GRS Gabriel Roeder Smith & Company
Consultants & Actuaries

PUBLIC EMPLOYEES RETIREMENT ASSOCIATION OF MINNESOTA

PUBLIC EMPLOYEES POLICE AND FIRE PLAN

GASB STATEMENTS NO. 67 AND NO. 68 ACCOUNTING AND FINANCIAL REPORTING FOR PENSIONS

JUNE 30, 2014

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December 3, 2014

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

Dear Trustees of the Public Employees Police and Fire Plan:

This report provides accounting and financial reporting information that is intended to comply with the Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68 for the Public Employees Police and Fire Plan ("PEPFP"). These calculations have been made on a basis that is consistent with our understanding of these accounting standards.

GASB Statement No. 67 is the accounting standard that applies to the financial reports issued by retirement systems. GASB Statement No. 68 establishes accounting and financial reporting for state and local government employers who provide their employees (including former employees) pension benefits through a trust.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of providing reporting and disclosure information that satisfies the requirements of GASB Statements No. 67 and No. 68. The calculation of the plan's liability for this report may not be applicable for funding purposes of the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statement No. 67 may produce significantly different results. The information in this report is calculated on a total plan basis. PERA is responsible for preparing the Schedule of Employer Allocations and the Schedule of Pension Amounts by Employer. This report may be provided to parties other than the Public Employees Retirement Association (PERA) only in its entirety and only with the permission of PERA.

This report is based upon information, furnished to us by PERA, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. If your understanding of this information is different, please let us know. This information was checked for internal consistency, but it was not otherwise audited.

To the best of our knowledge, the information contained with this report is accurate and fairly represents the actuarial position of the Public Employees Police and Fire Plan as of the measurement date. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board. Brian B. Murphy and Bonita J. Wurst are members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,

By Brian B. Murphy
Brian B. Murphy
FSA, EA, MAAA

By Bonita J. Wurst
Bonita J. Wurst
ASA, EA, MAAA

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SECTION A

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY
as of June 30, 2014 *(Dollars in Thousands)*

		2014
Actuarial Valuation Date		June 30, 2014
Measurement Date of the Net Pension Liability		June 30, 2014
Employer's Fiscal Year Ending Date (Reporting Date)		variable
Membership		
Number of		
- Service Retirements		7,002
- Survivors		1,886
- Disability Retirements		1,151
- Deferred Retirements		1,481
- Terminated other non-vested		975
- Active Members		10,879
- Total		23,374
Covered Payroll	$	820,333
Net Pension Liability		
Total Pension Liability	$	8,353,141
Plan Fiduciary Net Position		7,273,100
Net Pension Liability	$	1,080,041
Plan Fiduciary Net Position as a Percentage of Total Pension Liability		87.07%
Net Pension Liability as a Percentage of Covered Payroll		131.66%
Development of the Single Discount Rate		
Single Discount Rate		7.90%
Long-Term Expected Rate of Investment Return		7.90%
Long-Term Municipal Bond Rate*		4.29%
Last year ending June 30 in the 2015 to 2114 projection period for which projected benefit payments are fully funded		2114
Total Pension Expense/ (Income)	$	115,689

Deferred Outflows and Deferred Inflows of Resources by Source to be recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience	$ 1,511	$ -
Changes in assumptions	269,954	-
Net difference between projected and actual earnings on pension plan investments	-	532,929
Total	$ 271,465	$ 532,929

** Based on the Bond Buyer 20-Bond Index of general obligation municipal bonds as of June 26, 2014 (i.e., the weekly rate closest to but not later than the Measurement Date).*

DISCUSSION

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67, *Financial Reporting for Pension Plans* establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68, *Accounting and Financial Reporting for Pensions* establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

Financial Statements

GASB Statement No. 68 requires state and local governmental employers to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the liability and investment experience.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a Statement of Fiduciary Net Position and a Statement of Changes in Fiduciary Net Position in accordance with GASB Statement No. 67. The *Statement of Fiduciary Net Position* presents the assets and liabilities of the pension plan at the end of the pension plan's reporting period. The *Statement of Changes in Fiduciary Net Position* presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.

Notes to Financial Statements

GASB Statement No. 68 requires the notes to the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

Both GASB Statements No. 67 and No. 68 require the notes to the financial statements for the employers and pension plans to include certain descriptive information about the pension plans through which the pension benefits are provided. The list of disclosure items should include:

- a description of benefits provided by the plan;
- the classes of employees and number of members covered by the pension plan;
- a description of the plan's funding policy, which includes member and employer contribution requirements;
- the pension plan's investment policies;
- the pension plan's fiduciary net position, net pension liability, and the pension plan's fiduciary net position as a percentage of the total pension liability;
- the net pension liability using a discount rate that is 1% higher and 1% lower than the current discount rate used to calculate the total pension liability and net pension liability for financial reporting purposes;
- significant assumptions and methods used to calculate the total pension liability;
- inputs to the discount rates; and
- certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with Statement No. 67. This information includes:

- the composition of the pension plan's board and the authority under which benefit terms may be amended;
- a description of how fair value is determined;
- information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables, and insurance contracts excluded from plan assets; and
- annual money-weighted rate of return.

Required Supplementary Information

Statement No. 67 requires a 10-year fiscal history of:

- sources of changes in the net pension liability;
- information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. The net pension liability and pension expense should be measured as of the pension plan's fiscal year end (measurement date) on a date that is within the employer's prior fiscal year. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2014 and a measurement date of June 30, 2014.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a single discount rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating (which is published by the Federal Reserve) as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the long-term expected rate of return on pension plan investments is 7.90%; the municipal bond rate is 4.29% (based on the weekly rate closest to but not later than the measurement date of the 20-Year Bond Buyer Index as published by the Federal Reserve Board); and the resulting single discount rate is 7.90%.

Effective Date and Transition

GASB Statements No. 67 and No. 68 are effective for fiscal years beginning after June 15, 2013, and June 15, 2014 respectively. Earlier application is encouraged by the GASB.

SECTION B

FINANCIAL STATEMENTS

PENSION EXPENSE UNDER GASB STATEMENT NO. 68

Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

A. Expense

1. Service Cost	$	169,124
2. Interest on the Total Pension Liability		598,165
3. Current-Period Benefit Changes		0
4. Employee Contributions (made negative for addition here)		(81,213)
5. Projected Earnings on Plan Investments (made negative for addition here)		(492,228)
6. Pension Plan Administrative Expense		798
7. Other Changes in Plan Fiduciary Net Position		(18)
8. Recognition of Outflow (Inflow) of Resources due to Liabilities		54,293
9. Recognition of Outflow (Inflow) of Resources due to Assets		(133,232)
10. Total Pension Expense/ (Income)	**$**	**115,689**

STATEMENT OF OUTFLOWS AND INFLOWS ARISING FROM CURRENT REPORTING PERIOD

Fiscal Year Ended June 30, 2014

A. Outflows (Inflows) of Resources due to Liabilities		
1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	$	1,813
2. Assumption Changes (gains) or losses	$	323,945
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}		6.0000
4. Outflow (Inflow) of Resources to be recognized in the current pension expense for the difference between expected and actual experience of the Total Pension Liability	$	302
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	$	53,991
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	$	54,293
7. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for the difference between expected and actual experience of the Total Pension Liability	$	1,511
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	$	269,954
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	$	271,465
B. Outflows (Inflows) of Resources due to Assets		
1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	$	(666,161)
2. Recognition period for Assets {in years}		5.0000
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets	$	(133,232)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	$	(532,929)

STATEMENT OF OUTFLOWS AND INFLOWS ARISING FROM CURRENT AND PRIOR REPORTING PERIODS

Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

A. Outflows and Inflows of Resources due to Liabilities and Assets to be recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Due to Liabilities	$ 54,293	$ -	$ 54,293
2. Due to Assets	-	133,232	(133,232)
3. Total	$ 54,293	$ 133,232	$ (78,939)

B. Outflows and Inflows of Resources by Source to be recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Differences between expected and actual experience	$ 302	$ -	$ 302
2. Assumption Changes	53,991	-	53,991
3. Net Difference between projected and actual earnings on pension plan investments	-	133,232	(133,232)
4. Total	$ 54,293	$ 133,232	$ (78,939)

C. Deferred Outflows and Deferred Inflows of Resources by Source to be recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows of Resources
1. Differences between expected and actual experience	$ 1,511	$ -	$ 1,511
2. Assumption Changes	269,954	-	269,954
3. Net Difference between projected and actual earnings on pension plan investments	-	532,929	(532,929)
4. Total	$ 271,465	$ 532,929	$ (261,464)

D. Deferred Outflows and Deferred Inflows of Resources by Year to be recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows of Resources
2015	$ (78,939)
2016	(78,939)
2017	(78,939)
2018	(78,940)
2019	54,293
Thereafter	0
Total	$ (261,464)

