



VILLAGE OF CARPENTERSVILLE
CARPENTERSVILLE FIREFIGHTERS PENSION FUND

Actuarial Valuation Report
For the Year
Beginning May 1, 2015
And Ending December 31, 2015

Timothy W. Sharpe, Actuary, Geneva, IL (630) 262-0600

TABLE OF CONTENTS

	<u>Page</u>
Introduction	3
Summary of Results	4
Actuarial Valuation of Assets	6
Asset Changes During Prior Year	7
Normal Cost	8
Accrued Liability	9
Tax Levy Requirement	10
Summary of Plan Participants	11
Duration	12
Projected Pension Payments	12
Summary of Plan Provisions	13
Actuarial Method	14
Actuarial Assumptions	15
GASB Statements No. 25 & 27 Disclosure	17
GASB Statements No. 67 & 68 Disclosure	20

INTRODUCTION

Fire-sworn personnel of the Village of Carpentersville are covered by the Firefighters Pension Plan that is a defined-benefit, single-employer pension plan. The purpose of this report is to provide to the Intended Users of this report, specifically the Intended Users are the Village Officials, the Pension Board and the Village and Pension Board auditors, the reporting requirements of the Illinois Pension Code, the GASB Statements No. 25 & 27 and 67 & 68 financial information and related actuarial information for the year stated in this report. This report is not intended for distribution or usage to or by anyone who is not an Intended User and should not be used for any other purpose.

The valuation results reported herein are based on the employee data, plan provisions and the financial data provided by the Village. The actuary has relied on this information and does not assume responsibility for the accuracy or completeness of this information. I hereby certify that to the best of my knowledge this report is complete and accurate and fairly presents the actuarial position of the Fund in accordance with generally accepted actuarial principles and procedures. In my opinion, the assumptions used are reasonably related to the experience of the Plan and to reasonable expectations. A reasonable request for supplementary information not included in this report should be directed to the undersigned actuary.

The actuary cautions the Intended Users of the possibility of uncertainty or risks in any of the results in this report.

I, Timothy W. Sharpe, am an Enrolled Actuary and a member of the American Academy of Actuaries, and I meet the Qualifications Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,



Timothy W. Sharpe, EA, MAAA
Enrolled Actuary No. 14-4384

9/30/2015

Date

SUMMARY OF RESULTS

There was a change with respect to Actuarial Assumptions from the prior year to reflect revised expectations with respect to mortality rates, disability rates, turnover rates and retirement rates. The mortality rates, disability rates, turnover rates and retirement rates have been changed to the new rates most recently published by the Illinois Department of Insurance (September 2012).

There were no changes with respect to Plan Provisions or Actuarial Methods from the prior year.

The current Village fiscal year will be the 8-month period from May 1, 2015 through December 31, 2015. The Tax Levy has been adjusted accordingly (prorated for 8 months).

Based on the plan sponsor's funding policy and future expected plan contributions and funded status, the plan is to be expected to produce adequate assets to make benefit payments when they are due.

The benefit payment default risk or the financial health of the plan sponsor was not deemed to be material.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law.

Due to the limited scope of the actuary's assignment, the actuary did not perform an analysis of the potential range of such future measurements.

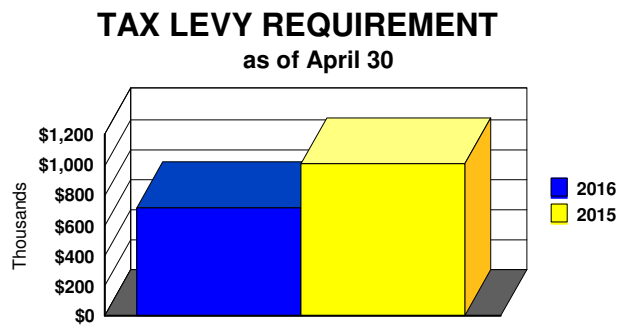
There were no unexpected changes with respect to the participants included in this actuarial valuation (3 new member, 0 terminations, 1 retirement, 2 incidents of disability, annual payroll increase 1.1%, average salary increase 3.3%).

