Gabriel Roeder Smith & Company
Consultants & Actuaries

CITY OF GRAND RAPIDS POLICE AND FIRE RETIREMENT SYSTEM

GASB STATEMENT NO. 67 PLAN REPORTING AND ACCOUNTING SCHEDULES

DECEMBER 31, 2015

GRS
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April 26, 2016

The Board of Trustees
City of Grand Rapids Police
and Fire Retirement System
Grand Rapids, Michigan

Dear Board Members:

This report provides information required by the Retirement System in connection with the Governmental Accounting Standards Board (GASB) Statement No. 67 "Financial Reporting for Pension Plans."

Our actuarial calculations for this report were prepared for the purpose of complying with the requirements of GASB Statement No. 67. These calculations have been made on a basis that is consistent with our understanding of these accounting standards.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of satisfying the requirements of GASB Statement No. 67. 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. This report may be provided to parties other than the City of Grand Rapids Police and Fire Retirement System ("the System") only in its entirety and only with the permission of the System.

The report was based upon information, furnished by System staff, concerning System benefits, financial transactions, and active members, terminated members, retirees and beneficiaries. We checked for internal and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the data provided by System staff.

To the best of our knowledge, this report is complete, accurate, and in accordance with generally recognized actuarial methods. James D. Anderson is a Member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the Academy of Actuaries to render the actuarial opinion herein. The signing individuals are independent of the plan sponsor.

Respectfully submitted,

James D. Anderson

James D. Anderson, FSA, MAAA

David L. Hoffman

David L. Hoffman

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SECTION A

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY
AS OF DECEMBER 31, 2015

Actuarial Valuation Date		December 31, 2015
Pension Plan's Fiscal Year Ending Date (Measurement Date & Reporting Date)		December 31, 2015
Membership		
Number of		
- Retirees and Beneficiaries		672
- Inactive, Nonretired Members		33
- Active Members		489
- Total		1,194
Covered Payroll#	$	36,827,593
Net Pension Liability		
Total Pension Liability	$	461,091,743
Plan Fiduciary Net Position		375,266,542
Net Pension Liability	$	85,825,201
Plan Fiduciary Net Position as a Percentage of Total Pension Liability		81.39%
Net Pension Liability as a Percentage of Covered Payroll		233.05%
Development of the Single Discount Rate		
Single Discount Rate		7.25%
Long-Term Expected Rate of Return		7.25%
Long-Term Municipal Bond Rate		3.57%
Last year ending January 1 in the 2016 to 2115 projection period for which projected benefit payments are fully funded		2115

 # Reported rates of pay adjusted by gross-up factors to estimate covered payroll.

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," replaces the requirements of Statement No. 25, "Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans," and Statement No. 50, "Pension Disclosures." Statement No. 67 establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability of employers and non-employer contributing entities for benefits provided through the pension plan.

The following discussion provides a summary of the information that is required to be disclosed under this new accounting standard. 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 your internal staff will be responsible for preparing that information to comply with this accounting standard.

Financial Statements

GASB Statement No. 67 requires defined benefit pension plans to present two financial statements – a statement of fiduciary net position and a statement of changes in fiduciary net position.

The *statement of fiduciary net position* presents the following items as of the end of the pension plan's reporting period, such as:

- assets;
- deferred inflows and outflows of resources;
- liabilities; and
- fiduciary net position (assets, plus deferred outflows, minus liabilities, minus deferred inflows).

The *statement of changes in fiduciary net position* presents the following for the plan's reporting period:

- additions, such as contributions and investment income;
- deductions, such as benefit payments and expenses; and
- net increase or decrease in the fiduciary net position (the difference between additions and deductions).

Notes to Financial Statements

GASB Statement No. 67 also requires the notes of the plan's financial statements to include additional disclosure information. This disclosure information should include:

- a description of the types of benefits provided by the plan, as well as automatic or ad hoc COLAs;
- the number and classes of employees covered by the benefit terms;
- the composition of the pension plan's board and the authority under which benefit terms may be amended;
- a description of the plan's funding policy, which includes member and employer contribution requirements;
- the pension plan's investment policies;
- a description of how fair value is determined;
- concentrations of investments greater than or equal to 5%;
- annual money-weighted rate of return on pension plan investments;
- the portion of the present value of benefits to be provided through the pension plan to current active and inactive plan members;
- the pension plan's fiduciary net position;
- the net pension liability;
- the pension plan's fiduciary net position as a percentage of the total pension liability;
- 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.

Required Supplementary Information

GASB 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;
- comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy; and
- the annual money-weighted rate of return on pension plan investments for each year.

These tables may be built prospectively as the information becomes available.

Measurement of the Net Pension Liability

The net pension liability is to be measured as the total pension liability, less the amount of the pension plan's fiduciary net position. In actuarial terms, this will be 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).

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. If the actuarial valuation is not calculated as of the plan's fiscal year end, the total pension liability is required to be rolled forward from the actuarial valuation date to the pension plan's fiscal year end.

The total pension liability shown in this report is based on an actuarial valuation performed as of December 31, 2015 and a measurement date of December 31, 2015.

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 expected rate of return on pension plan investments is 7.250%; the municipal bond rate is 3.570% (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); and the resulting single discount rate is 7.250%.

Effective Date and Transition

GASB Statement No. 67 is effective for a pension plan's fiscal years beginning after June 15, 2013.

SECTION B

FINANCIAL STATEMENTS

STATEMENT OF FIDUCIARY NET POSITION AS OF DECEMBER 31, 2015

Assets	
Cash and Deposits	$ 7,697,456
Receivables	
Accounts Receivable - Sale of Investments	$ -
Accrued Interest and Other Dividends	393,942
Contributions	727,361
Accounts Receivable - Other	3,409,746
Total Receivables	$ 4,531,049
Investments	
Fixed Income	93,863,055
Domestic Equities	176,126,444
International Equities	58,711,918
Real Estate	18,170,497
Other	21,295,961
Total Investments	$ 368,167,875
Total Assets	$ 380,396,380
Liabilities	
Payables	
Accounts Payable - Purchase of Investments	$ 4,833,791
Accrued Expenses	296,047
Accounts Payable - Other	-
Total Liabilities	$ 5,129,838
Net Position Restricted for Pensions	$ 375,266,542

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION FOR YEAR ENDED DECEMBER 31, 2015