STATEMENT OF FIDUCIARY NET POSITION

as of June 30, 2014 *(Dollars in Thousands)*

	Market Value			
Assets in Trust	**June 30, 2014**		**June 30, 2013**	
Cash, Equivalents, Short Term Securities	$ 188,578		$ 161,583	
Fixed Income	1,696,489		1,456,052	
Equity	4,458,763		3,797,435	
SBI Alternative	917,040		919,315	
Other	0		0	
Total Assets in Trust	**$ 7,260,870**		**$ 6,334,385**	
Assets Receivable	15,304	*	15,730	**
Amounts Payable	(3,074)		(3,374)	
Net Position Restricted for Pensions	**$ 7,273,100**		**$ 6,346,741**	

* *Includes $11,534 contribution from Minneapolis to be paid by July 15, 2014.*
** *Includes $11,534 contribution from Minneapolis to be paid by July 15, 2013.*

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION

for Year Ended June 30, 2014 *(Dollars in Thousands)*

Change in Assets		**Market Value**	
Year Ending		**June 30, 2014**	**June 30, 2013**
1.	Fund balance at market value at beginning of year	$ 6,346,741	$ 5,772,047
2.	Contributions		
	a. Member	81,213	76,434
	b. Employer	132,632 *	125,995 **
	c. Other sources	9,000	0
	d. Total contributions	222,845	202,429
3.	Investment income		
	a. Investment income/(loss)	1,168,495	815,439
	b. Investment expenses	(10,106)	(8,697)
	c. Net subtotal	1,158,389	806,742
4.	Other	18	24
5.	**Total additions:** *(2.d.) + (3.c.) + (4.)*	**$ 1,381,252**	**$ 1,009,195**
6.	Benefits Paid		
	a. Annuity benefits	(452,462)	(431,726)
	b. Refunds	(1,633)	(2,020)
	c. Total benefits paid	(454,095)	(433,746)
7.	Expenses		
	a. Other	0	0
	b. Administrative	(798)	(755)
	c. Total expenses	(798)	(755)
8.	**Total deductions:** *(6.c.) + (7.c.)*	**(454,893)**	**(434,501)**
9.	Net increase (decrease) in net position: *(5) + (8)*	926,359	574,694
10.	**Net position restricted for pensions**	**$ 7,273,100**	**$ 6,346,741**
11.	Approximate return on market value of assets	18.6%	14.3%

** Includes $11,534 contribution from Minneapolis to be paid by July 15, 2014.*
*** Includes $11,534 contribution from Minneapolis to be paid by July 15, 2013.*

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS CURRENT PERIOD

Fiscal Year Ended June 30, 2014 *(Dollars in Thousands)*

A. Total pension liability		
1. Service cost	$	169,124
2. Interest on the total pension liability		598,165
3. Changes of benefit terms		0
4. Difference between expected and actual experience of the total pension liability		1,813
5. Changes of assumptions		323,945
6. Benefit payments, including refunds of employee contributions		(454,095)
7. Net change in total pension liability	$	638,952
8. Total pension liability – beginning		7,714,189
9. Total pension liability – ending	**$**	**8,353,141**
B. Plan fiduciary net position		
1. Contributions – employer	$	141,632
2. Contributions – employee		81,213
3. Net investment income		1,158,389
4. Benefit payments, including refunds of employee contributions		(454,095)
5. Pension Plan Administrative Expense		(798)
6. Other		18
7. Net change in plan fiduciary net position	$	926,359
8. Plan fiduciary net position – beginning		6,346,741
9. Plan fiduciary net position – ending	**$**	**7,273,100**
C. Net pension liability	**$**	**1,080,041**
D. Plan fiduciary net position as a percentage of the total pension liability		**87.07%**
E. Covered-employee payroll	**$**	**820,333**
F. Net pension liability as a percentage of covered employee payroll		**131.66%**

SCHEDULES OF REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in Net Pension Liability and Related Ratios Multiyear *(Dollars in Thousands)*

Last 10 Fiscal Years (which may be built prospectively)

Fiscal year ending June 30,	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
Total Pension Liability										
Service Cost	$ 169,124									
Interest on the Total Pension Liability	598,165									
Benefit Changes	-									
Difference between Expected and Actual Experience	1,813									
Assumption Changes	323,945									
Benefit Payments	(452,462)									
Refunds	(1,633)									
Net Change in Total Pension Liability	638,952									
Total Pension Liability - Beginning	7,714,189									
Total Pension Liability - Ending (a)	$ 8,353,141									
Plan Fiduciary Net Position										
Employer Contributions	$ 141,632									
Employee Contributions	81,213									
Pension Plan Net Investment Income	1,158,389									
Benefit Payments	(452,462)									
Refunds	(1,633)									
Pension Plan Administrative Expense	(798)									
Other	18									
Net Change in Plan Fiduciary Net Position	926,359									
Plan Fiduciary Net Position - Beginning	6,346,741									
Plan Fiduciary Net Position - Ending (b)	$ 7,273,100									
Net Pension Liability - Ending (a) - (b)	1,080,041									
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	87.07 %									
Covered Employee Payroll	$ 820,333									
Net Pension Liability as a Percentage of Covered Employee Payroll	131.66 %									

Notes to Schedule:

N/A

SCHEDULES OF REQUIRED SUPPLEMENTARY INFORMATION

Schedule of the Net Pension Liability Multiyear *(Dollars in Thousands)*

Last 10 Fiscal Years (which may be built prospectively)

FY Ending June 30,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered Payroll	Net Pension Liability as a % of Covered Payroll
2005			$ -			
2006			-			
2007			-			
2008			-			
2009			-			
2010			-			
2011			-			
2012			-			
2013			-			
2014	$ 8,353,141	$ 7,273,100	$ 1,080,041	87.07%	$ 820,333	131.66%

SCHEDULE OF CONTRIBUTIONS MULTIYEAR *(DOLLARS IN THOUSANDS)*

Last 10 Fiscal Years

FY Ending June 30,	Actuarially Determined Contribution	Actual Contribution	Contribution Deficiency (Excess)	Covered Payroll	Actual Contribution as a % of Covered Payroll
2005	$ 89,828	$ 55,802	$ 34,026	$ 580,723	9.61%
2006	107,681	63,603	44,078	618,435	10.28
2007	116,325	74,707	41,618	648,342	11.52
2008	144,548	87,023	57,525	703,701	12.37
2009	140,591	101,548	39,043	733,164	13.85
2010	150,220	107,066	43,154	740,101	14.47
2011	124,284	109,604	14,680	775,806	14.13
2012	152,369	121,891	30,478	794,417	15.34
2013	189,254	125,995	63,259	796,188	15.82
2014	163,985	141,632	22,353	820,333	17.27

NOTES TO SCHEDULE OF CONTRIBUTIONS

Valuation Date:	June 30, 2014
Notes	Actuarially determined contribution rates are calculated as of each July 1.

Methods and Assumptions Used to Determine Contribution Rates:

Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	27 years
Asset Valuation Method	5-Year smoothed market; no corridor
Inflation	3.00%
Salary Increases	4.25% to 12.75% including inflation
Investment Rate of Return	8.00% through June 30, 2017; 8.50% thereafter
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2011 valuation pursuant to an experience study of the period 2004 - 2009, prepared by a former actuary.
Mortality	RP-2000 annuitant generational mortality table, projected with scale AA, white collar adjustment.

Other Information:

Notes	The plan is assumed to pay a 2.5% post retirement benefit increase beginning January 1, 2024. See separate funding report as of July 1, 2014 for additional detail.

SCHEDULE OF INVESTMENT RETURNS MULTIYEAR

Last 10 Fiscal Years

FY Ending June 30,	Annual Return[1]
2005	
2006	
2007	
2008	
2009	
2010	
2011	
2012	
2013	
2014	

[1] *Annual money-weighted rate of return, net of investment expenses.*

It is our understanding that this exhibit will be prepared by PERA with assistance from the State Board of Investment. Please provide a copy of the final exhibit for our files.

SECTION D

ADDITIONAL FINANCIAL STATEMENT DISCLOSURES

Asset Allocation

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Domestic Fixed Income		
International Fixed Income		
Domestic Equity		
International Equity		
Private Equity		
Real Estate		
Commodities		
Cash		
Total		

It is our understanding that this exhibit will be prepared by PERA with assistance from the State Board of Investment. Please provide a copy of the final exhibit for our files.