There were no unexpected changes with respect to the Fund's investments from the prior year (annual investment return 6.88%).

The Village's Tax Levy Requirement has decreased from \$1,010,754 last year to \$722,056 this year. The decrease in the Tax Levy is due to the 8-month adjustment. If not for the 8-month adjustment, the Tax Levy would have increased to \$1,107,230 (9.5%). The increase in the Tax Levy is due to the increase in salaries and the changes to the assumptions. The Percent Funded has decreased from 70.6% last year to 65.7% this year.

SUMMARY OF RESULTS (Continued)

	For Year Ending April 30	
	<u>12/31/2015</u>	<u>2015</u>
Tax Levy Requirement	\$ 722,056	\$ 1,010,754
		as of May 1
	<u>2015</u>	<u>2014</u>
Village Normal Cost	593,588	626,939
Anticipated Employee Contributions	289,882	286,674
Accrued Liability	28,231,535	24,413,583
Actuarial Value of Assets	18,562,011	17,230,933
Unfunded Accrued Liability/(Surplus)	9,669,524	7,182,650
Amortization of Unfunded Accrued Liability/(Surplus)	441,206	317,691
Percent Funded	65.7%	70.6%
Annual Payroll	\$ 3,065,913	\$ 3,031,982



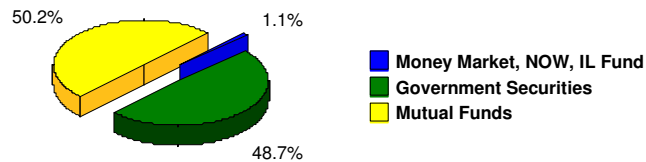
ACTUARIAL VALUATION OF ASSETS

		as of May 1	
		<u>2015</u>	<u>2014</u>
Money Market, NOW, IL Fund	\$	208,835	\$ 43,848
Government Securities		8,884,100	9,736,455
Mutual Funds		9,158,589	7,185,420
Interest Receivable		65,931	82,365
Miscellaneous Receivable/(Payable)		<u>(6,706)</u>	<u>(5,369)</u>
Market Value of Assets		<u>18,310,749</u>	<u>17,042,719</u>
Actuarial Value of Assets	\$	18,562,011	17,230,933