Additions	
Contributions	
Employer	$ 5,630,297
Employee	4,557,165
Other	-
Total Contributions	$ 10,187,462
Investment Income	
Net Appreciation in Fair Value of Investments	$ (12,661,785)
Interest and Dividends	4,575,452
Less Investment Expense	(959,770)
Net Investment Income	$ (9,046,103)
Other	$ -
Total Additions	$ 1,141,359
Deductions	
Benefit Payments, including Refunds of Employee Contributions	$ 32,082,302
Pension Plan Administrative Expense	581,364
Other	37,609
Total Deductions	$ 32,701,275
Net Increase in Net Position	$ (31,559,916)
Net Position Restricted for Pensions	
Beginning of Year	$ 406,826,458
End of Year	$ 375,266,542

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

SCHEDULES OF REQUIRED SUPPLEMENTARY INFORMATION
SCHEDULE OF CHANGES IN THE EMPLOYERS' NET PENSION LIABILITY AND RELATED RATIOS
ULTIMATELY 10 FISCAL YEARS WILL BE DISPLAYED

Measurement Date - December 31,	**2015**	**2014**
Total Pension Liability		
Service Cost	$ 7,482,069	$ 7,794,219
Interest on the Total Pension Liability	29,375,231	28,440,421
Benefit Changes	-	-
Difference between Expected and Actual Experience	16,663,107	2,978,624
Assumption Changes	35,683,769	-
Benefit Payments	(32,070,933)	(21,079,038)
Refunds	(11,369)	(24,749)
Net Change in Total Pension Liability	**$ 57,121,874**	**$ 18,109,477**
Total Pension Liability - Beginning	**$403,969,869**	**$385,860,392**
Total Pension Liability - Ending (a)	**$461,091,743**	**$403,969,869**
Plan Fiduciary Net Position		
Employer Contributions	$ 5,630,297	$ 6,331,848
Employee Contributions	4,557,165	4,563,692
Pension Plan Net Investment Income	(9,046,103)	29,390,902
Benefit Payments	(32,070,933)	(21,079,038)
Refunds	(11,369)	(24,749)
Pension Plan Administrative Expense	(581,364)	(523,607)
Other	(37,609)	(15,065)
Net Change in Plan Fiduciary Net Position	**(31,559,916)**	**18,643,983**
Plan Fiduciary Net Position - Beginning	**406,826,458**	**388,182,475**
Plan Fiduciary Net Position - Ending (b)	**$375,266,542**	**$406,826,458**
Net Pension Liability - Ending (a) - (b)	**$ 85,825,201**	**$ (2,856,589)**
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	**81.39 %**	**100.71 %**
Covered-Employee Payroll #	**$ 36,827,593**	**$ 35,710,964**
Net Pension Liability as a Percentage of Covered-Employee Payroll	**233.05 %**	**(8.00)%**
Notes to Schedule:	**N/A**	**N/A**

 # Reported rates of pay adjusted by gross-up factors to estimate covered payroll.

SCHEDULES OF REQUIRED SUPPLEMENTARY INFORMATION
SCHEDULE OF THE EMPLOYERS' NET PENSION LIABILITY
ULTIMATELY 10 FISCAL YEARS WILL BE DISPLAYED

FY Ending December 31,	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
2014	$ 403,969,869	$ 406,826,458	$ (2,856,589)	100.71%	$ 35,710,964	(8.00)%
2015	$ 461,091,743	$ 375,266,542	$85,825,201	81.39%	$ 36,827,593	233.05%

 # Reported rates of pay adjusted by gross-up factors to estimate covered payroll.

SCHEDULE OF CONTRIBUTIONS
ULTIMATELY 10 FISCAL YEARS WILL BE DISPLAYED

FY Ending December 31,	Actuarially Determined Contribution	Actual Contribution*	Contribution Deficiency (Excess)	Covered Payroll #	Actual Contribution as a % of Covered Payroll
2014	$ 6,331,848	$ 6,331,848	$ -	$ 35,710,964	17.73%
2015	$ 5,630,297	$ 5,630,297	$ -	$ 36,827,593	15.29%

\# *Reported rates of pay adjusted by gross-up factors to estimate covered payroll.*

* *Actual contributions are based on covered payroll at the time of the contribution. Since it was reported to the actuary that the City's practice is to contribute the percent-of-payroll employer contribution rate shown in the actuarial valuation report, the annual required contributions shown in the Schedule of Employer Contributions are the actual contributions made by the City in the fiscal year.*

NOTES TO SCHEDULE OF CONTRIBUTIONS

Valuation Date:	December 31, 2015
Notes:	Actuarially determined contribution rates are calculated as of December 31, which is six months prior to the beginning of the fiscal year in which contributions are reported.

Methods and Assumptions Used to Determine Contribution Rates:

Actuarial Cost Method	Individual Entry Age
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	30 years per City Commission
Asset Valuation Method	5-year smoothed market
Inflation	3.50% wage inflation, 2.75% price inflation
Salary Increases	3.5% to 20.5% including inflation
Investment Rate of Return	7.25% as of December 31, 2015.
Cost-of-Living Adjustments:	Ad hoc "13th check" tied to plan investments for benefit recipients who do not have an automatic benefit increase. 1.5% simple escalator for firefighters retired on or after July 1, 2007 with commencement delayed 2 years after retirement. 1.5% simple escalator for Fire Chief retired on or after January 1, 2016 with commencement delayed 2 years after retirement. 1.0% simple escalator for police command officer retired on or after February 19, 2010 with commencement delayed 5 years after retirement. 1.0% simple escalator for police officers and sergeants retired on or after December 17, 2008 with commencement delayed 5 years after retirement. 1.0% simple escalator for Police Chief and Deputy Police Chief retired on or after January 1, 2016 with commencement delayed 5 years after retirement.
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition.
Mortality	RP-2014 Healthy Annuitant Mortality Table projected to 2019 using the MP-2014 Mortality Improvement Scale as of December 31, 2015. Prior to that, 1983 Group Annuity Male and Female Mortality Tables set back 3 years for males and 2 years for females.

Other Information:

Notes	Several of the assumptions used were updated for the December 31, 2015 valuation.

SECTION D

NOTES TO FINANCIAL STATEMENTS

Long-Term Expected Return on Plan Assets

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation.