Single Discount Rate

A single discount rate of 7.90% was used to measure the total pension liability. This single discount rate was based on the expected rate of return on pension plan investments of 7.90%. The projection of cash flows used to determine this single discount rate assumed that plan member and employer contributions will be made at the current statutory rates. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Regarding the sensitivity of the net pension liability to changes in the single discount rate, the following presents the plan's net pension liability, calculated using a single discount rate of 7.90%, as well as what the plan's net pension liability would be if it were calculated using a single discount rate that is 1-percentage-point lower or 1-percentage-point higher:

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

(Dollars in Thousands)

1% Decrease 6.90%	Current Single Discount Rate Assumption 7.90%	1% Increase 8.90%
$2,163,415	$1,080,041	$187,255

GASB STATEMENT NO. 68 RECONCILIATION *(Dollars in Thousands)*

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Deferred Outflows	Deferred Inflows	Pension Expense
Balance Beginning of Year	**$ 7,714,189**	**$ 6,346,741**	**$ 1,367,448**			
Changes for the Year:						
Service Cost	$ 169,124		$ 169,124			$ 169,124
Interest on Total Pension Liability	598,165		598,165			598,165
Interest on Fiduciary Net Position		$ 492,228	(492,228)			(492,228)
Changes in Benefit Terms	-		-			-
Liability Experience Gains and Losses	1,813		1,813	$ 1,511	$ 0	302
Changes in Assumptions	323,945		323,945	269,954	-	53,991
Contributions - Employer		141,632	(141,632)			
Contributions - Employees		81,213	(81,213)			(81,213)
Asset Gain/(Loss)		666,161	(666,161)	-	532,929	(133,232)
Benefit Payouts	(454,095)	(454,095)	-			-
Administrative Expenses		(798)	798			798
Other		18	(18)			(18)
			-			
Net Changes	**$ 638,952**	**$ 926,359**	**$ (287,407)**	**$ 271,465**	**$ 532,929**	**$ 115,689**
Balance End of Year	**$ 8,353,141**	**$ 7,273,100**	**$ 1,080,041**	**$ 271,465**	**$ 532,929**	

SUMMARY OF POPULATION STATISTICS

		Terminated		Recipients			
	Actives	Deferred Retirement	Other Non-Vested	Service Retirement	Disability Retirement	Survivor	Total
Members on 7/1/2013	**10,940**	**1,388**	**988**	**6,583**	**1,131**	**1,865**	**22,895**
New Members	651	0	0	0	0	0	**651**
Return to active	47	(31)	(16)	0	0	0	**0**
Terminated non-vested	(50)	0	50	0	0	0	**0**
Service retirements	(440)	(122)	0	562	0	0	**0**
Terminated deferred	(203)	203	0	0	0	0	**0**
Terminated refund/transfer	(26)	(15)	(10)	0	0	0	**(51)**
Deaths	(6)	(1)	0	(160)	(19)	(85)	**(271)**
New beneficiary	0	0	0	0	0	116	**116**
Disabled	(34)	0	0	0	34	0	**0**
Data correction	0	59	(37)	17	5	(10)	**34**
Net change	(61)	93	(13)	419	20	21	**479**
Members on 6/30/2014	**10,879**	**1,481**	**975**	**7,002**	**1,151**	**1,886**	**23,374**

SECTION E

SUMMARY OF BENEFITS

Summary of Plan Provisions – Police & Fire Plan

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

Plan year	July 1 through June 30.
Eligibility	All full-time and certain part-time police officers and fire fighters, and certain paramedics, who are not contributing to any other local retirement fund.
Contributions	**Member** / **Employer** Percent of Salary Current: 10.20 / 15.30 January 1, 2015 & later: 10.80 / 16.20 Member contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).
State Contributions	$9 million paid annually on October 1 until both PERA P&F and MSRS State Patrol become 90% funded (on a Market Value of Assets basis).
Allowable service	Police and Fire service during which member contributions were made. May also include certain leaves of absence and military service.
Salary	Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes unused annual leaves and sick leave payments, severance payments, Workers' Compensation benefits and employer-paid flexible spending accounts, cafeteria plans, healthcare expense accounts, day-care expenses, fringe benefits and the cost of insurance coverage.
Average salary	Average of the five highest successive years of salary. Average Salary is based on all Allowable Service if less than five years.
Vesting	

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

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

Retirement	
Normal retirement benefit	
Age/service requirement	Age 55 and at least partially vested. Proportionate Retirement Annuity is available at age 65 and one year of Allowable Service.
Amount	3.0% of Average Salary for each year of Allowable Service (up to 33 years if hired after June 30, 2014), pro rata for completed months. A pro-rata share of member contributions will be refunded at retirement for excess service.
Early retirement	
Age/service requirement	Age 50 and at least partially vested.
Amount	Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date and 0.10% (0.20% for members enrolled in the plan after June 30, 2007) reduction for each month the member is under age 55. If the effective date of retirement is after June 30, 2019, the reduction is 5/12% for each month that the member is under age 55 at the time of retirement. The change in early retirement factors will be phased in over a five-year period for retirements occurring between July 1, 2014 and June 30, 2019.
Form of payment	Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are: 25%, 50%, 75% or 100% Joint and Survivor with bounce back feature. The Joint and Survivor options are determined on an actuarially equivalent basis, but with no actuarial reduction for the bounce back feature.
Benefit Increases	Benefit recipients receive a future annual 1.0% post-retirement benefit increase. The annual adjustment will match inflation, up to 2.5%, any time the fund exceeds a 90% funded ratio for two consecutive years. If the adjustment is increased to 2.5% and the funded ratio falls below 80% for one year or 85% for two consecutive years the post-retirement benefit increase will be lowered to 1.0%. A benefit recipient who has been receiving a benefit for at least 12 full months as of June 30 will receive a full increase. Members receiving benefits for at least one month but less than 12 full months as of June 30 will receive a pro rata increase. For retirements after May 31, 2014, the first increase will be delayed two years. Members retired under laws in effect before July 1, 1973 receive an additional lump sum payment each year. In 1989, this lump sum payment is the greater of $25 times each full year of Allowable Service or the difference between $400 times each full year of Allowable Service and the sum of benefits paid from any Minnesota public pension plan plus cash payments from the Social Security Administration for the preceding fiscal year July 1, 1988 through June 30, 1989. In each following year, the lump sum payment will increase by the same percentage increase that is applied to regular annuities paid from the fund. Effective January 1, 2002, annual lump sum payment is divided by 12 and paid as a monthly life annuity in the annuity form elected.

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

Disability

Duty disability benefit

Age/service requirement	Physically or mentally unable to perform normal duties as a police officer or fire fighter as a direct result of an act of duty specific to protecting property and personal safety of others. Members age 55 or older with 20 or more years of Allowable Service are not eligible to apply for duty disability benefits.
Amount	60.00%, plus an additional 3.00% for each year of service in excess of 20 years, of Average Salary paid until Normal Retirement Age, or for 60 months, whichever is later. The retirement benefit is then recalculated but is never lower than the disability benefit. If a member became disabled prior to July 1, 1997 but did not commence their benefit before July 1, 1997, the benefit is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in post-retirement interest rates from 5.00% to 6.00%.

Regular disability benefit

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

Retirement benefit

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

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

Death

Surviving spouse benefit

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

Surviving dependent children’s benefit

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

Duty disability surviving spouse benefit

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

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

Death (Continued)

Duty disability surviving dependent children's benefit

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

Surviving spouse optional annuity

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

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

Termination	
Refund of contributions	
Age/service requirement	Termination of public service.
Amount	If member terminated before July 1, 2011, member's contributions credited with 6% interest compounded annually prior to July 1, 2011 and 4% interest thereafter. If member terminated after June 30, 2011, member's contributions credited with 4% interest compounded annually. A deferred annuity may be elected in lieu of a refund if vested.
Deferred benefit	
Age/service requirement	Partially or fully vested.
Amount	Benefit computed under law in effect at termination and increased by the following percentage (augmentation) compounded annually for terminations prior to 2012: (a.) 0.00% before July 1, 1971; (b.) 5.00% from July 1, 1971 to January 1, 1981; (c.) 3.00% (2.50% if hired after June 30, 2006) thereafter until the earlier of January 1 of the year following attainment of age 55 and January 1, 2012; (d.) 5.00% (2.50% if hired after June 30, 2006) thereafter until the earlier of the date the annuity begins and January 1, 2012; and (e.) 1.00% from January 1, 2012 thereafter. Members who terminate after 2011 will receive no future augmentation. If a member terminated employment prior to July 1, 1997 but was not eligible to commence their pension before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997 and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Form of payment	Same as for retirement.
Optional form conversion factors	Actuarially equivalent factors based on RP-2000 for healthy annuitants, white collar adjustment, projected to 2027 using scale AA, no setbacks, blended 90% males, and 7.0% interest. The interest rate assumption will change to 6.5% on the earlier of the effective date of the next mortality adjustment or July 1, 2017.

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

Combined service annuity	Members are eligible for combined service benefits if they: (a.) Meet minimum retirement age for each plan participated in and total public service meets the vesting requirements of each plan; or (b.) Have three or more years of service under PERA and the covered fund(s) (if hired prior to July 1, 2010). Other requirements for combined service include: (a.) Member must have at least six months of allowable service credit in each plan worked under; 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 is combined in order to determine eligibility for early retirement. (b.) Average salary is based on the high five consecutive years during their entire service in all covered plans.
Changes in plan provisions	The interest rate assumption used to determine optional form conversion factors was changed (with a future effective date).

