

DRAFT



VILLAGE OF CARPENTERSVILLE
CARPENTERSVILLE POLICE PENSION FUND

Actuarial Valuation Report
For the Year
Beginning January 1, 2016
And Ending December 31, 2016

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



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INTRODUCTION

Police-sworn personnel of the Village of Carpentersville are covered by the Police 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

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. The mortality rates have been changed to the RP 2014 Mortality Table (BCHA) projected to 2016 using improvement scale MP-2015.

The Retirement Plans Experience Committee of the Society of Actuaries (RPEC) presented an update to Mortality Improvement Scale MP-2014, which was released in October 2014. This updated scale was created using two additional years of historical data and the same RPEC 2014 model that was used to produce Scale MP-2014. For clarity, the updated mortality improvement scale is called MP-2015.

Within the MP-2014 report, RPEC indicated an intention to publish updated improvement scales at least triennially. Subsequent to the development of Scale MP-2014, the Social Security Administration (SSA) released two years of additional mortality data. To reflect this latest available data, RPEC is now publishing this 2015 update and intends on providing future annual updates to the model as soon as practicable following the public release of updated data upon which the model is constructed.

The Village fiscal year has been changed to the calendar year. The prior fiscal year was the 8-month period from May 1, 2015 through December 31, 2015. The Tax Levy was adjusted accordingly (prorated for 8 months).

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

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.



SUMMARY OF RESULTS (Continued)

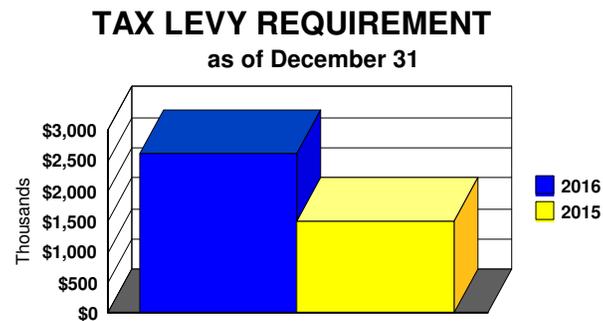
There were no unexpected changes with respect to the participants included in this actuarial valuation (5 new members, 1 termination, 1 retirement, 0 incidents of disability, annual payroll increase 6.8%, average salary increase 3.6%).

There were no unexpected changes with respect to the Fund's investments from the prior year (annual investment return -0.84%).

The Village's Tax Levy Requirement has increased from \$1,530,352 (8-month period) last year to \$2,615,965 this year (70.9%, 11.5% on 12-month basis). The increase in the Tax Levy is due to the increase in salaries, the investment return was less than assumed and the changes to the assumptions. The Percent Funded has decreased from 53.4% last year to 52.7% this year.

SUMMARY OF RESULTS (Continued)

	For Year Ending December 31	
	<u>2016</u>	<u>2015</u>
Tax Levy Requirement	\$ 2,615,965	\$ 1,530,352
	as of January 1	
	<u>2016</u>	<u>5/1/2015</u>
Village Normal Cost	922,255	856,002
Anticipated Employee Contributions	562,174	526,587
Accrued Liability	68,223,666	62,861,669
Actuarial Value of Assets	35,924,580	33,555,912
Unfunded Accrued Liability/(Surplus)	32,299,086	29,305,757
Amortization of Unfunded Accrued Liability/(Surplus)	1,522,572	1,337,178
Percent Funded	52.7%	53.4%
Annual Payroll	\$ 5,672,798	\$ 5,313,697