FYE 2012-2015 (Gain)/Loss: \$216,004; (\$121,422); \$218,332; \$20,156

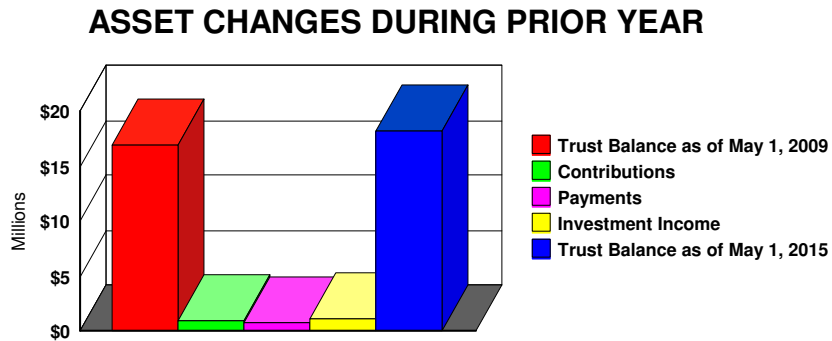
SUMMARY OF ASSETS

As Of May 1, 2015



ASSET CHANGES DURING PRIOR YEAR

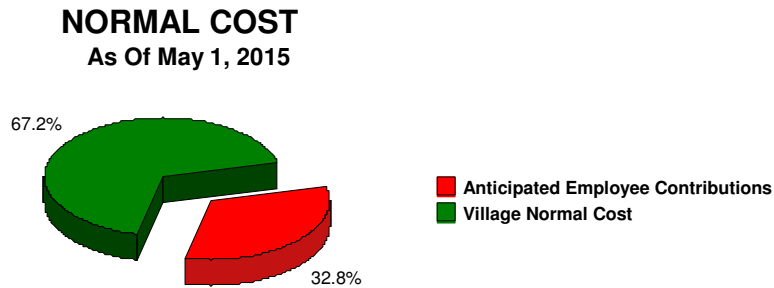
Trust Balance as of May 1, 2014		\$	17,042,719
Contributions			
Village	654,009		
Employee	<u>300,585</u>		
Total			954,595
Payments			
Benefit Payments	818,320		
Expenses	<u>44,299</u>		
Total			862,618
Investment Income			<u>1,176,053</u>
Trust Balance as of May 1, 2015		\$	<u>18,310,749</u>
Approximate Annual Rate of Return			6.88%



NORMAL COST

The Normal Cost is the actuarial present value of the portion of the projected benefits that are expected to accrue during the year based upon the actuarial valuation method and actuarial assumptions employed in the valuation.

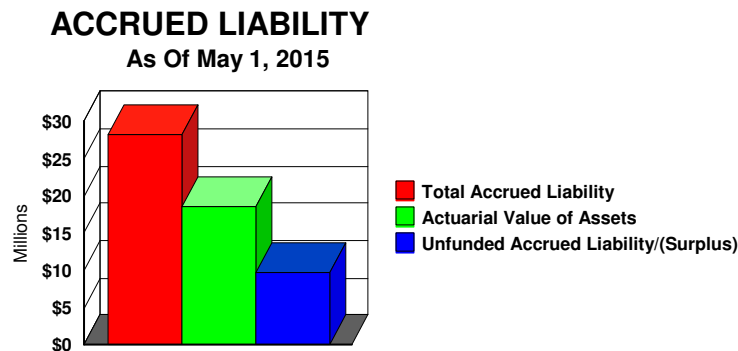
	as of May 1	
	<u>2015</u>	<u>2014</u>
Total Normal Cost	\$ 883,470	\$ 913,613
Anticipated Employee Contributions	<u>289,882</u>	<u>286,674</u>
Village Normal Cost	<u>593,588</u>	<u>626,939</u>
Normal Cost Payroll	\$ 3,065,913	\$ 3,031,982
Village Normal Cost Rate	19.36%	20.68%
Total Normal Cost Rate	28.82%	30.13%



ACCRUED LIABILITY

The Accrued Liability is the actuarial present value of the portion of the projected benefits that has been accrued as of the valuation date based upon the actuarial valuation method and actuarial assumptions employed in the valuation. The Unfunded Accrued Liability is the excess of the Accrued Liability over the Actuarial Value of Assets.

	as of May 1	
Accrued Liability	<u>2015</u>	<u>2014</u>
Active Employees	\$ 14,062,205	\$ 12,723,313
Children Annuities	8,562	9,383
Disability Annuities	4,736,004	3,298,787
Retirement Annuities	8,612,738	8,124,651
Surviving Spouse Annuities	300,217	257,449
Terminated Vested Annuities	<u>511,809</u>	<u>0</u>
Total Annuities	14,169,330	11,690,270
Total Accrued Liability	28,231,535	24,413,583
Actuarial Value of Assets	<u>18,562,011</u>	<u>17,230,933</u>
Unfunded Accrued Liability/(Surplus)	\$ <u>9,669,524</u>	\$ <u>7,182,650</u>
Percent Funded	65.7%	70.6%



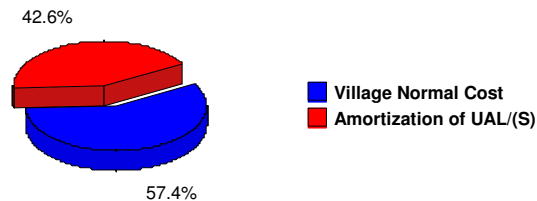
TAX LEVY REQUIREMENT

The Public Act 096-1495 Tax Levy Requirement is determined as the annual contribution necessary to fund the normal cost, plus the amount to amortize the excess (if any) of ninety percent (90%) of the accrued liability over the actuarial value of assets as a level percentage of payroll over a thirty (30) year period which commenced in 2011, plus an adjustment for interest. The 100% amortization amount is equal to the amount to amortize the unfunded accrued liability as a level percentage of payroll over a thirty (30) year period which commenced in 2011.