Summary of Plan Provisions – Minneapolis Police Relief Association

Normal retirement benefit	Monthly benefits are equal to the number of units multiplied by the unit values described herein. Units are based on service, as follows: **Service** — **Units** 20 — 35.0 units 21 — 36.6 units 22 — 38.2 units 23 — 39.8 units 24 — 41.4 units 25 or more — 43.0 units Members must be at least age 50 with 5 years of service to receive this benefit.
Unit values	**Calendar Year** — **Unit Value** 2012 — $ 104.651 2013 — 109.011 2014 — 114.825 2015 — 124.031 Unit values after 2015 are assumed to increase 1.0% per year.
Surviving spouse's benefit	Annual benefit based on 23 units for the surviving spouse of an active or retired member. Upon retirement, members may choose an alternative form of payment that provides 50%, 75% or 100% of their benefit to their spouse after their death. The units are adjusted if one of these alternate forms is selected.
Surviving children's benefit	Annual benefit based on 8 units for each surviving child of an active or retired member. Benefits continue to age 18 or if the child is a full-time student, to age 22. The total benefit for surviving children and spouse combined is limited to 41 units.
Contributions	Member and employer contributions equal to 8% of the monthly unit value multiplied by 80 are required for each member. After 25 years of service, member contributions are paid to a separate health insurance account.
Benefit Increases	Benefit recipients receive a future annual 1.0% post-retirement benefit increase. The annual adjustment will match inflation, up to 2.5%, any time the fund exceeds a 90% funded ratio for two consecutive years. If the adjustment is increased to 2.5% and the funded ratio falls below 80% for one year or 85% for two consecutive years the post-retirement benefit increase will be lowered to 1.0%.

Summary of Plan Provisions – Minneapolis Firefighters' Relief Association

Normal retirement benefit	Monthly benefits are equal to the number of units multiplied by the unit values described herein. Units are based on service, as follows:

Service	Units
15	25.0 units
16	26.6 units
17	28.2 units
18	29.8 units
19	31.4 units
20	35.0 units
21	36.6 units
22	38.2 units
23	39.8 units
24	41.4 units
25 or more	43.0 units

Members must be at least age 50 with 5 years of service to receive this benefit.

Members may choose among alternative survivor payment forms which modify the number of units payable to the member and their spouse. A member who is single at the time of retirement and who has at least 25 years of service may choose to receive 43.3 units on the condition of a reduced survivor payment to any future spouse.

Unit values

Calendar Year	Unit Value
2013	100.775
2014	104.264
2015	124.031

Unit values after 2015 are assumed to increase 1.0% per year.

Disability benefit	Annual benefit based on 41 units for the disabled member.
Surviving spouse's benefit	Annual benefit based on 23 units for the surviving spouse of an active or retired member and 22 units for the surviving spouse of a disabled member. Upon retirement, members may choose an alternative form of payment that provides 50%, 75% or 100% of their benefit to their spouse after their death. The units are adjusted if one of these alternate forms is selected.
Surviving children's benefit	Annual benefit based on 8 units for each surviving child of an active or retired member. Benefits continue to age 18 or if the child is a full-time student, to age 22. The total benefit for surviving children and spouse combined is limited to 43 units.
Contributions	Member and employer contributions equal to 8% of the monthly unit value multiplied by 80 are required for each member. After 25 years of service, member contributions are paid to a separate health insurance account.
Benefit Increases	Benefit recipients receive a future annual 1.0% post-retirement benefit increase. The annual adjustment will match inflation, up to 2.5%, any time the fund exceeds a 90% funded ratio for two consecutive years. If the adjustment is increased to 2.5% and the funded ratio falls below 80% for one year or 85% for two consecutive years the post-retirement benefit increase will be lowered to 1.0%.

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Actuarial Methods

Actuarial Cost Method

Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using an **Individual Entry-Age Actuarial Cost Method** having the following characteristics:

(i) the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement;

(ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Actuarial gains/(losses), as they occur, reduce (increase) the Total Pension Liability.

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%.

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 7.90%
- Liabilities and normal cost based on statutory funding assumptions
    - Discount rate of 8.00% through June 30, 2017; 8.50% thereafter
    - Statutory salary increases (rate of 13.00% at year 1 declining to 4.50% at years 23 and later)
- Open group; stable active population (new member profile based on average new members hired in recent years)
- The postretirement benefit increase rate is assumed to be 1.00% per year until the funding ratio threshold required to pay a 2.50% postretirement benefit increase is reached
- Current statutory contributions (i.e. not including potential contribution increases under the contribution stabilizer statutes) as directed by PERA

Based on these assumptions and methods, the projection indicates that this plan is expected to attain the funding ratio threshold required to pay a 2.50% postretirement benefit increase in the year 2030, and that the plan would begin paying 2.50% benefit increases on January 1, 2031. This assumption is reflected in our calculations.

To determine liabilities as of July 1, 2013, we performed a similar projection, and assumed the plan would pay the 1.00% benefit increases indefinitely.

Decrement Timing

All decrements are assumed to occur mid-year.

Asset Valuation Method

Fair value of assets.

Summary of Actuarial Assumptions

The following assumptions were used in valuing the liabilities and benefits under the plan. All demographic 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 demographic assumptions are based on the last experience study, dated August 2009, prepared by a former actuary. The economic assumptions are based on a review of inflation and investment return assumptions dated September 11, 2014.

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	7.90% per annum.
Benefit increases after retirement	1.00% per annum through 2030 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.
Payroll growth	3.50% per year.
Mortality rates	
Healthy Pre-retirement	RP-2000 employee generational mortality table projected with scale AA, white collar adjustment, set back two years for males and females.
Healthy Post-retirement	RP-2000 annuitant generational mortality table projected with scale AA, white collar adjustment. The RP-2000 employee mortality table as published by the Society of Actuaries (SOA) contains mortality rates for ages 15 to 70 and the annuitant mortality table contains mortality rates for ages 50 to 95. We have applied the annuitant mortality table for active members beyond age 70 until the assumed retirement age and the employee mortality table for annuitants younger than age 50.
Disabled	RP-2000 healthy annuitant mortality table, white collar adjustment, set forward eight years for males and females.
Retirement	Members retiring from active status are assumed to retire according to the age related rates shown in the rate table. Members who have attained the highest assumed retirement age are assumed to retire in one year.
Withdrawal	Select and Ultimate rates based on actual experience. Ultimate rates after the third year are shown in rate table. Select rates in the first three years are:

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

Summary of Actuarial Assumptions (Continued)

Disability	Age-related rates based on experience; see table of sample rates. All incidences are assumed to be duty-related.
Allowance for combined service annuity	Liabilities for former members are increased by 30.00% to account for the effect of some participants having eligibility for a Combined Service Annuity.
Administrative expenses	Total prior year administrative expenses expressed as a percentage of prior year projected payroll are assumed to increase 3.50% per year and are allocated to the closed group based on the ratio of closed group payroll to total payroll.
Refund of contributions	Account balances accumulate interest until normal retirement date and are discounted back to the valuation date. All employees withdrawing after becoming eligible for a deferred benefit take the larger of their contributions accumulated with interest or the value of their deferred benefit.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at age 55.
Percentage married	85% of male and 65% of female active members are assumed to be married. Actual marital status is used for members in payment status.
Age of spouse	Wives are assumed to be three years younger than their husbands for male members, and husbands are assumed to be four years older than their wives for female members. For members in payment status, actual spouse date of birth is used, if provided.
Eligible children	Retiring members are assumed to have no dependent children.
Form of payment	Married members retiring from active status are assumed to elect subsidized joint and survivor form of annuity as follows: Males: 10% elect 25% Joint & Survivor option 20% elect 50% Joint & Survivor option 20% elect 75% Joint & Survivor option 35% elect 100% Joint & Survivor option Females: 5% elect 25% Joint & Survivor option 15% elect 50% Joint & Survivor option 5% elect 75% Joint & Survivor option 15% elect 100% Joint & Survivor option Remaining married members and unmarried members are assumed to elect the Straight Life option. Members receiving deferred annuities (including current terminated deferred members) are assumed to elect a straight life annuity.
Eligibility testing	Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.
Decrement operation	Withdrawal decrements do not operate during retirement eligibility.
Service credit accruals	It is assumed that members accrue one year of service credit per year.