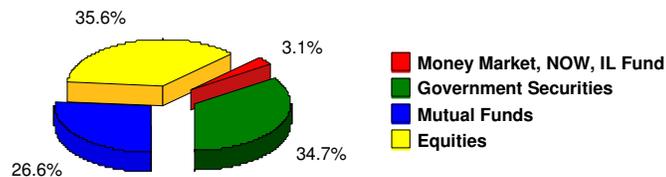


ACTUARIAL VALUATION OF ASSETS

		as of January 1	
		<u>2016</u>	<u>5/1/2015</u>
Money Market, NOW, IL Fund	\$	1,087,318	\$ 392,049
Government Securities		12,105,883	11,369,635
Mutual Funds		9,295,635	9,806,854
Common Stock		12,446,481	12,546,345
Interest Receivable		92,401	114,884
Miscellaneous Receivable/(Payable)		<u>(2,340)</u>	<u>22,421</u>
Market Value of Assets		<u>35,025,378</u>	<u>34,252,188</u>
Actuarial Value of Assets	\$	35,924,580	33,555,912

FYE 2013-2015 (Gain)/Loss: (\$474,131); (\$1,172,577); \$17,991; \$1,815,331

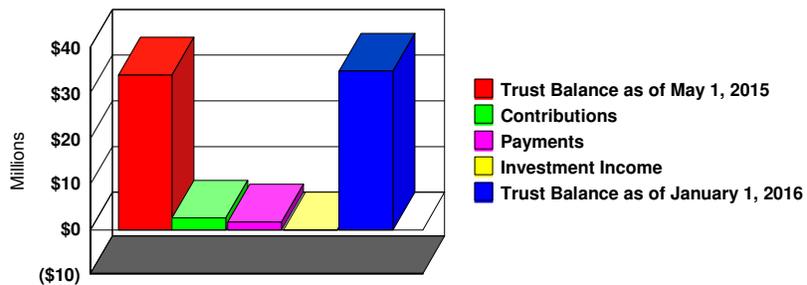
SUMMARY OF ASSETS
As Of January 1, 2016



ASSET CHANGES DURING PRIOR YEAR

Trust Balance as of May 1, 2015		\$	34,252,188
Contributions			
Village	2,085,015		
Employee	<u>374,280</u>		
Total			2,459,295
Payments			
Benefit Payments	1,460,181		
Expenses	<u>31,603</u>		
Total			1,491,784
Investment Income			<u>(194,320)</u>
Trust Balance as of January 1, 2016		\$	<u>35,025,378</u>
Approximate Annual Rate of Return			-0.84%

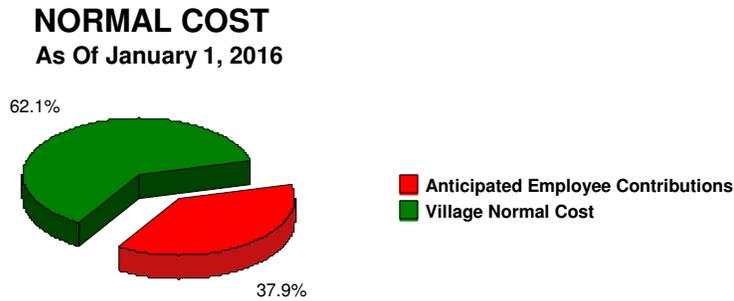
ASSET CHANGES DURING PRIOR YEAR



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.

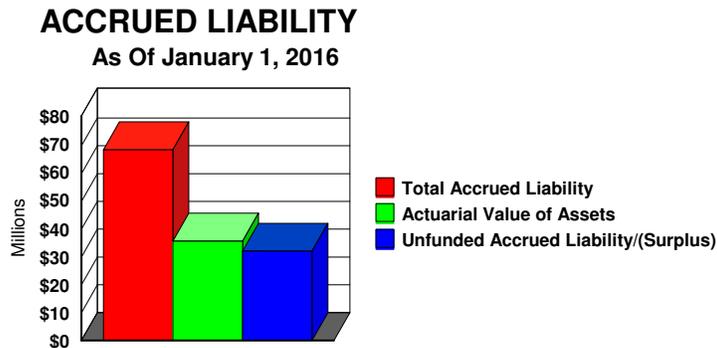
		as of January 1	
		<u>2016</u>	<u>5/1/2015</u>
Total Normal Cost	\$	1,484,429	\$ 1,382,589
Anticipated Employee Contributions		<u>562,174</u>	<u>526,587</u>
Village Normal Cost		<u>922,255</u>	<u>856,002</u>
Normal Cost Payroll	\$	5,672,798	\$ 5,313,697
Village Normal Cost Rate		16.26%	16.11%
Total Normal Cost Rate		26.17%	26.02%