	For Year Ending April 30	
	<u>12/31/2015</u>	<u>2015</u>
Village Normal Cost as of Beginning of Year ¹ \$	395,725	\$ 626,939
Amortization of Unfunded Accrued Liability/(Surplus) ¹	294,137	317,691
Interest for One Year ¹	<u>32,193</u>	<u>66,124</u>
Tax Levy Requirement as of End of Year \$	<u>722,056</u>	<u>\$ 1,010,754</u>
 Public Act 096-1495 Tax Levy Requirement		
1) Normal Cost (PUC) ¹	405,174	591,611
2) Accrued Liability (PUC) ¹	26,495,077	22,069,970
3) Amortization Payment	160,721	116,416
4) Interest for One Year ¹	26,409	49,562
5) PA 096-1495 Tax Levy Requirement \$ (1 + 3 + 4)	592,303	757,589

¹ Prorated to reflect 8-month fiscal year.

TAX LEVY REQUIREMENT For Fiscal Year Ending April 30, 2016



SUMMARY OF PLAN PARTICIPANTS

The actuarial valuation of the Plan is based upon the employee data furnished by the Village.
 The information provided for Active participants included:

- Name
- Sex
- Date of Birth
- Date of Hire
- Compensation
- Employee Contributions

The information provided for Inactive participants included:

- Name
- Sex
- Date of Birth
- Date of Pension Commencement
- Monthly Pension Benefit
- Form of Payment

Membership	<u>2015</u>	<u>2015</u>	<u>2014</u>	<u>2014</u>
Current Employees				
Vested	19		19	
Nonvested	<u>17</u>		<u>17</u>	
Total	<u>36</u>		<u>36</u>	
Inactive Participants		<u>Annual Benefits</u>		<u>Annual Benefits</u>
Children	6 \$	1,721	7 \$	1,958
Disabled Employees	6	272,944	4	190,020
Retired Employees	9	605,127	9	575,616
Surviving Spouses	1	30,056	1	30,056
Terminated Vesteds	<u>3</u>	<u>23,635</u>	<u>0</u>	<u>0</u>
Total	<u>25</u>	<u>933,483</u>	<u>21</u>	<u>797,650</u>
Annual Payroll	\$	3,065,913	\$	3,031,982

SUMMARY OF PLAN PARTICIPANTS (Continued)

Age and Service Distribution

Service Age	0-4	5-9	10-14	15-19	20-24	25-29	30+	Total	Salary
20-24									
25-29	3							3	59,609
30-34	2	2						4	80,197
35-39	1	8	4	1				14	82,570
40-44		1	2	4				7	92,878
45-49			1	1		2		4	88,317
50-54			1	1	1			3	105,315
55-59								0	
60+				1				1	90,958
Total	<u>6</u>	<u>11</u>	<u>8</u>	<u>8</u>	<u>1</u>	<u>2</u>	<u>0</u>	<u>36</u>	<u>85,164</u>
Salary	68,014	80,966	87,466	94,206	122,549	95,634			

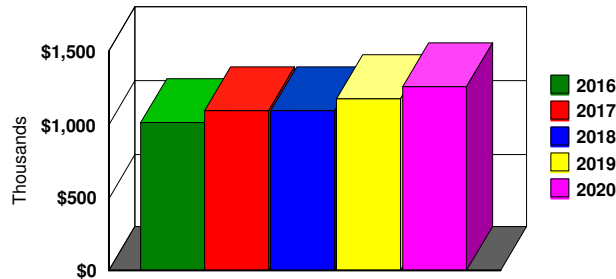
Average Age: 39.3 Average Service: 10.8

DURATION (years) Active Members: 19.6 Retired Members: 11.5 All Members: 15.5

PROJECTED PENSION PAYMENTS

<u>2016</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
\$1,021,571	\$1,095,723	\$1,100,979	\$1,182,958	\$1,262,315

**PROJECTED PENSION PAYMENTS
2016-2020**



SUMMARY OF PLAN PROVISIONS

The Plan Provisions have not been changed from the prior year.