Summary of Actuarial Assumptions (Continued)

Unknown data for certain members	To prepare this report, GRS has used and relied on participant data supplied by the Fund. Although GRS has reviewed the data in accordance with Actuarial Standards of Practice No. 23, GRS has not verified or audited any of the data or information provided. In cases where submitted data was missing or incomplete, the following assumptions were applied: <u>Data for active members:</u> There were 19 members reported with a salary less than $100. We used prior year salary (11 members), if available; otherwise high five salary with a 10% load to account for salary increases (seven members). If neither prior year salary nor high five salary was available, we assumed a value of $35,000 (one member). Note former members of either Minneapolis Police or Minneapolis Fire are excluded from these salary counts as salary is not used to calculate the benefit. There were also 85 members reported without a gender. We assumed male gender. No members were reported without a date of birth. <u>Data for terminated members:</u> We calculated benefits for these members using the reported Average Salary and credited service. If Average Salary was not reported (six members), we assumed a value of $24,000. If credited service was not reported (15 members), we used elapsed time from hire date to termination date (four members); otherwise we assumed nine years of service (11 members). If termination date was invalid or not reported (18 members), we assumed the termination date was equal to the hire date plus credited service, otherwise the valuation date. There were four members reported without a gender; male was assumed. No members were reported without a date of birth. <u>Data for inactive members:</u> There were two beneficiaries with missing or invalid dates of birth; we assumed a date of birth of July 1, 1943. There were two members reported without a gender; male was assumed.
Changes in actuarial assumptions	The assumed post-retirement benefit increase rate was changed from 1.0% per year to 1.0% per year through 2030 and 2.5% per year thereafter.

Summary of Actuarial Assumptions (Continued)

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

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

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

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

Summary of Actuarial Assumptions (Concluded)

Age	Retirement	Salary Scale Year	Salary Scale Increase
50	13%	1	12.75%
51	10	2	10.75
52	10	3	8.75
53	10	4	7.75
54	13	5	6.25
55	30	6	5.85
56	20	7	5.55
57	20	8	5.35
58	20	9	5.15
59	20	10	5.05
60	25	11	4.95
61	25	12	4.85
62	35	13	4.75
63	35	14	4.65
64	35	15	4.55
65	50	16	4.55
66	50	17	4.55
67	50	18	4.55
68	50	19	4.55
69	50	20	4.55
70+	100	21	4.45
		22	4.35
		23+	4.25

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

CALCULATION OF THE SINGLE DISCOUNT RATE

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the assumed long-term rate of return is used. In years where assets are not projected to be sufficient to meet benefit payments, the use of a “risk-free” rate is required, as described in the following paragraph.

The *Single Discount Rate* (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating (which is published by the Federal Reserve) as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.90%; the municipal bond rate is 4.29%; and the resulting single discount rate is 7.90%.

The tables in this section provide background for the development of the single discount rate.

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their liabilities).

The **Projection of Plan Fiduciary Net Position** table shows the development of expected asset levels in future years.

The **Present Values of Projected Benefit Payments** table shows the development of the Single Discount Rate (SDR). It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

We performed a similar analysis as of July 1, 2013. Based on an expected rate of return of 7.90% and a municipal bond rate of 4.63%, the plan is projected to have sufficient assets to pay future benefits. **The resulting single discount rate as of July 1, 2013 is 7.90%.**

SINGLE DISCOUNT RATE DEVELOPMENT

Projection of Contributions *(Dollars in Thousands)*

	Payroll			Projected Contributions					
Year	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll toward current UAL*	Contributions due from Mergers	Additional State Contributions	Total Contributions
0	$ 820,333	$ -	$ 820,333						
1	829,469	-	829,469	$ 87,094	$ 130,641	$ -	$ 11,560	$ 9,000	$ 238,295
2	828,883	29,617	858,500	89,519	134,279	2,026	10,977	9,000	245,801
3	826,263	62,285	888,548	89,236	133,855	4,260	11,560	9,000	247,911
4	821,333	98,314	919,647	88,704	133,056	6,725	11,560	9,000	249,045
5	813,383	138,452	951,835	87,845	131,768	9,470	11,560	9,000	249,643
6	802,376	182,773	985,149	86,657	129,985	12,502	11,560	9,000	249,704
7	788,498	231,131	1,019,629	85,158	127,737	15,809	11,560	9,000	249,264
8	771,848	283,468	1,055,316	83,360	125,039	19,389	11,534	9,000	248,322
9	752,681	339,571	1,092,252	81,290	121,934	23,227	11,534	9,000	246,985
10	731,289	399,192	1,130,481	78,979	118,469	27,305	11,534	9,000	245,287
11	707,705	462,343	1,170,048	76,432	114,648	31,624	11,534	9,000	243,238
12	681,956	529,044	1,211,000	73,651	110,477	36,187	11,534	9,000	240,849
13	654,548	598,837	1,253,385	70,691	106,037	40,960	11,534	9,000	238,222
14	625,660	671,593	1,297,253	67,571	101,357	45,937	11,534	9,000	235,399
15	595,789	746,868	1,342,657	64,345	96,518	51,086	11,534	9,000	232,483
16	564,565	825,085	1,389,650	60,973	91,460	56,436	11,534	9,000	229,403
17	531,596	906,692	1,438,288	57,412	86,119	62,018	11,534	9,000	226,083
18	497,243	991,385	1,488,628	53,702	80,553	67,811	11,534	9,000	222,600
19	461,479	1,079,251	1,540,730	49,840	74,760	73,821	-	9,000	207,421
20	424,544	1,170,111	1,594,655	45,851	68,776	80,036	-	9,000	203,663
21	386,513	1,263,955	1,650,468	41,743	62,615	86,455	-	9,000	199,813
22	347,844	1,360,390	1,708,234	37,567	56,351	93,051	-	9,000	195,969
23	309,082	1,458,941	1,768,023	33,381	50,071	99,792	-	9,000	192,244
24	271,109	1,558,794	1,829,903	29,280	43,920	106,622	-	9,000	188,822
25	234,744	1,659,206	1,893,950	25,352	38,029	113,490	-	9,000	185,871
26	200,198	1,760,040	1,960,238	21,621	32,432	120,387	-	9,000	183,440
27	168,183	1,860,664	2,028,847	18,164	27,246	127,269	-	9,000	181,679
28	139,204	1,960,652	2,099,856	15,034	22,551	134,109	-	9,000	180,694
29	113,608	2,059,743	2,173,351	12,270	18,404	140,886	-	9,000	180,560
30	91,449	2,157,970	2,249,419	9,876	14,815	147,605	-	9,000	181,296
31	72,303	2,255,845	2,328,148	7,809	11,713	154,300	-	9,000	182,822
32	56,121	2,353,512	2,409,633	6,061	9,092	160,980	-	9,000	185,133
33	42,815	2,451,156	2,493,971	4,624	6,936	167,659	-	9,000	188,219
34	32,075	2,549,185	2,581,260	3,464	5,196	174,364	-	9,000	192,024
35	23,547	2,648,057	2,671,604	2,543	3,815	181,127	-	9,000	196,485
36	16,857	2,748,253	2,765,110	1,821	2,731	187,980	-	9,000	201,532
37	11,721	2,850,168	2,861,889	1,266	1,899	194,951	-	9,000	207,116
38	7,865	2,954,190	2,962,055	849	1,274	202,067	-	9,000	213,190
39	5,067	3,060,660	3,065,727	547	821	209,349	-	9,000	219,717
40	3,136	3,169,891	3,173,027	339	508	216,821	-	9,000	226,668
41	1,849	3,282,234	3,284,083	200	300	224,505	-	9,000	234,005
42	1,031	3,397,995	3,399,026	111	167	232,423	-	9,000	241,701
43	542	3,517,450	3,517,992	59	88	240,594	-	9,000	249,741
44	268	3,640,853	3,641,121	29	43	249,034	-	9,000	258,106
45	125	3,768,436	3,768,561	14	20	257,761	-	9,000	266,795
46	53	3,900,407	3,900,460	6	9	266,788	-	9,000	275,803
47	19	4,036,957	4,036,976	2	3	276,128	-	9,000	285,133
48	6	4,178,265	4,178,271	1	1	285,793	-	9,000	294,795
49	1	4,324,509	4,324,510	-	-	295,796	-	9,000	304,796
50	-	4,475,868	4,475,868	-	-	306,149	-	9,000	315,149

**Contributions related to future employees in excess of normal cost and expenses of 20.16% of pay.*

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Projection of Contributions (Concluded) *(Dollars in Thousands)*