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 January 1	
	<u>2016</u>	<u>5/1/2015</u>
Accrued Liability		
Active Employees	\$ 37,155,767	\$ 33,809,688
Children Annuities	0	0
Disability Annuities	6,856,853	6,543,207
Retirement Annuities	22,821,363	21,246,092
Surviving Spouse Annuities	358,786	205,127
Terminated Vested Annuities	<u>1,030,897</u>	<u>1,057,555</u>
Total Annuities	31,067,899	29,051,981
 Total Accrued Liability	 68,223,666	 62,861,669
 Actuarial Value of Assets	 <u>35,924,580</u>	 <u>33,555,912</u>
 Unfunded Accrued Liability/(Surplus)	 \$ <u>32,299,086</u>	 \$ <u>29,305,757</u>
 Percent Funded	 52.7%	 53.4%



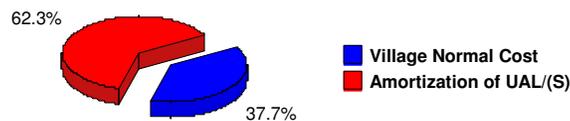
TAX LEVY REQUIREMENT

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 December 31	
	<u>2016</u>	<u>2015¹</u>
Village Normal Cost as of Beginning of Year	\$ 922,255	\$ 570,668
Amortization of Unfunded Accrued Liability/(Surplus)	1,522,572	891,452
Interest for One Year	<u>171,138</u>	<u>68,232</u>
Tax Levy Requirement as of End of Year	\$ <u>2,615,965</u>	\$ <u>1,530,352</u>
 Public Act 096-1495 Tax Levy Requirement		
1) Normal Cost (PUC)	1,200,867	752,939
2) Accrued Liability (PUC)	66,227,616	60,813,311
3) Amortization Payment	1,116,283	644,155
4) Interest for One Year	162,201	65,198
5) PA 096-1495 Tax Levy Requirement (1 + 3 + 4)	\$ 2,479,351	1,462,292

¹ Prorated to reflect 8-month fiscal year.

TAX LEVY REQUIREMENT
For Fiscal Year Ending December 31, 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>2016</u>	<u>2016</u>	<u>2015</u>	<u>2015</u>
Current Employees				
Vested	51		50	
Nonvested	<u>12</u>		<u>10</u>	
Total	<u>63</u>		<u>60</u>	
Inactive Participants		<u>Annual Benefits</u>		<u>Annual Benefits</u>
Children	0 \$	0	0 \$	0
Disabled Employees	10	463,705	10	463,705
Retired Employees	27	1,680,964	27	1,657,863
Surviving Spouses	2	50,889	2	38,278
Terminated Vesteds	<u>2</u>	<u>72,038</u>	<u>3</u>	<u>83,433</u>
Total	<u>41</u>	<u>2,267,596</u>	<u>42</u>	<u>2,243,279</u>
Annual Payroll	\$	5,672,798	\$	5,313,697

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	2							2	64,118
25-29	5	1						6	68,842
30-34		2	3					5	87,496
35-39	1	4	6					11	84,337
40-44		2	7	5				14	91,995
45-49			3	3	5	4		15	98,551
50-54				4	1	2	1	8	100,070
55-59						1		1	88,747
60+							1	1	110,822
Total	<u>8</u>	<u>9</u>	<u>19</u>	<u>12</u>	<u>6</u>	<u>7</u>	<u>2</u>	<u>63</u>	<u>90,044</u>
Salary	63,664	88,323	89,298	95,432	92,405	110,391	99,784		