The Village of Carpentersville Firefighters Pension Fund was created and is administered as prescribed by "Article 4. Firefighters' Pension Fund - Municipalities 500,000 and Under" of the Illinois Pension Code (Illinois Compiled Statutes, 1992, Chapter 40). A brief summary of the plan provisions is provided below.

Employees attaining the age of (50) or more with (20) or more years of creditable service are entitled to receive an annual retirement benefit of one-half of the salary attached to the rank held on the last day of service. The pension shall be increased by (1/12) of (2.5%) of such monthly salary for each additional month of service over (20) years up to (30) years, to a maximum of (75%) of such monthly salary.

Employees with at least (10) years but less than (20) years of credited service may retire at or after age (60) and receive a reduced benefit ranging from (15%) of final salary for (10) years of service to (45.6%) for 19 years of service.

Surviving spouses receive (100%) of final salary for fatalities resulting from an act of duty, or otherwise the greater of (54%) of final salary or the monthly retirement pension that the deceased firefighter was receiving at the time of death. Surviving children receive (12%) of final salary. The maximum family survivor benefit is (75%) of final salary.

Employees disabled in the line of duty receive (65%) of final salary.

The monthly pension of a covered employee who retired with (20) or more years of service after January 1, 1977, shall be increased annually, following the first anniversary date of retirement and be paid upon reaching the age of at least (55) years, by (3%) of the amount of the pension payable at the time of the increase.

Employees are required to contribute (9.455%) of their base salary to the Firefighters' Pension Plan. If an employee leaves covered employment with less than twenty (20) years of service, accumulated employee contributions may be refunded without accumulated interest.

For Employees hired after January 1, 2011, the annual retirement benefit is (2.5%) of final average salary for each year of service up to (30) years, to a maximum of (75%) of such salary, the Normal Retirement age is attainment of age 55 and completion of 10 years of service; Early Retirement age is attainment of age 50, completion of 10 years of service and the Early Retirement Factor is 6% per year; the Employee's Accrued Benefit is based on the Employee's final 8-year average salary not to exceed \$106,800 (as indexed); Cost-of-living adjustments are simple increases (not compounded) of the lesser of 3% or 50% of CPI beginning the later of the anniversary date and age 60; Surviving Spouse's Benefits are 66 2/3% of the Employee's benefit at the time of death.

ACTUARIAL METHODS

The Actuarial Methods employed for this valuation are as follows:

Projected Unit Credit Cost Method (for years beginning on or after 2011 for PA 096-1495)

Under the Projected Unit Credit Cost Method, the Normal Cost is the present value of the projected benefit (including projected salary increases) earned during the year.

The Accrued Liability is the present value of the projected benefit (including projected salary increases) earned as of the actuarial valuation date. The Unfunded Accrued Liability is the excess of the Accrued Liability over the plan's assets. Experience gains or losses adjust the Unfunded Accrued Liability.

Entry Age Normal Cost Method

Under the Entry Age Normal Cost Method the Normal Cost for each participant is computed as the level percentage of pay which, if paid from the earliest age the participant is eligible to enter the plan until retirement or termination, will accumulate with interest to sufficiently fund all benefits under the plan. The Normal Cost for the plan is determined as the greater of a) the sum of the Normal Costs for all active participants, and b) 17.5% of the total payroll of all active participants.

The Accrued Liability is the theoretical amount that would have accumulated had annual contributions equal to the Normal Cost been paid. The Unfunded Accrued Liability is the excess of the Accrued Liability over the plan's assets. Experience gains or losses adjust the Unfunded Accrued Liability.