Based on information provided by System's Investment Advisor, we used capital market expectations for each major asset class that is included in the plan's current asset allocation as of June 30, 2015; the best estimates for the long-term expected return are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
U.S. Stocks	22.50%	6.00%
Global Stocks	22.50%	6.22%
Private Markets	5.00%	10.98%
Core Bonds	12.50%	1.78%
LT Core Bonds	12.50%	2.60%
TIPS	10.00%	1.38%
U.S. RE Securities	5.00%	4.80%
Commodities	5.00%	3.13%
MLP	5.00%	8.95%
Total	100.00%	
Total Real Rate of Return		4.84%
Plus: Price Inflation - Actuary's Assumption		2.75%
Less: Admin and Investment Expenses		0.25%
Net Expected Return		7.34%

Single Discount Rate

A single discount rate of 7.250% 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 7.250%. The projection of cash flows used to determine this single discount rate assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. 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 7.250%, as well as what the plan's net pension liability would be if it were calculated using a single discount rate that is 100 basis points lower or 100 basis points higher:

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

	100 Basis Point Decrease	Current Single Discount Rate Assumption	100 Basis Point Increase
	6.25%	**7.25%**	**8.25%**
Total Pension Liability	$ 515,882,010	$ 461,091,743	$ 405,988,240
Plan Net Position	375,266,542	375,266,542	375,266,542
Net Pension Liability	$ 140,615,468	$ 85,825,201	$ 30,721,698

Summary of Population Statistics

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	672
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	33
Active Plan Members	489
Total Plan Members	1,194

SECTION E

SUMMARY OF BENEFITS

SUMMARY OF BENEFIT PROVISIONS EVALUATED DECEMBER 31, 2015

Voluntary Retirement. Police members may retire after attaining age 50 and completing 10 years of service. Firefighter members are eligible for retirement after attaining age 55 with 10 or more years of service. Firefighter members may also retire at the age their service reaches the service credit limit.

Compulsory Retirement. None.

Final Average Salary (FAS). The average of member's highest annual salary rates during the 3 consecutive calendar years of credited service when such compensation rates are the highest increased by the applicable FAS Adjustment Factor (11.2% for Police members for the period January 1, 2015 to June 30, 2015, and 11.6% for Police members for the period July 1, 2015 to December 31, 2015, 7.8% for Firefighter members for the period January 1, 2015 to June 30, 2015, and 7.8% for Firefighter members for the period July 1, 2015 to December 31, 2015). Highest salary rates that occur in calendar years after the calendar year in which the member reaches their service credit limit will not be included in the FAS.

Benefit Multiplier Description. See page 15.

Benefit Multiplier. The member's benefit multiplier, used to compute full age and service allowance, is defined in the following table:

Benefit Multipliers and Allowance Caps for Member Groups

Covered Group	*Date of Hire*	*Benefit Multiplier*	*Allowance Cap*
Firefighters	Prior to July 1, 1992	2.5%	100%
	-or-		
	Prior to July 1, 1992	2.8%	94.5%
	July 1, 1992 to January 9, 2012	2.8%	90%
	January 10, 2012 or after	2.0%*	90%
Fire Chief	At any time	2.8%	94.5%
Police Command	Prior to July 1, 2001	2.8%	100%
	July 1, 2001 to December 19, 2011	2.8%	80%
	December 20, 2011 or after	2.0%[@]	80%
Police Chief or Deputy Police Chief	At any time	2.8%	100%
Police Officers and Sergeants	Before March 9, 1995	2.8%	100%
	March 9, 1995 to June 30, 2001	2.8%	87.5%
	July 1, 2001 to December 19, 2011	2.8%	80%
	December 20, 2011 or after	2.0%[#]	80%

* *Firefighter members hired on or after January 10, 2012 will have a 2.0% multiplier for the first five years of employment. Members may then irrevocably elect that multiplier, or, by making higher member contributions, elect a higher multiplier for all future service (2.2%, 2.4%, 2.6%, or 2.8%).*

[@] *Police Command members hired on or after December 20, 2011 will have a 2.0% multiplier for the first five years of employment. Members may then irrevocably elect that multiplier, or, by making higher member contributions, elect a higher multiplier for all future service (2.2%, 2.4%, 2.6%, or 2.8%).*

[#] *Police Officers and Sergeants members hired on or after December 20, 2011 will have a 2.0% multiplier for the first five years of employment. Members may then irrevocably elect that multiplier, or, by making higher member contributions, elect a higher multiplier for all future service (2.2%, 2.4%, 2.6%, or 2.8%).*

Full Age and Service Allowance. Allowance, payable monthly for life to the retired member, equals the member's benefit multiplier times the member's FAS times years of credited service. In lieu of this single life-level amount form of payment, a retiring member may elect from a variety of optional forms of payment, each of which is the actuarial equivalent (same lump sum value at time of retirement) of the single life-level payment form.

Deferred Allowance. A member with 10 or more years of service who leaves covered employment before retirement is eligible to receive an allowance computed in the same manner as an age and service allowance but based upon the member's employment record to the time of leaving. Such deferred allowance commences the first day of the calendar month next following the later of the date of the member's attainment of age 50 or the date when written application therefore is received by the Board. Benefits may be actuarially reduced in accordance with the Early Retirement provision if applicable.

Early Allowance. A Firefighter member who leaves covered employment after both attaining age 50 and completing 10 years of service is eligible to receive an immediate early allowance (in lieu of a deferred allowance), computed in the same manner as a deferred allowance based upon the member's employment record to the time of early retirement, but actuarially reduced (per schedule in ordinance) to reflect the fact that the age when payments begin is younger than age 55.

Duty Disability Allowance. A member who becomes totally and permanently disabled from duty-connected causes is eligible to receive, subject to offsets, a duty disability allowance computed in the same manner as a full age and service allowance based upon the member's employment record to the time of disability with a minimum allowance before offset of 72% of FAS. The maximum allowance after offsets is 90% of final salary less amounts received from (i) Worker's Compensation, (ii) gainful employment as a law enforcement officer or firefighter, and (iii) Social Security disability income.

Non-Duty Disability Allowance. A member with 1 or more years of credited service who becomes totally and permanently disabled from other than duty-connected causes is eligible to receive a non-duty disability allowance computed in the same manner as a full age and service allowance, based upon the member's employment record to the time of disability. Minimum benefit for Police Officers is 48% of FAS if credited service is less than 20 years or 60% of FAS if credited service is 20 or more years. Minimum benefit for Police Command Officers is based on the earlier of (i) the date the member would have completed 20 (if credited service is less than 20 years) or 25 years of service (if credited service is 20 or more years) or (ii) the date the member would have reached 50 years of age. Minimum benefit for Firefighters is based on the earlier of (i) the date the member would have completed 20 (if credited service is less than 20 years) or 25 years of service (if credited service is 20 or more years) or (ii) the date the member would have reached 55 years of age.

Death-in-Service Benefits. Upon the death of a member, surviving dependents are eligible to receive the following benefits, subject to offsets for Worker's Compensation and Social Security.