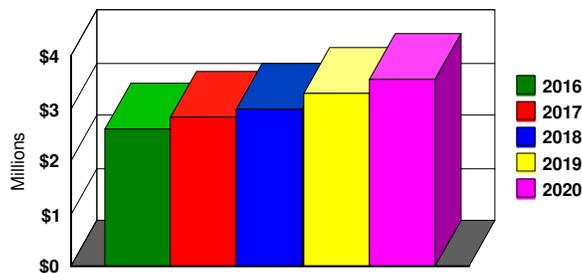
Average Age: 41.3 Average Service: 14.0 Average Future Service: 9.4

DURATION (years) Active Members: 19.0 Retired Members: 11.2 All Members: 15.4

PROJECTED PENSION PAYMENTS

<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
\$2,619,802	\$2,842,827	\$2,982,300	\$3,294,198	\$3,578,359

**PROJECTED PENSION PAYMENTS
2016-2020**





SUMMARY OF PLAN PROVISIONS

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

The Village of Carpentersville Police Pension Fund was created and is administered as prescribed by "Article 3. Police 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 (2.5%) of final salary for each year of service up to (30) years, to a maximum of (75%) of such salary.

Employees with at least (8) years but less than (20) years of credited service may retire at or after age (60) and receive a reduced benefit of (2.5%) of final salary for each year of service.

Surviving spouses receive the greater of (50%) of final salary or the employee's retirement benefit.

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 originally granted pension. Beginning with increases granted on or after July 1, 1993, the second and subsequent automatic annual increases shall be calculated as (3%) of the amount of the pension payable at the time of the increase.

Employees are required to contribute (9.91%) of their base salary to the Police Pension Plan. If an employee leaves covered employment with less than (20) years of service, accumulated employee contributions may be refunded without accumulated interest.

For Employees hired after January 1, 2011, 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 sum of the Normal Costs for 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	January 1, 2016
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 2014 Mortality Table (BCHA) projected to 2016 using improvement scale MP-2015.
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)

Sample Annual Rates Per 100 Participants

<u>Age</u>	<u>Withdrawal</u>	<u>Disability</u>	<u>Retirement</u>
20	10.00	0.05	
25	7.50	0.05	
30	5.00	0.22	
35	3.00	0.26	
40	2.00	0.40	
45	2.00	0.65	
50	3.50	0.95	20.00
55	3.50	1.30	25.00
60	3.50	1.65	33.00
65	3.50	2.00	50.00
70			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>December 31, 2015</u>	<u>April 30, 2015</u>
Retirees and beneficiaries receiving benefits	39	39
Terminated plan members entitled to but not yet receiving benefits	2	3
Active vested plan members	51	50
Active nonvested plan members	<u>12</u>	<u>10</u>
Total	<u>104</u>	<u>102</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)
04/30/14	31,750,944	57,085,108	25,334,164	55.6%	5,210,073	486.3%
04/30/15	34,252,188	62,861,669	28,609,481	54.5%	5,313,697	538.4%
12/31/15	35,025,378	68,223,666	33,198,288	51.3%	5,672,798	585.2%



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

ANNUAL PENSION COST AND NET PENSION OBLIGATION

	<u>December 31, 2015</u>	<u>April 30, 2015</u>
Annual required contribution	2,085,014	2,018,729
Interest on net pension obligation	173,900	169,636
Adjustment to annual required contribution	<u>(114,966)</u>	<u>(108,710)</u>
Annual pension cost	2,143,948	2,079,655
Contributions made	<u>2,085,015</u>	<u>2,018,731</u>
Increase (decrease) in net pension obligation	58,933	60,924
Net pension obligation beginning of year	<u>2,484,291</u>	<u>2,423,367</u>
Net pension obligation end of year	<u>2,543,224</u>	<u>2,484,291</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>
04/30/14	1,972,826	89.7%	2,423,367
04/30/15	2,079,655	97.1%	2,484,291
12/31/15	2,143,948	97.3%	2,543,224