ACTUARIAL ASSUMPTIONS

The Actuarial Assumptions used for determining the Tax Levy Requirement and GASB Statements No. 25 & 27 and 67 & 68 Disclosure Information are the same (except where noted) and have been changed from the prior year (discussion on page 4). The methods and assumptions disclosed in this report may reflect statutory requirements and may reflect the responsibility of the Principal and its advisors. Unless specifically noted otherwise, each economic and demographic assumption was selected in accordance with Actuarial Standards of Practice 27 and 35 and may reflect the views and advice of advisors to the Principal. In the event a method or assumption conflicts with the actuary's professional judgment, the method or assumption is identified in this report. The Actuarial Assumptions employed for this valuation are as follows:

Valuation Date	May 1, 2015
Asset Valuation Method	5-year Average Market Value (PA 096-1495)
Investment Return	7.00% net of investment expenses.
Salary Scale	5.50%
Mortality	RP 2000 Mortality Table (CHBCA). There is no margin for future mortality improvement beyond the valuation date.
Withdrawal	Based on studies of the Fund and the Department of Insurance, Sample Rates below
Disability	Based on studies of the Fund and the Department of Insurance, Sample Rates below
Retirement	Based on studies of the Fund and the Department of Insurance, Sample Rates below (100% by age 70)
Marital Status	80% Married, Female spouses 3 years younger

ACTUARIAL ASSUMPTIONS (Continued)

<u>Sample Annual Rates Per 100 Participants</u>				
<u>Age</u>	<u>Mortality</u>	<u>Withdrawal</u>	<u>Disability</u>	<u>Retirement</u>
20	0.03	9.00	0.10	
25	0.04	5.00	0.10	
30	0.07	2.50	0.20	
35	0.11	2.00	0.35	
40	0.14	1.00	0.50	
45	0.18	1.00	0.65	
50	0.24	1.00	1.00	14.00
55	0.42	1.00	1.50	20.00
60	0.83	1.00	3.00	25.00
65	1.55	1.00	4.25	50.00
70	2.68			100.00

GASB STATEMENTS NO. 25 & 27 DISCLOSURE INFORMATION

The Governmental Accounting Standards Board (GASB) issued Statements No. 25 & 27 that established generally accepted accounting principles for the annual financial statements for defined benefit pension plans. The required information is as follows:

Membership in the plan consisted of the following as of:

	<u>April 30, 2015</u>	<u>April 30, 2014</u>
Retirees and beneficiaries receiving benefits	22	21
Terminated plan members entitled to but not yet receiving benefits	3	0
Active vested plan members	19	19
Active nonvested plan members	<u>17</u>	<u>17</u>
Total	<u>61</u>	<u>57</u>
Number of participating employers	1	1

SCHEDULE OF FUNDING PROGRESS

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) -Entry Age (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a)/c)
04/30/13	16,176,364	20,468,175	4,291,811	79.0%	2,825,725	151.9%
04/30/14	17,042,719	24,413,583	7,370,864	69.8%	3,031,982	243.1%
04/30/15	18,310,749	28,231,535	9,920,786	64.9%	3,065,913	323.6%

GASB STATEMENTS NO. 25 & 27 DISCLOSURE INFORMATION (Continued)

ANNUAL PENSION COST AND NET PENSION OBLIGATION

	<u>April 30, 2015</u>	<u>April 30, 2014</u>
Annual required contribution	925,347	840,509
Interest on net pension obligation	135,683	110,296
Adjustment to annual required contribution	<u>(86,952)</u>	<u>(68,610)</u>
Annual pension cost	974,078	882,195
Contributions made	<u>654,009</u>	<u>519,515</u>
Increase (decrease) in net pension obligation	320,069	362,680
Net pension obligation beginning of year	<u>1,938,335</u>	<u>1,575,655</u>
Net pension obligation end of year	<u>2,258,404</u>	<u>1,938,335</u>

THREE-YEAR TREND INFORMATION

Fiscal Year <u>Ending</u>	Annual Pension Cost (APC) <u>Cost (APC)</u>	Percentage of APC <u>Contributed</u>	Net Pension Obligation <u>Obligation</u>
04/30/13	863,041	52.6%	1,575,655
04/30/14	882,195	58.9%	1,938,335
04/30/15	974,078	67.1%	2,258,404

GASB STATEMENTS NO. 25 & 27 DISCLOSURE INFORMATION (Continued)