	Payroll			Projected Contributions					
Year	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll toward current UAL*	Contributions due from Mergers	Additional State Contributions	Total Contributions
51	-	4,632,523	4,632,523	$ -	$ -	$ 316,865	$ -	$ 9,000	$ 325,865
52	-	4,794,662	4,794,662	-	-	327,955	-	9,000	336,955
53	-	4,962,475	4,962,475	-	-	339,433	-	9,000	348,433
54	-	5,136,161	5,136,161	-	-	351,313	-	9,000	360,313
55	-	5,315,927	5,315,927	-	-	363,609	-	9,000	372,609
56	-	5,501,985	5,501,985	-	-	376,336	-	9,000	385,336
57	-	5,694,554	5,694,554	-	-	389,507	-	9,000	398,507
58	-	5,893,863	5,893,863	-	-	403,140	-	9,000	412,140
59	-	6,100,149	6,100,149	-	-	417,250	-	9,000	426,250
60	-	6,313,654	6,313,654	-	-	431,854	-	9,000	440,854
61	-	6,534,632	6,534,632	-	-	446,969	-	9,000	455,969
62	-	6,763,344	6,763,344	-	-	462,613	-	9,000	471,613
63	-	7,000,061	7,000,061	-	-	478,804	-	9,000	487,804
64	-	7,245,063	7,245,063	-	-	495,562	-	9,000	504,562
65	-	7,498,640	7,498,640	-	-	512,907	-	9,000	521,907
66	-	7,761,093	7,761,093	-	-	530,859	-	9,000	539,859
67	-	8,032,731	8,032,731	-	-	549,439	-	9,000	558,439
68	-	8,313,876	8,313,876	-	-	568,669	-	9,000	577,669
69	-	8,604,862	8,604,862	-	-	588,573	-	9,000	597,573
70	-	8,906,032	8,906,032	-	-	609,173	-	9,000	618,173
71	-	9,217,743	9,217,743	-	-	630,494	-	9,000	639,494
72	-	9,540,364	9,540,364	-	-	652,561	-	9,000	661,561
73	-	9,874,277	9,874,277	-	-	675,401	-	9,000	684,401
74	-	10,219,877	10,219,877	-	-	699,040	-	9,000	708,040
75	-	10,577,573	10,577,573	-	-	723,506	-	9,000	732,506
76	-	10,947,788	10,947,788	-	-	748,829	-	9,000	757,829
77	-	11,330,960	11,330,960	-	-	775,038	-	9,000	784,038
78	-	11,727,544	11,727,544	-	-	802,164	-	9,000	811,164
79	-	12,138,008	12,138,008	-	-	830,240	-	9,000	839,240
80	-	12,562,838	12,562,838	-	-	859,298	-	9,000	868,298
81	-	13,002,537	13,002,537	-	-	889,374	-	9,000	898,374
82	-	13,457,626	13,457,626	-	-	920,502	-	9,000	929,502
83	-	13,928,643	13,928,643	-	-	952,719	-	9,000	961,719
84	-	14,416,146	14,416,146	-	-	986,064	-	9,000	995,064
85	-	14,920,711	14,920,711	-	-	1,020,577	-	9,000	1,029,577
86	-	15,442,936	15,442,936	-	-	1,056,297	-	9,000	1,065,297
87	-	15,983,438	15,983,438	-	-	1,093,267	-	9,000	1,102,267
88	-	16,542,859	16,542,859	-	-	1,131,532	-	9,000	1,140,532
89	-	17,121,859	17,121,859	-	-	1,171,135	-	9,000	1,180,135
90	-	17,721,124	17,721,124	-	-	1,212,125	-	9,000	1,221,125
91	-	18,341,363	18,341,363	-	-	1,254,549	-	9,000	1,263,549
92	-	18,983,311	18,983,311	-	-	1,298,458	-	9,000	1,307,458
93	-	19,647,727	19,647,727	-	-	1,343,905	-	9,000	1,352,905
94	-	20,335,397	20,335,397	-	-	1,390,941	-	9,000	1,399,941
95	-	21,047,136	21,047,136	-	-	1,439,624	-	9,000	1,448,624
96	-	21,783,786	21,783,786	-	-	1,490,011	-	9,000	1,499,011
97	-	22,546,218	22,546,218	-	-	1,542,161	-	9,000	1,551,161
98	-	23,335,336	23,335,336	-	-	1,596,137	-	9,000	1,605,137
99	-	24,152,073	24,152,073	-	-	1,652,002	-	9,000	1,661,002
100	-	24,997,395	24,997,395	-	-	1,709,822	-	9,000	1,718,822

**Contributions related to future employees in excess of normal cost and expenses of 20.16% of pay.*

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Projection of Plan Fiduciary Net Position *(Dollars in Thousands)*

Year	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.90%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
1	$ 7,273,100	$ 238,295	$ 503,648	$ 829	$ 564,261	$ 7,571,179
2	7,571,179	245,801	518,630	829	587,519	7,885,040
3	7,885,040	247,911	533,936	826	611,803	8,209,992
4	8,209,992	249,044	549,990	821	636,896	8,545,121
5	8,545,121	249,643	567,091	813	662,732	8,889,592
6	8,889,592	249,703	586,858	802	689,182	9,240,817
7	9,240,817	249,264	607,548	788	716,111	9,597,856
8	9,597,856	248,322	629,333	772	743,437	9,959,510
9	9,959,510	246,985	652,114	753	771,074	10,324,702
10	10,324,702	245,287	676,033	731	798,932	10,692,157
11	10,692,157	243,239	701,260	708	826,905	11,060,333
12	11,060,333	240,849	727,801	682	854,871	11,427,570
13	11,427,570	238,223	755,428	655	882,711	11,792,421
14	11,792,421	235,399	783,167	626	910,351	12,154,378
15	12,154,378	232,483	810,695	596	937,767	12,513,337
16	12,513,337	229,403	838,634	565	964,924	12,868,465
17	12,868,465	226,083	873,030	532	991,519	13,212,505
18	13,212,505	222,601	913,286	497	1,017,005	13,538,328
19	13,538,328	207,420	954,106	461	1,040,576	13,831,757
20	13,831,757	203,662	995,400	425	1,062,013	14,101,607
21	14,101,607	199,813	1,037,232	387	1,081,562	14,345,363
22	14,345,363	195,969	1,079,413	348	1,099,037	14,560,608
23	14,560,608	192,244	1,121,161	309	1,114,281	14,745,663
24	14,745,663	188,821	1,162,068	271	1,127,184	14,899,329
25	14,899,329	185,871	1,201,659	235	1,137,677	15,020,983
26	15,020,983	183,440	1,239,559	200	1,145,726	15,110,390
27	15,110,390	181,679	1,274,669	168	1,151,361	15,168,593
28	15,168,593	180,694	1,306,724	139	1,154,680	15,197,104
29	15,197,104	180,561	1,335,106	114	1,155,829	15,198,274
30	15,198,274	181,296	1,359,521	91	1,155,004	15,174,962
31	15,174,962	182,822	1,380,434	72	1,152,412	15,129,690
32	15,129,690	185,133	1,397,527	56	1,148,264	15,065,504
33	15,065,504	188,219	1,410,571	43	1,142,807	14,985,916
34	14,985,916	192,024	1,419,742	32	1,136,313	14,894,479
35	14,894,479	196,485	1,425,263	24	1,129,048	14,794,725
36	14,794,725	201,532	1,427,358	17	1,121,282	14,690,164
37	14,690,164	207,116	1,426,159	12	1,113,285	14,584,394
38	14,584,394	213,190	1,421,757	8	1,105,335	14,481,154
39	14,481,154	219,717	1,414,182	5	1,097,726	14,384,410
40	14,384,410	226,667	1,403,474	3	1,090,768	14,298,368
41	14,298,368	234,004	1,389,705	2	1,084,788	14,227,453
42	14,227,453	241,701	1,372,908	1	1,080,135	14,176,380
43	14,176,380	249,740	1,353,097	1	1,077,179	14,150,201
44	14,150,201	258,107	1,330,288	-	1,076,319	14,154,339
45	14,154,339	266,795	1,304,488	-	1,077,983	14,194,629
46	14,194,629	275,802	1,275,702	-	1,082,630	14,277,359
47	14,277,359	285,133	1,243,954	-	1,090,757	14,409,295
48	14,409,295	294,795	1,209,288	-	1,102,898	14,597,700
49	14,597,700	304,797	1,171,773	-	1,119,623	14,850,347
50	14,850,347	315,149	1,131,521	-	1,141,543	15,175,518

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Projection of Plan Fiduciary Net Position (Concluded) *(Dollars in Thousands)*