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

FUNDING POLICY AND ANNUAL PENSION COST

Contribution rates:

Village	36.75%	37.99%
Plan members	9.91%	Same

Annual pension cost	2,143,948	2,079,655
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Contributions made	2,085,015	2,018,731
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Actuarial valuation date	12/31/2015	04/30/2015
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Actuarial cost method	Entry age	same
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Amortization period	Level percentage of pay, closed	same
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Remaining amortization period	25 years	26 years
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Asset valuation method	Market	same
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Actuarial assumptions:

Investment rate of return*	7.00%	same
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Projected salary increases*	5.50%	same
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*Includes inflation at	2.50%	same
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Cost-of-living adjustments	Tier 1: 3.00% per year, compounded Tier 2: 2.00% per year, simple	same
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STATEMENTS NO. 67 & 68 DISCLOSURE INFORMATION

Plan Membership	December 31, 2015
Inactive plan members or beneficiaries currently receiving benefits	39
Inactive plan members entitled to but not yet receiving benefits	2
Active plan members	<u>63</u>
Total	<u>104</u>

Net Pension Liability of the Village	
Total pension liability	68,223,666
Plan fiduciary net position	35,025,378
Village's net pension liability	33,198,288
Plan fiduciary net position as a percentage of the total pension liability	51.34%

Actuarial Assumptions	
Inflation	2.50%
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.

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	43,038,318	33,198,288	25,136,007



STATEMENTS NO. 67 & 68 DISCLOSURE INFORMATION (continued)

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

Total Pension Liability	December 31, 2015
Service cost	986,247
Interest	2,899,473
Changes of benefit terms	0
Differences between expected and actual experience	(292,474)
Changes of assumptions	3,228,932
Benefit payments, including refunds of member contributions	1,460,181
Net change in total pension liability	5,361,997
Total pension liability - beginning	62,861,669
Total pension liability - ending	68,223,666
 Plan Fiduciary Net Position	
Contributions - employer	2,085,015
Contributions - member	374,280
Net investment income	(194,320)
Benefit payments, including refunds of member contributions	1,460,181
Administrative expense	31,603
Other	0
Net change in plan fiduciary net position	773,191
Plan fiduciary net position - beginning	34,252,188
Plan fiduciary net position - ending	35,025,378
 Village's net pension liability	33,198,288
 Plan fiduciary net position as a percentage of the total pension liability	51.34%
 Covered-employee payroll	5,672,798
 Village's net pension liability as a percentage of covered-employee payroll	585.22%



STATEMENTS NO. 67 & 68 DISCLOSURE INFORMATION (continued)

Schedule of Village Contributions

	December 31, 2015
Actuarially determined contribution	2,085,014
Contributions in relation to the actuarially determined contribution	2,085,015
Contribution deficiency (Excess)	(1)
Covered-employee payroll	5,672,798
Contributions as a percentage of covered-employee payroll	36.75%

Notes to schedule

Valuation date December 31, 2015

Methods and assumptions used to determine contribution rates:

Actuarial cost method	Entry Age Normal
Amortization method	Level Percentage of Pay
Remaining amortization period	25 years
Asset valuation method	Market Value
Inflation	2.50%
Salary increases	5.50%
Investment rate of return	7.00%
Retirement age	50-70
Mortality	RP 2014 projected to 2016
Other	

Mortality rates were based on the RP 2014 Mortality Table (BCHA) projected to 2016 using improvement scale MP-2015. The other non-economic actuarial assumptions used in the December 31, 2015 valuation were based on the results of an actuarial experience study conducted by the Illinois Department of Insurance dated September 26, 2012.