FUNDING POLICY AND ANNUAL PENSION COST

Contribution rates:

Village	21.332%	17.135%
Plan members	9.455%	Same
Annual pension cost	974,078	882,195
Contributions made	654,009	519,515
Actuarial valuation date	04/30/2015	04/30/2014
Actuarial cost method	Entry age	Same
Amortization period	Level percentage of pay, closed	Same
Remaining amortization period	26 years	27 years
Asset valuation method	Market	Same
Actuarial assumptions:		
Investment rate of return*	7.00%	Same
Projected salary increases*	5.50%	Same
*Includes inflation at	3.00%	Same
Cost-of-living adjustments	Tier 1: 3.00% per year, compounded Tier 2: 2.00% per year, simple	Same

STATEMENTS NO. 67 & 68 DISCLOSURE INFORMATION

Plan Membership	April 30, 2015
Inactive plan members or beneficiaries currently receiving benefits	22
Inactive plan members entitled to but not yet receiving benefits	3
Active plan members	<u>36</u>
Total	<u>61</u>

Net Pension Liability of the Village	
Total pension liability	28,231,535
Plan fiduciary net position	18,310,749
Village's net pension liability	9,920,786
Plan fiduciary net position as a percentage of the total pension liability	64.86%

Actuarial Assumptions	
Inflation	3.00%
Salary increases	5.50%
Investment rate of return	7.00% net of expenses

The projection of cash flows used to determine the discount rate assumed that plan member contributions will be made at the current contribution rate and that Village contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current 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.

Based on those assumptions, the discount rate was determined in accordance with paragraphs 40-45. Therefore, the discount rate was applied to all periods of projected benefit payments to determine the total pension liability.

Sensitivity of the Net Pension Liability to Changes in the Discount Rate			
	1% Decrease	Current Discount Rate	1% Increase
	6.00%	7.00%	8.00%
Net Pension Liability	14,016,591	9,920,786	6,562,242

STATEMENTS NO. 67 & 68 DISCLOSURE INFORMATION (continued)

Schedule of Changes in the Village's Net Pension Liability and Related Ratios

Total Pension Liability	April 30, 2015
Service cost	977,566
Interest	1,680,310
Changes of benefit terms	0
Differences between expected and actual experience	807,759
Changes of assumptions	1,170,637
Benefit payments, including refunds of member contributions	818,320
Net change in total pension liability	3,817,952
Total pension liability - beginning	24,413,583
Total pension liability - ending	28,231,535
Plan Fiduciary Net Position	
Contributions - employer	654,009
Contributions - member	300,585
Net investment income	1,176,053
Benefit payments, including refunds of member contributions	818,320
Administrative expense	44,299
Other	0
Net change in plan fiduciary net position	1,268,030
Plan fiduciary net position - beginning	17,042,719
Plan fiduciary net position - ending	18,310,749
Village's net pension liability	9,920,786
Plan fiduciary net position as a percentage of the total pension liability	64.86%
Covered-employee payroll	3,065,913
Village's net pension liability as a percentage of covered-employee payroll	323.58%

STATEMENTS NO. 67 & 68 DISCLOSURE INFORMATION (continued)

Schedule of Village Contributions

	April 30, 2015
Actuarially determined contribution	654,008
Contributions in relation to the actuarially determined contribution	654,009
Contribution deficiency (Excess)	(1)
Covered-employee payroll	3,065,913
Contributions as a percentage of covered-employee payroll	21.33%
Notes to schedule	
Valuation date	April 30, 2015
Methods and assumptions used to determine contribution rates:	
Actuarial cost method	Entry Age Normal
Amortization method	Level Percentage of Pay
Remaining amortization period	26 years
Asset valuation method	Market Value
Inflation	3.00%
Salary increases	5.50%
Investment rate of return	7.00%
Retirement age	50-70
Mortality	RP 2000 CHBCA
Other	

Mortality rates were based on the RP-2000 CHBCA Mortality Table. The actuarial assumptions used in the April 30, 2015 valuation were based on the results of an actuarial experience study conducted by the Illinois Department of Insurance dated September 26, 2012.