(a) The widow receives an allowance equal to the Option B-100 allowance (joint and 100% survivor actuarial equivalent benefit) which would have been payable to her had the deceased member retired the day preceding the date of his death and elected Option B-100. The minimum allowance payable to the widow is 20% of the member's FAS. If the death was determined to be duty-related, the minimum allowance payable to the widow is 72% of the member's final average salary (60% for Command or Firefighters hired after June 30, 1992).

(b) Dependent children under age 18 (up to age 23 if they are continuous full-time students) each are eligible to receive an allowance of 15% of the member's FAS. If there are 4 or more dependent children, each child receives an equal share of 50% of the member's FAS.

(c) If there are neither a widow nor children, each dependent parent is eligible to receive an allowance equal to 15% of FAS.

Compensation. Compensation upon which members contribute includes base pay, longevity pay, educational increment and vacation pay, plus the following additional compensation items:

> Firefighters: Overtime pay (assumed to be 4.2% for calendars years before 2010 and actual overtime in 2010 and later), holiday pay, clothing allowance, acting assignment pay, shop pay and shift pay. In addition, up to six (6) days of unused vacation time may be converted to compensation.
>
> Police Officers and Police Command Officers: Overtime pay, comp. payoff, holiday pay, clothing allowance, acting assignment, witness fees and shift pay.

The average of the additional compensation items is used to annually adjust the FAS Adjustment Factor. In addition, compensation will not include any amount that would cause the System to be in violation of IRC Sections 401(a) (17) or 415(d).

Member Contributions. Effective July 1, 2013, member contribution rates shall be payable in accordance with the following table.

System Funding Represented As a Percentage of Valuation Assets to Actuarial Accrued Liabilities	Firefighters	Police Officers & Sergeants	Police Command
Below 100%	10.70%	9.86%	10.89%
100% - 104.999%	9.70%	8.86%	9.89%
105% - 109.999%	8.70%	7.86%	8.89%
110% - 114.999%	7.70%	6.86%	7.89%
115% - 119.999%	6.70%	5.86%	6.89%
120% - 124.999%	6.70%	5.20%	6.06%
125% - 129.999%	6.70%	4.54%	5.23%
130% - 134.999%	6.70%	3.88%	4.40%
135+%	6.70%	3.22%	3.57%

The member contribution rates used for the December 31, 2015 valuation were 10.70%, 9.86%, 10.89%, 10.20%, and 10.20% for Firefighters, Police Officers and Sergeants, Police Command Officers, Police Chief and Deputy Police Chiefs, and Fire Chief respectively.

If a member terminates employment before any allowance is payable, accumulated contributions (contributions plus regular interest) are refunded.

Employer Contributions. The City contributes the remainder amounts necessary to maintain the Retirement System in sound financial condition in accordance with its funding objectives.

Automatic Post-Retirement Benefit Increases. Post-retirement benefit increases are paid to eligible groups as described in the following table.

	Firefighters	**Fire Chief**	**Police Officer and Sergeants**	**Police Command**	**Police Chief and Deputy Police Chief**
Effective date	Retired on or after July 1, 2007	Retired on or after January 1, 2016	Retired on or after December 17, 2008	Retired on or after February 19, 2010	Retired on or after January 1, 2016
Amount of increase	1.5% of original benefit	1.5% of original benefit	1.0% of original benefit	1.0% of original benefit	1.0% of original benefit
First increase to occur	2 years after retirement	2 years after retirement	5 years after retirement	5 years after retirement	5 years after retirement

Benefit recipients who are eligible for the automatic post-retirement increase do not participate in the 13^{th} check program.

13th Check. For members not eligible for automatic post-retirement increases, one-half of net investment income over 8% which is attributable to retired life assets is distributed annually (in January) to retired members and beneficiaries who have been on the retirement rolls for 5 years in the form of a 13th check. Net investment income is based on a market value rate of return averaged over the preceding 5 plan years. The distribution is in proportion to points. An individual’s points are determined by multiplying (i) the number of full years of retirement, to a maximum of 15, by (ii) the number of years, and fractions thereof, of service at retirement. Subsequent to the calculations above, the benefit so calculated for Chief of Police, Deputy Chief, Police Command, Police Officers and Sergeants, Firefighter Service, and beneficiaries having had at least 10 years of service under either bargaining unit shall be increased by twenty percent.

Eligibility. The plan is closed to individuals hired from outside of the organization to fill the position of Fire Chief, Police Chief or Deputy Police Chief.

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

VALUATION METHODS

Normal cost and the allocation of benefit values between service rendered before and after the valuation date was determined using the individual entry-age actuarial cost method having the following characteristics:

(i) The annual normal costs for each individual active member, payable from the date of employment to the date of retirement, are sufficient to accumulate the value of the portion 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.

Financing of Unfunded Actuarial Accrued Liabilities. Unfunded actuarial accrued liabilities were amortized by level (principal & interest combined) percent-of-payroll contributions over a closed period of 30 years.

Valuation Asset Method. Valuation Assets were determined using a method which phases-in each year's differences between actual and assumed investment return over a closed five-year period.

ACTUARIAL ASSUMPTIONS USED FOR THE VALUATION ADOPTED BY THE BOARD OF TRUSTEES

The actuary calculates contribution requirements and actuarial present values of the System by applying assumptions to the benefit provisions and census data information furnished, using the valuation methods described on the previous page.

The principal areas of financial risk which require assumptions about future experiences are:

(i) Long-term rates of investment return to be generated by the assets of the System,
(ii) patterns of pay increases to members,
(iii) rates of mortality among members, retirants and beneficiaries,
(iv) rates of withdrawal of active members,
(v) rates of disability among members, and
(vi) the age patterns of actual retirement.

In a valuation, the actuary calculates the monetary effect of each assumption for as long as a present covered person survives - - - a period of time which can be as long as a century.

Actual experience will not coincide exactly with assumed experience, regardless of the wisdom of the assumptions, or the skill of the actuary and the precision of the many calculations made. Each valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experience. The result is a continual series of adjustments (usually small) to the computed contribution rate.

From time to time it becomes appropriate to modify one or more of the assumptions, to reflect experience trends (but not random year-to-year fluctuations).

The rates of salary increase used for individual members are in accordance with the following table. This assumption is used to project a member's current salary to the salaries upon which benefit amounts will be based.