Year	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.90%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
51	$ 15,175,518	$ 325,865	$ 1,088,681	$ -	$ 1,169,307	$ 15,582,009
52	15,582,009	336,955	1,043,419	-	1,203,604	16,079,149
53	16,079,149	348,433	995,949	-	1,245,162	16,676,795
54	16,676,795	360,313	946,506	-	1,294,752	17,385,354
55	17,385,354	372,609	895,350	-	1,353,187	18,215,800
56	18,215,800	385,336	842,766	-	1,421,323	19,179,693
57	19,179,693	398,507	789,041	-	1,500,063	20,289,222
58	20,289,222	412,140	734,483	-	1,590,358	21,557,237
59	21,557,237	426,250	679,435	-	1,693,211	22,997,263
60	22,997,263	440,854	624,270	-	1,809,676	24,623,523
61	24,623,523	455,969	569,402	-	1,940,863	26,450,953
62	26,450,953	471,613	515,283	-	2,087,933	28,495,216
63	28,495,216	487,804	462,377	-	2,252,107	30,772,750
64	30,772,750	504,562	411,169	-	2,434,666	33,300,809
65	33,300,809	521,907	362,158	-	2,636,954	36,097,512
66	36,097,512	539,859	315,788	-	2,860,386	39,181,969
67	39,181,969	558,439	272,461	-	3,106,457	42,574,404
68	42,574,404	577,669	232,514	-	3,376,752	46,296,311
69	46,296,311	597,573	196,177	-	3,672,962	50,370,669
70	50,370,669	618,173	163,597	-	3,996,897	54,822,142
71	54,822,142	639,494	134,824	-	4,350,505	59,677,317
72	59,677,317	661,561	109,782	-	4,735,889	64,964,985
73	64,964,985	684,401	88,309	-	5,155,332	70,716,409
74	70,716,409	708,040	70,178	-	5,611,313	76,965,584
75	76,965,584	732,506	55,101	-	6,106,530	83,749,519
76	83,749,519	757,829	42,755	-	6,643,920	91,108,513
77	91,108,513	784,038	32,785	-	7,226,683	99,086,449
78	99,086,449	811,164	24,841	-	7,858,299	107,731,071
79	107,731,071	839,240	18,602	-	8,542,553	117,094,262
80	117,094,262	868,298	13,771	-	9,283,559	127,232,348
81	127,232,348	898,374	10,076	-	10,085,776	138,206,422
82	138,206,422	929,502	7,283	-	10,954,042	150,082,683
83	150,082,683	961,719	5,199	-	11,893,596	162,932,799
84	162,932,799	995,064	3,663	-	12,910,107	176,834,307
85	176,834,307	1,029,577	2,547	-	14,009,707	191,871,044
86	191,871,044	1,065,297	1,747	-	15,199,024	208,133,618
87	208,133,618	1,102,267	1,182	-	16,485,222	225,719,925
88	225,719,925	1,140,532	789	-	17,876,038	244,735,706
89	244,735,706	1,180,135	519	-	19,379,830	265,295,152
90	265,295,152	1,221,125	337	-	21,005,621	287,521,561
91	287,521,561	1,263,549	216	-	22,763,156	311,548,050
92	311,548,050	1,307,458	137	-	24,662,953	337,518,324
93	337,518,324	1,352,905	86	-	26,716,368	365,587,511
94	365,587,511	1,399,941	53	-	28,935,658	395,923,057
95	395,923,057	1,448,624	32	-	31,334,053	428,705,702
96	428,705,702	1,499,011	19	-	33,925,835	464,130,529
97	464,130,529	1,551,161	11	-	36,726,417	502,408,096
98	502,408,096	1,605,137	6	-	39,752,437	543,765,664
99	543,765,664	1,661,002	3	-	43,021,850	588,448,513
100	588,448,513	1,718,822	2	-	46,554,035	636,721,368

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Present Values of Projected Benefits *(Dollars in Thousands)*

Year	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=((c)/(1+sdr)^(a-.5)
1	$ 7,273,100	$ 503,648	$ 503,648	$ -	$ 484,860	$ -	$ 484,860
2	7,571,179	518,630	518,630	-	462,728	-	462,728
3	7,885,040	533,936	533,936	-	441,505	-	441,505
4	8,209,991	549,990	549,990	-	421,483	-	421,483
5	8,545,120	567,091	567,091	-	402,769	-	402,769
6	8,889,592	586,858	586,858	-	386,292	-	386,292
7	9,240,816	607,548	607,548	-	370,630	-	370,630
8	9,597,854	629,333	629,333	-	355,811	-	355,811
9	9,959,508	652,114	652,114	-	341,697	-	341,697
10	10,324,699	676,033	676,033	-	328,295	-	328,295
11	10,692,153	701,260	701,260	-	315,612	-	315,612
12	11,060,329	727,801	727,801	-	303,575	-	303,575
13	11,427,565	755,428	755,428	-	292,029	-	292,029
14	11,792,416	783,167	783,167	-	280,585	-	280,585
15	12,154,374	810,695	810,695	-	269,182	-	269,182
16	12,513,333	838,634	838,634	-	258,072	-	258,072
17	12,868,461	873,030	873,030	-	248,986	-	248,986
18	13,212,501	913,286	913,286	-	241,397	-	241,397
19	13,538,323	954,106	954,106	-	233,722	-	233,722
20	13,831,752	995,400	995,400	-	225,985	-	225,985
21	14,101,603	1,037,232	1,037,232	-	218,241	-	218,241
22	14,345,360	1,079,413	1,079,413	-	210,488	-	210,488
23	14,560,605	1,121,161	1,121,161	-	202,621	-	202,621
24	14,745,659	1,162,068	1,162,068	-	194,638	-	194,638
25	14,899,325	1,201,659	1,201,659	-	186,533	-	186,533
26	15,020,979	1,239,559	1,239,559	-	178,328	-	178,328
27	15,110,385	1,274,669	1,274,669	-	169,953	-	169,953
28	15,168,588	1,306,724	1,306,724	-	161,471	-	161,471
29	15,197,099	1,335,106	1,335,106	-	152,899	-	152,899
30	15,198,268	1,359,521	1,359,521	-	144,296	-	144,296
31	15,174,957	1,380,434	1,380,434	-	135,788	-	135,788
32	15,129,684	1,397,527	1,397,527	-	127,405	-	127,405
33	15,065,497	1,410,571	1,410,571	-	119,178	-	119,178
34	14,985,910	1,419,742	1,419,742	-	111,171	-	111,171
35	14,894,473	1,425,263	1,425,263	-	103,432	-	103,432
36	14,794,720	1,427,358	1,427,358	-	96,000	-	96,000
37	14,690,159	1,426,159	1,426,159	-	88,897	-	88,897
38	14,584,389	1,421,757	1,421,757	-	82,134	-	82,134
39	14,481,150	1,414,182	1,414,182	-	75,715	-	75,715
40	14,384,406	1,403,474	1,403,474	-	69,640	-	69,640
41	14,298,363	1,389,705	1,389,705	-	63,908	-	63,908
42	14,227,448	1,372,908	1,372,908	-	58,513	-	58,513
43	14,176,375	1,353,097	1,353,097	-	53,446	-	53,446
44	14,150,197	1,330,288	1,330,288	-	48,698	-	48,698
45	14,154,334	1,304,488	1,304,488	-	44,257	-	44,257
46	14,194,624	1,275,702	1,275,702	-	40,112	-	40,112
47	14,277,354	1,243,954	1,243,954	-	36,250	-	36,250
48	14,409,291	1,209,288	1,209,288	-	32,660	-	32,660
49	14,597,696	1,171,773	1,171,773	-	29,329	-	29,329
50	14,850,343	1,131,521	1,131,521	-	26,248	-	26,248