Service	Salary Increase Assumptions For an Individual Member		
at Beginning of Year	Merit & Seniority	Base (Economic)	Increase Next Year
1	17.0%	3.5%	20.5%
2	7.0	3.5%	10.5
3	6.0	3.5%	9.5
4	5.0	3.5%	8.5
5	4.0	3.5%	7.5
6 and over	1.0	3.5%	4.5

These rates were first used for the December 31, 2010 valuation.

If the number of active members remains constant, then the total active member payroll will increase 3.5% annually, the base portion of the individual salary increase assumptions. This increasing payroll was recognized in amortizing unfunded actuarial accrued liabilities. Note that the 3.50% wage inflation assumption consists of 2.75% for price inflation and 0.75% for real wage growth.

The rate of investment return was 7.25% a year compounded yearly (net after expenses). This assumption is used to make money payable at one point in time equal in value to a different amount of money payable at another point in time. This assumption was first used for the December 31, 2015 valuation.

The assumed real return for funding purposes is the rate of return in excess of average salary increases.

The mortality table was the RP-2014 Healthy Annuity Mortality Table projected to 2019 using the MP-2014 Mortality Improvement Scale. Related values are shown below.

Sample	Value at Retirement of $1 Monthly for Life		Future Life Expectancy (Years)	
Ages	Men	Women	Men	Women
50	$146.94	$151.22	33.25	35.95
55	140.29	145.28	28.92	31.44
60	132.17	137.63	24.73	27.02
65	122.10	128.02	20.70	22.74
70	109.89	116.29	16.85	18.67
75	95.54	102.46	13.26	14.86
80	79.46	86.81	10.01	11.41

This assumption is used to measure the probabilities of members dying before retirement and the probabilities of each benefit payment being made after retirement. For disabled lives the RP-2014 Disabled Retirees projected to 2019 using the MP-2014 mortality improvement scale was used. For death in service the RP-2014 Mortality Tables for employees projected to 2019 using the MP-2014 Mortality Improvement Scale was used. We assume that one-half of pre-retirement deaths are duty related and that one-half are not. The margin for future mortality improvement is the projection to 2019. This assumption was first used for the December 31, 2015 valuation.

The rates of retirement used to measure the probability of eligible members retiring during the next year were as follows:

Retirement Ages	Percent	Retirement Ages	Percent
50	25%	60	50%
51	25%	61	60%
52	25%	62	70%
53	25%	63	80%
54	25%	64	90%
55	25%	65	100%
56	25%	66	100%
57	25%	67	100%
58	25%	68	100%
59	25%	69	100%
		70	100%

A Police member is eligible for retirement after both attaining age 50 and completing 10 or more years of service. Fire members are eligible after attaining age 55 with 10 or more years of service or at the age their service reaches the service credit limit. A 100% decrement pattern is applied to Firefighters once achieving 34 years of service regardless of age.

Rates of separation from active membership were as follows:

(Rates do not apply to members eligible to retire and do not include separation on account of death or disability.) This assumption measures the probabilities of members remaining in employment. These rates were first used for the December 31, 2010 valuation.

Sample Ages	% of Active Members Separating Within Next Year	
	Police	Fire
25	4.60%	2.76%
30	3.80	2.28
35	2.60	1.56
40	1.80	1.08
45	1.40	0.84
50	1.20	0.72
55	1.20	0.72
60	1.20	0.72

The rates of disability were as follows:

Sample Ages	% of Active Members Becoming Disabled Within Next Year	
	Police	Fire
20	0.12%	0.12%
25	0.12	0.12
30	0.12	0.12
35	0.27	0.27
40	0.59	0.59
45	1.05	1.05
50	1.68	1.68
55	2.51	2.51

		Duty Related	Non-Duty Related
Cause of Disability:	Male	75%	25%
	Female	75%	25%

These rates were first used for the December 31, 2015 valuation.

SUMMARY OF ASSUMPTIONS USED

DECEMBER 31, 2015

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

Marriage Assumption. 90% of males and 90% of females are assumed to be married for purposes of death-in-service benefits.

Pay Increase Timing. Beginning of (Fiscal) year. Reported pays represent amounts paid to members during the year ended on the valuation date.

Decrement Timing. Decrements of all types are assumed to occur mid-year.

Eligibility Testing. Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.

Benefit Service. Exact fractional service is used to determine the amount of benefit payable.

Decrement Relativity. Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.

Liability Adjustments. Retirement present values were increased by 11.6% and 7.8% for police and fire, respectively, to account for the FAS Adjustment Factor.

13th Check. A 7.0% load was placed on affected liabilities for members eligible to participate in the 13th Check program.

Service Purchase. An $11.0 million liability was applied for the liability for service purchases.

Normal Form of Benefit. The assumed normal form of benefit is the straight life form.

Incidence of Contributions. Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made. New entrant normal cost contributions are applied to the funding of new entrant benefits.

New Benefit Multiplier. Benefits for new hires will be modeled using the 2.0% benefit multiplier for all future years of service until such time that they elect another benefit multiplier.

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 valuation discount rate 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 S*ingle 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 7.250%; the municipal bond rate is 3.570%; and the resulting single discount rate is 7.250%.

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.

SINGLE DISCOUNT RATE DEVELOPMENT
PROJECTION OF CONTRIBUTIONS

Year	Contributions from Current Employees	Normal Cost	Administrative Expense Contributions	UAL Contributions	Total Contributions
1	$ 3,756,762	$ 4,575,198	$ -	$ 4,123,579	$ 12,455,538
2	3,698,703	4,484,241	-	4,040,683	12,223,628
3	3,597,580	4,343,198	-	4,208,962	12,149,740
4	3,439,863	4,145,258	-	4,860,198	12,445,319
5	3,276,494	3,937,274	-	5,624,878	12,838,645
6	3,135,444	3,751,060	-	5,821,748	12,708,252
7	2,988,131	3,559,447	-	6,025,509	12,573,088
8	2,842,342	3,374,701	-	6,236,402	12,453,445
9	2,673,520	3,170,910	-	6,454,676	12,299,106
10	2,483,823	2,949,628	-	6,680,590	12,114,041
11	2,314,938	2,749,113	-	6,914,411	11,978,462
12	2,157,870	2,560,175	-	7,156,415	11,874,459
13	1,986,598	2,357,961	-	7,406,890	11,751,449
14	1,826,210	2,167,958	-	7,666,131	11,660,298
15	1,698,665	2,010,458	-	7,934,445	11,643,568
16	1,591,021	1,876,168	-	8,212,151	11,679,340
17	1,487,330	1,746,417	-	8,499,576	11,733,324
18	1,374,427	1,610,108	-	8,797,061	11,781,597
19	1,272,465	1,485,781	-	9,104,958	11,863,205
20	1,180,639	1,371,177	-	9,423,632	11,975,448
21	1,090,537	1,257,245	-	9,753,459	12,101,241
22	1,003,327	1,146,505	-	10,094,830	12,244,661
23	905,707	1,028,409	-	10,448,149	12,382,265
24	823,577	926,832	-	10,813,834	12,564,243
25	750,846	834,668	-	11,192,319	12,777,833
26	668,620	733,588	-	11,584,050	12,986,258
27	580,646	628,781	-	11,989,492	13,198,918
28	479,997	514,761	-	12,409,124	13,403,881
29	343,549	371,532	-	12,843,443	13,558,525
30	221,138	244,071	-	13,292,964	13,758,173
31	159,652	176,319	-	-	335,971
32	122,160	134,245	-	-	256,405
33	93,190	101,867	-	-	195,056
34	59,709	64,980	-	-	124,689
35	32,618	35,188	-	-	67,806
36	22,103	23,459	-	-	45,561
37	13,785	14,344	-	-	28,129
38	7,673	7,758	-	-	15,431
39	3,729	3,671	-	-	7,400
40	1,589	1,505	-	-	3,094
41	560	509	-	-	1,069
42	163	138	-	-	300
43	37	31	-	-	68
44	6	3	-	-	9
45	0	1	-	-	1
46	-	-	-	-	-
47	-	-	-	-	-
48	-	-	-	-	-
49	-	-	-	-	-
50	-	-	-	-	-

SINGLE DISCOUNT RATE DEVELOPMENT
PROJECTION OF PLAN FIDUCIARY NET POSITION

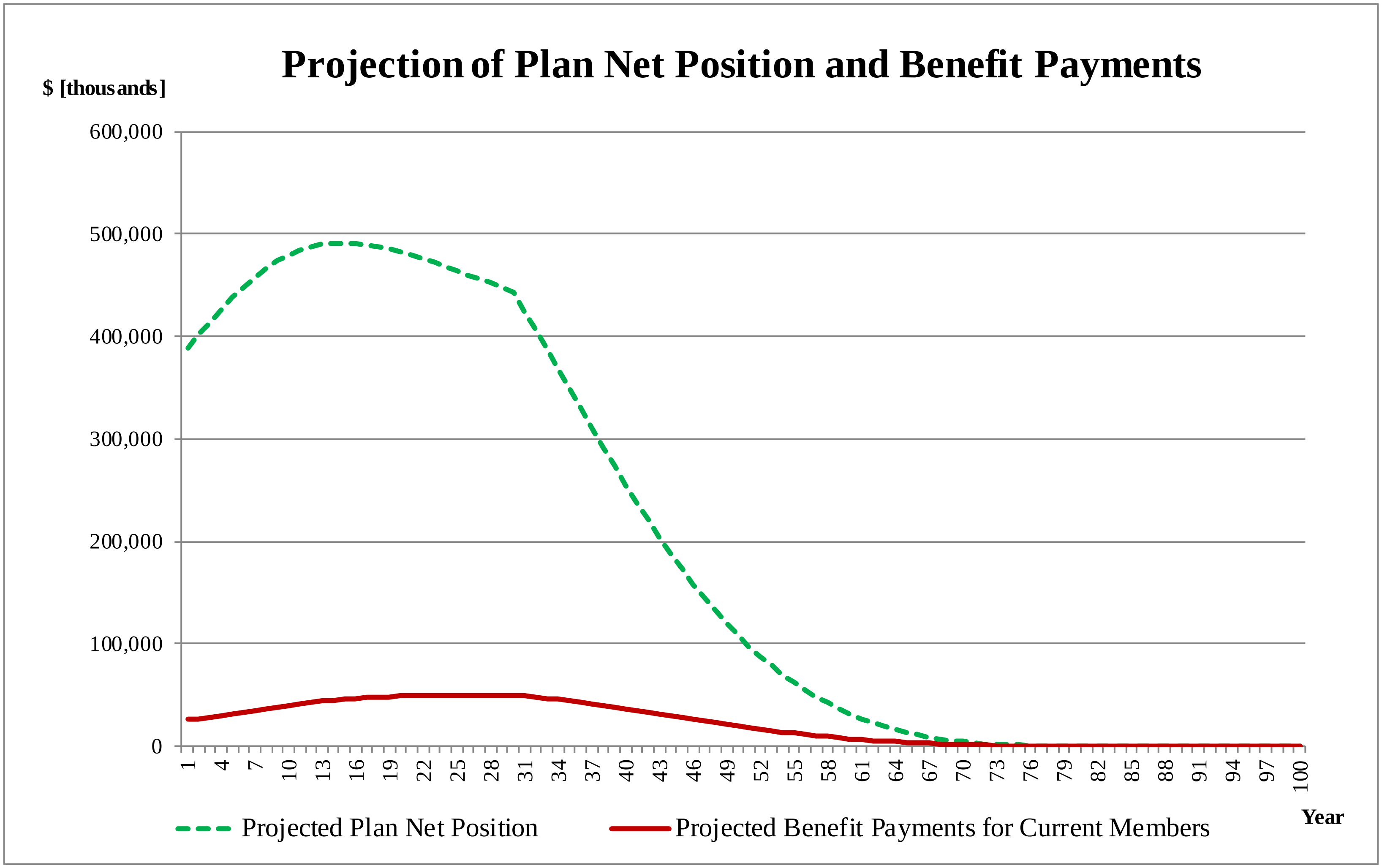
Year	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.25%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
1	$ 375,266,542	$ 12,455,538	$ 25,774,348	$ 562,900	$ 27,295,365	$ 388,680,197
2	388,680,197	12,223,628	26,951,735	583,020	28,237,782	401,606,851
3	401,606,851	12,149,740	28,219,700	602,410	29,146,563	414,081,044
4	414,081,044	12,445,319	29,934,196	621,122	30,019,118	425,990,162
5	425,990,162	12,838,645	31,749,243	638,985	30,849,757	437,290,336
6	437,290,336	12,708,252	33,271,198	655,936	31,627,120	447,698,574
7	447,698,574	12,573,088	34,707,013	671,548	32,341,378	457,234,479
8	457,234,479	12,453,445	36,120,804	685,852	32,992,420	465,873,688
9	465,873,688	12,299,106	37,676,023	698,811	33,570,835	473,368,796
10	473,368,796	12,114,041	39,406,822	710,053	34,057,238	479,423,199
11	479,423,199	11,978,462	40,909,146	719,135	34,446,928	484,220,309
12	484,220,309	11,874,459	42,279,892	726,330	34,749,390	487,837,936
13	487,837,936	11,751,449	43,715,229	731,757	34,961,593	490,103,992
14	490,103,992	11,660,298	44,958,641	735,156	35,081,750	491,152,243
15	491,152,243	11,643,568	45,901,073	736,728	35,125,159	491,283,169
16	491,283,169	11,679,340	46,605,367	736,925	35,111,038	490,731,255
17	490,731,255	11,733,324	47,222,382	736,097	35,050,143	489,556,243
18	489,556,243	11,781,597	47,859,086	734,334	34,942,235	487,686,655
19	487,686,655	11,863,205	48,339,719	731,530	34,789,674	485,268,285
20	485,268,285	11,975,448	48,680,600	727,902	34,602,571	482,437,802
21	482,437,802	12,101,241	48,942,856	723,657	34,388,255	479,260,786
22	479,260,786	12,244,661	49,131,062	718,891	34,151,561	475,807,056
23	475,807,056	12,382,265	49,367,608	713,711	33,892,461	472,000,464
24	472,000,464	12,564,243	49,421,695	708,001	33,615,328	468,050,340
25	468,050,340	12,777,833	49,360,643	702,076	33,332,801	464,098,255
26	464,098,255	12,986,258	49,339,778	696,147	33,048,513	460,097,100
27	460,097,100	13,198,918	49,300,278	690,146	32,761,408	456,067,003
28	456,067,003	13,403,881	49,301,051	684,101	32,470,453	451,956,185
29	451,956,185	13,558,525	49,480,352	677,934	32,165,375	447,521,798
30	447,521,798	13,758,173	49,428,816	671,283	31,846,176	443,026,048
31	443,026,048	335,971	48,807,213	664,539	31,057,587	424,947,854
32	424,947,854	256,405	47,904,430	637,422	29,749,121	406,411,528
33	406,411,528	195,056	46,856,936	609,617	28,412,555	387,552,586
34	387,552,586	124,689	45,766,821	581,329	27,053,312	368,382,438
35	368,382,438	67,806	44,543,922	552,574	25,676,250	349,029,998
36	349,029,998	45,561	43,120,399	523,545	24,294,077	329,725,692
37	329,725,692	28,129	41,613,452	494,589	22,918,608	310,564,389
38	310,564,389	15,431	40,027,729	465,847	21,556,696	291,642,941
39	291,642,941	7,400	38,371,720	437,464	20,215,203	273,056,360
40	273,056,360	3,094	36,657,951	409,585	18,900,680	254,892,598
41	254,892,598	1,069	34,902,231	382,339	17,619,021	237,228,118
42	237,228,118	300	33,119,304	355,842	16,375,322	220,128,594
43	220,128,594	68	31,323,371	330,193	15,173,913	203,649,011
44	203,649,011	9	29,527,314	305,474	14,018,389	187,834,622
45	187,834,622	1	27,743,060	281,752	12,911,672	172,721,483
46	172,721,483	-	25,981,868	259,082	11,856,026	158,336,558
47	158,336,558	-	24,254,274	237,505	10,853,071	144,697,850
48	144,697,850	-	22,569,805	217,047	9,903,800	131,814,799
49	131,814,799	-	20,936,738	197,722	9,008,617	119,688,956
50	119,688,956	-	19,361,973	179,533	8,167,391	108,314,841