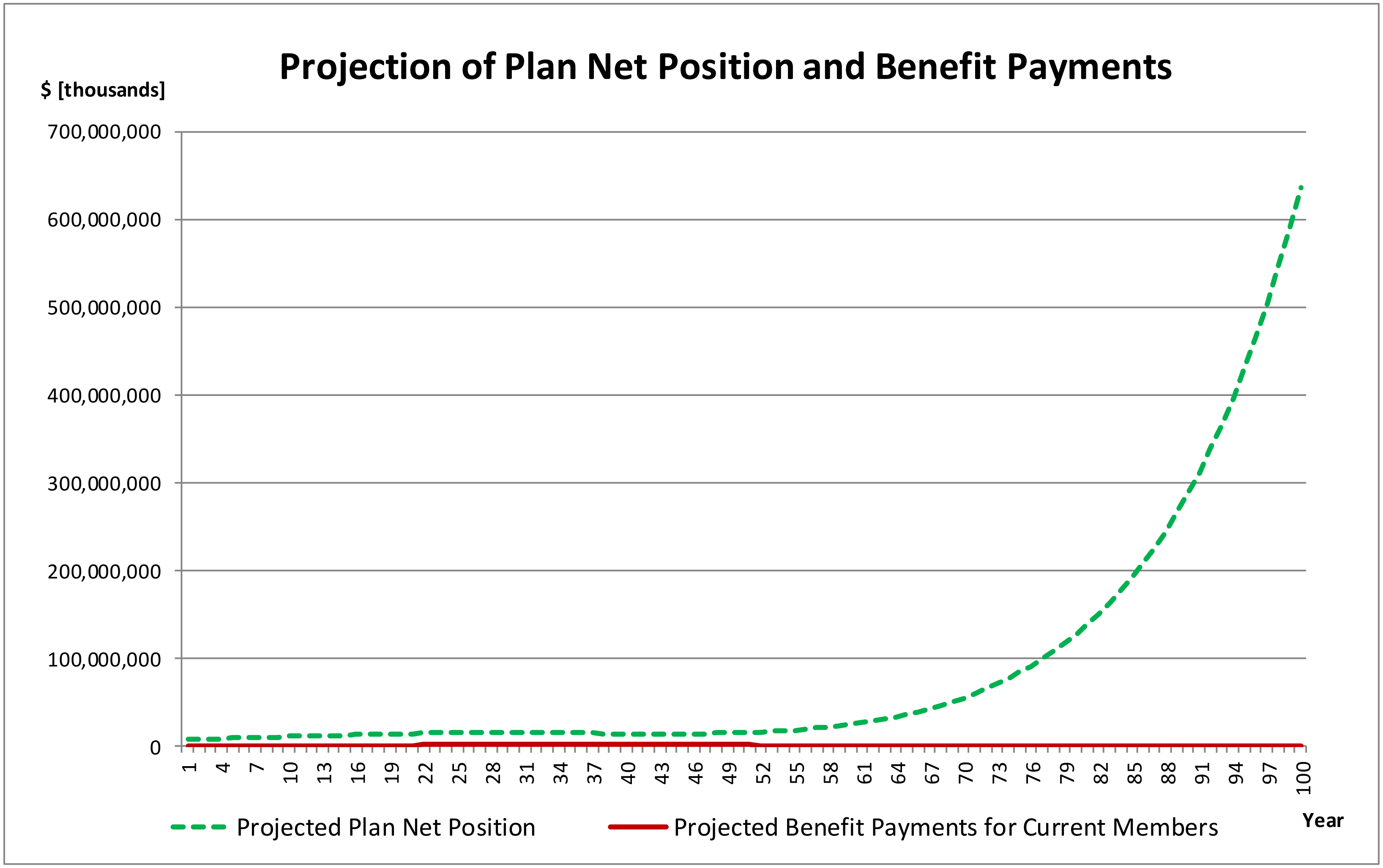
For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

SINGLE DISCOUNT RATE DEVELOPMENT

Present Values of Projected Benefits (Concluded) *(Dollars in Thousands)*

Year	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=((c)/(1+sdr)^(a-.5)
51	$ 15,175,515	$ 1,088,681	$ 1,088,681	$ -	$ 23,405	$ -	$ 23,405
52	15,582,006	1,043,419	1,043,419	-	20,790	-	20,790
53	16,079,146	995,949	995,949	-	18,391	-	18,391
54	16,676,792	946,506	946,506	-	16,199	-	16,199
55	17,385,351	895,350	895,350	-	14,201	-	14,201
56	18,215,798	842,766	842,766	-	12,388	-	12,388
57	19,179,691	789,041	789,041	-	10,749	-	10,749
58	20,289,220	734,483	734,483	-	9,274	-	9,274
59	21,557,236	679,435	679,435	-	7,950	-	7,950
60	22,997,262	624,270	624,270	-	6,770	-	6,770
61	24,623,522	569,402	569,402	-	5,723	-	5,723
62	26,450,952	515,283	515,283	-	4,800	-	4,800
63	28,495,215	462,377	462,377	-	3,992	-	3,992
64	30,772,749	411,169	411,169	-	3,290	-	3,290
65	33,300,808	362,158	362,158	-	2,685	-	2,685
66	36,097,512	315,788	315,788	-	2,170	-	2,170
67	39,181,968	272,461	272,461	-	1,735	-	1,735
68	42,574,403	232,514	232,514	-	1,372	-	1,372
69	46,296,311	196,177	196,177	-	1,073	-	1,073
70	50,370,668	163,597	163,597	-	829	-	829
71	54,822,141	134,824	134,824	-	634	-	634
72	59,677,315	109,782	109,782	-	478	-	478
73	64,964,983	88,309	88,309	-	356	-	356
74	70,716,407	70,178	70,178	-	262	-	262
75	76,965,582	55,101	55,101	-	191	-	191
76	83,749,516	42,755	42,755	-	137	-	137
77	91,108,510	32,785	32,785	-	98	-	98
78	99,086,446	24,841	24,841	-	69	-	69
79	107,731,068	18,602	18,602	-	48	-	48
80	117,094,259	13,771	13,771	-	33	-	33
81	127,232,344	10,076	10,076	-	22	-	22
82	138,206,418	7,283	7,283	-	15	-	15
83	150,082,679	5,199	5,199	-	10	-	10
84	162,932,796	3,663	3,663	-	6	-	6
85	176,834,305	2,547	2,547	-	4	-	4
86	191,871,041	1,747	1,747	-	3	-	3
87	208,133,615	1,182	1,182	-	2	-	2
88	225,719,921	789	789	-	1	-	1
89	244,735,702	519	519	-	1	-	1
90	265,295,147	337	337	-	-	-	-
91	287,521,556	216	216	-	-	-	-
92	311,548,045	137	137	-	-	-	-
93	337,518,319	86	86	-	-	-	-
94	365,587,506	53	53	-	-	-	-
95	395,923,053	32	32	-	-	-	-
96	428,705,698	19	19	-	-	-	-
97	464,130,525	11	11	-	-	-	-
98	502,408,093	6	6	-	-	-	-
99	543,765,661	3	3	-	-	-	-
100	588,448,509	2	2	-	-	-	-
				Totals	$ 10,097,622	$ -	$ 10,097,622

For purposes of this projection, based on GASB guidance, we assumed the current contribution rates would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.


Projection of Plan Net Position and Benefit Payments
$ [thousands]
700,000,000
600,000,000
500,000,000
400,000,000
300,000,000
200,000,000
100,000,000
0
1 4 7 10 13 16 19 22 25 28 31 34 37 40 43 46 49 52 55 58 61 64 67 70 73 76 79 82 85 88 91 94 97 100
Year
Projected Plan Net Position
Projected Benefit Payments for Current Members

SECTION H
GLOSSARY OF TERMS

GLOSSARY OF TERMS

Actuarial Accrued Liability (AAL)	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability".
Actuarial Assumptions	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
Accrued Service	Service credited under the system which was rendered before the date of the actuarial valuation.
Actuarial Equivalent	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
Actuarial Gain (Loss)	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
Actuarial Present Value (APV)	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future benefit payments at predetermined rates of interest to reflect the expected effects of the time value (present value) of money and the probabilities of payment.
Actuarial Valuation	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.
Actuarial Valuation Date	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution (ADC)	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

GLOSSARY OF TERMS

Amortization Payment	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
Amortization Method	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be "open" (meaning, reset each year) or "closed" (the number of years remaining will decline each year.
Cost-of-Living Adjustments	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
Covered-Employee Payroll	The payroll of covered employees, which is typically only the pensionable pay (meets the statutory salary definition) and does not include pay above any pay cap.
Deferred Inflows and Outflows of Resources	The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.
Discount Rate or Single Discount Rate	For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically: 1. The benefit payments to be made while the pension plans' fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period and; 2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.
Entry Age Actuarial Cost Method or Entry Age Normal (EAN)	The EAN is a funding method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit ages(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.

GLOSSARY OF TERMS

GASB	The Governmental Accounting Standards Board is an organization that exists with authority to promulgate accounting standards for state and local governmental entities.
Fiduciary Net Position	The fiduciary net position is the value of the net assets of the trust restricted for pension benefits.
Long-Term Expected Rate of Return	The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.
Money-Weighted Rate of Return	The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.
Multiple-Employer Defined Benefit Pension Plan	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
Municipal Bond Rate	The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.
Net Pension Liability (NPL)	The NPL is the liability of employers and non-employer contribution entities to plan members for benefits provided through a defined benefit pension plan.
Non-Employer Contribution Entities	Non-employer contribution entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB Accounting Statements No. 67 and No. 68 plan members are not considered non-employer contribution entities.
Normal Cost	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method.
Other Postemployment Benefits (OPEB)	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other post-employment benefits do not include termination benefits.
Real Rate of Return	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
Service Cost	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.

GLOSSARY OF TERMS

Total Pension Expense The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year:

1. Service Cost
2. Interest on the Total Pension Liability
3. Current-Period Changes in Benefit Terms
4. Employee Contributions
5. Projected Earnings on Plan Investments
6. Pension Plan Administrative Expense
7. Other Changes in Plan Fiduciary Net Position
8. Recognition of Outflow (Inflow) of Resources due to the difference between expected and actual in measurement of the Total Pension Liability
9. Recognition of Outflows (Inflow) of Resources due to Assumption Changes
10. Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings on pension plan investments

Total Pension Liability (TPL) The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.

Unfunded Actuarial Accrued Liability (UAAL) The UAAL is the difference between actuarial accrued liability and valuation assets.

Valuation Assets The valuation assets are the plan fiduciary net position used in determining the net position liability of the plan. For purposes of the GASB Statement No. 67, the asset valuation method is equal to the market value of assets.