SINGLE DISCOUNT RATE DEVELOPMENT
PRESENT VALUES OF PROJECTED BENEFIT PAYMENTS

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	$ 375,266,542	$ 25,774,348	$ 25,774,348	$ -	$ 24,887,945	$ -	$ 24,887,945
2	388,680,197	26,951,735	26,951,735	-	24,265,586	-	24,265,586
3	401,606,851	28,219,700	28,219,700	-	23,689,677	-	23,689,677
4	414,081,044	29,934,196	29,934,196	-	23,430,257	-	23,430,257
5	425,990,162	31,749,243	31,749,243	-	23,171,040	-	23,171,040
6	437,290,336	33,271,198	33,271,198	-	22,640,358	-	22,640,358
7	447,698,574	34,707,013	34,707,013	-	22,020,886	-	22,020,886
8	457,234,479	36,120,804	36,120,804	-	21,368,678	-	21,368,678
9	465,873,688	37,676,023	37,676,023	-	20,782,031	-	20,782,031
10	473,368,796	39,406,822	39,406,822	-	20,267,354	-	20,267,354
11	479,423,199	40,909,146	40,909,146	-	19,617,730	-	19,617,730
12	484,220,309	42,279,892	42,279,892	-	18,904,488	-	18,904,488
13	487,837,936	43,715,229	43,715,229	-	18,224,956	-	18,224,956
14	490,103,992	44,958,641	44,958,641	-	17,476,305	-	17,476,305
15	491,152,243	45,901,073	45,901,073	-	16,636,500	-	16,636,500
16	491,283,169	46,605,367	46,605,367	-	15,749,899	-	15,749,899
17	490,731,255	47,222,382	47,222,382	-	14,879,640	-	14,879,640
18	489,556,243	47,859,086	47,859,086	-	14,060,852	-	14,060,852
19	487,686,655	48,339,719	48,339,719	-	13,242,014	-	13,242,014
20	485,268,285	48,680,600	48,680,600	-	12,433,934	-	12,433,934
21	482,437,802	48,942,856	48,942,856	-	11,655,869	-	11,655,869
22	479,260,786	49,131,062	49,131,062	-	10,909,734	-	10,909,734
23	475,807,056	49,367,608	49,367,608	-	10,221,222	-	10,221,222
24	472,000,464	49,421,695	49,421,695	-	9,540,718	-	9,540,718
25	468,050,340	49,360,643	49,360,643	-	8,884,785	-	8,884,785
26	464,098,255	49,339,778	49,339,778	-	8,280,680	-	8,280,680
27	460,097,100	49,300,278	49,300,278	-	7,714,733	-	7,714,733
28	456,067,003	49,301,051	49,301,051	-	7,193,337	-	7,193,337
29	451,956,185	49,480,352	49,480,352	-	6,731,467	-	6,731,467
30	447,521,798	49,428,816	49,428,816	-	6,269,889	-	6,269,889
31	443,026,048	48,807,213	48,807,213	-	5,772,532	-	5,772,532
32	424,947,854	47,904,430	47,904,430	-	5,282,758	-	5,282,758
33	406,411,528	46,856,936	46,856,936	-	4,817,942	-	4,817,942
34	387,552,586	45,766,821	45,766,821	-	4,387,743	-	4,387,743
35	368,382,438	44,543,922	44,543,922	-	3,981,820	-	3,981,820
36	349,029,998	43,120,399	43,120,399	-	3,594,004	-	3,594,004
37	329,725,692	41,613,452	41,613,452	-	3,233,942	-	3,233,942
38	310,564,389	40,027,729	40,027,729	-	2,900,429	-	2,900,429
39	291,642,941	38,371,720	38,371,720	-	2,592,479	-	2,592,479
40	273,056,360	36,657,951	36,657,951	-	2,309,270	-	2,309,270
41	254,892,598	34,902,231	34,902,231	-	2,050,041	-	2,050,041
42	237,228,118	33,119,304	33,119,304	-	1,813,816	-	1,813,816
43	220,128,594	31,323,371	31,323,371	-	1,599,496	-	1,599,496
44	203,649,011	29,527,314	29,527,314	-	1,405,858	-	1,405,858
45	187,834,622	27,743,060	27,743,060	-	1,231,614	-	1,231,614
46	172,721,483	25,981,868	25,981,868	-	1,075,457	-	1,075,457
47	158,336,558	24,254,274	24,254,274	-	936,082	-	936,082
48	144,697,850	22,569,805	22,569,805	-	812,187	-	812,187
49	131,814,799	20,936,738	20,936,738	-	702,490	-	702,490
50	119,688,956	19,361,973	19,361,973	-	605,736	-	605,736

SINGLE DISCOUNT RATE DEVELOPMENT
PRESENT VALUES OF PROJECTED BENEFIT PAYMENTS (CONCLUDED)

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	$ 108,314,841	$ 17,850,970	$ 17,850,970	$ -	$ 520,713	$ -	$ 520,713
52	97,680,922	16,407,757	16,407,757	-	446,260	-	446,260
53	87,770,657	15,035,003	15,035,003	-	381,281	-	381,281
54	78,563,543	13,734,150	13,734,150	-	324,748	-	324,748
55	70,036,097	12,505,605	12,505,605	-	275,710	-	275,710
56	62,162,712	11,348,883	11,348,883	-	233,294	-	233,294
57	54,916,427	10,262,748	10,262,748	-	196,705	-	196,705
58	48,269,604	9,245,388	9,245,388	-	165,227	-	165,227
59	42,194,482	8,294,568	8,294,568	-	138,214	-	138,214
60	36,663,596	7,407,825	7,407,825	-	115,094	-	115,094
61	31,650,047	6,582,620	6,582,620	-	95,359	-	95,359
62	27,127,610	5,816,468	5,816,468	-	78,564	-	78,564
63	23,070,736	5,107,038	5,107,038	-	64,319	-	64,319
64	19,454,435	4,452,261	4,452,261	-	52,282	-	52,282
65	16,254,050	3,850,406	3,850,406	-	42,158	-	42,158
66	13,444,928	3,300,116	3,300,116	-	33,690	-	33,690
67	11,002,033	2,800,375	2,800,375	-	26,656	-	26,656
68	8,899,568	2,350,372	2,350,372	-	20,860	-	20,860
69	7,110,704	1,949,265	1,949,265	-	16,131	-	16,131
70	5,607,541	1,595,927	1,595,927	-	12,314	-	12,314
71	4,361,320	1,288,740	1,288,740	-	9,272	-	9,272
72	3,342,876	1,025,491	1,025,491	-	6,879	-	6,879
73	2,523,221	803,377	803,377	-	5,025	-	5,025
74	1,874,164	619,073	619,073	-	3,610	-	3,610
75	1,368,920	468,833	468,833	-	2,549	-	2,549
76	982,635	348,654	348,654	-	1,768	-	1,768
77	692,804	254,424	254,424	-	1,203	-	1,203
78	479,547	182,072	182,072	-	803	-	803
79	325,758	127,714	127,714	-	525	-	525
80	217,113	87,779	87,779	-	336	-	336
81	141,949	59,103	59,103	-	211	-	211
82	91,032	38,981	38,981	-	130	-	130
83	57,263	25,184	25,184	-	78	-	78
84	35,334	15,938	15,938	-	46	-	46
85	21,390	9,883	9,883	-	27	-	27
86	12,705	6,006	6,006	-	15	-	15
87	7,407	3,578	3,578	-	8	-	8
88	4,239	2,090	2,090	-	5	-	5
89	2,382	1,198	1,198	-	2	-	2
90	1,314	674	674	-	1	-	1
91	711	372	372	-	1	-	1
92	378	202	202	-	0	-	0
93	197	107	107	-	0	-	0
94	100	56	56	-	0	-	0
95	49	28	28	-	0	-	0
96	23	14	14	-	0	-	0
97	11	7	7	-	0	-	0
98	5	3	3	-	0	-	0
99	2	1	1	-	0	-	0
100	1	1	1	0	0	0	0
				Totals	**$ 529,530,331**	**$ -**	**$ 529,530,331**


Projection of Plan Net Position and Benefit Payments
$ [thousands]
600,000
500,000
400,000
300,000
200,000
100,000
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 payments at predetermined rates of interest and 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.

Actuarial Valuation Date The date as of which an actuarial valuation is performed.

Actuarially Determined Contribution (ADC) or Annual Required Contribution (ARC) 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 and does not include pay above any pay cap.
Deferred Retirement Option Program (DROP)	A program that permits a plan member to elect a calculation of benefit payments based on service credits and salary, as applicable, as of the DROP entry date. The plan member continues to provide service to the employer and is paid for the service by the employer after the DROP entry date; however, the pensions that would have been paid to the plan member are credited to an individual member account within the defined benefit pension plan until the end of the DROP period. Other variations for DROP exist and will be more fully detailed in the plan provision section of the valuation report.
Deferred Inflows and Outflows	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	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.

GLOSSARY OF TERMS

Entry Age Actuarial Cost Method (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.
GASB	The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.
Fiduciary Net Position	The fiduciary net position is the value of the assets of the trust.
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 statement 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.

GLOSSARY OF TERMS

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.

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 Benefit Changes
4. Employee Contributions (made negative for addition here)
5. Projected Earnings on Plan Investments (made negative for addition here)
6. Pension Plan Administrative Expense
7. Other Changes in Plan Fiduciary Net Position
8. Recognition of Outflow (Inflow) of Resources due to Liabilities
9. Recognition of Outflow (Inflow) of Resources due to Assets

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 assets used in determining the unfunded liability of the plan. For purposes of the GASB Statement No. 67, the valuation asset is equal to the market value of assets.