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Village of Clarendon Hills
Firefighters' Pension Fund

May 1, 2016

Actuarial Valuation Report

At the request of the plan sponsor, this report summarizes the Village of Clarendon Hills Firefighters' Pension Fund as of May 1, 2016. The purpose of this report is to communicate the following results of the valuation:

- Funded Status;
- Recommended Village Contribution;

This report has been prepared in accordance with the applicable Federal and State laws. Consequently, it may not be appropriate for other purposes. Please contact Nyhart prior to disclosing this report to any other party or relying on its content for any purpose other than that explained above. Failure to do so may result in misrepresentation or misinterpretation of this report.

The results in this report were prepared using information provided to us by other parties. The census information has been provided to us by the employer. Asset information has been provided to us by the administrator. We have reviewed the provided data for reasonableness when compared to prior information provided, but have not audited the data. Where relevant data may be missing, we have made assumptions we believe to be reasonable. We are not aware of any significant issues with and have relied on the data provided. Any errors in the data provided may result in a different result than those provided in this report. A summary of the data used in the valuation is included in this report.

The actuarial assumptions and methods were chosen by the employer. In our opinion, all actuarial assumptions and methods are individually reasonable and in combination represent our best estimate of anticipated experience of the plan. 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); and
- changes in plan provisions or applicable law.

We did not perform an analysis of the potential range of future measurements due to the limited scope of our engagement. This report has been prepared in accordance with generally accepted actuarial principles and practice.

Neither Nyhart nor any of its employees have any relationship with the plan or its sponsor which could impair or appear to impair the objectivity of this report. To the extent that this report or any attachment concerns tax matters, it is not intended to be used and cannot be used by a taxpayer for the purpose of avoiding penalties that may be imposed by law.

The undersigned are compliant with the continuing education requirements of the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States and are available for any questions.

Nyhart

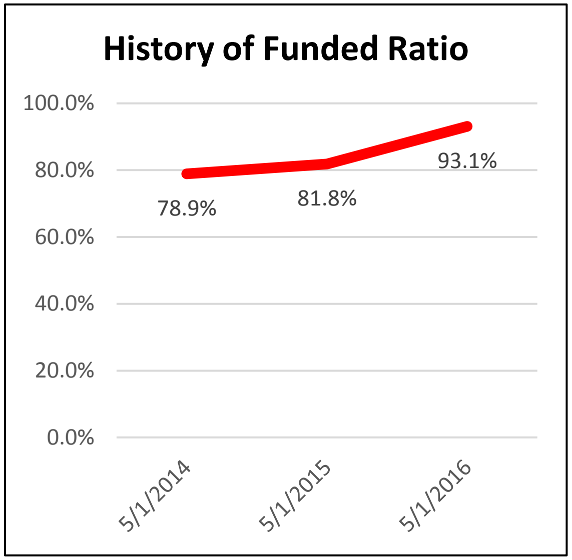
Michael Zurek, EA, FCA, MAAA

July 28, 2016
Date

Summary Results

The actuarial valuation's primary purpose is to produce a scorecard measure displaying the funding progress of the plan toward the ultimate goal of paying benefits at retirement. The accrued liability is based on the entry age normal level percentage of pay actuarial cost method.

	May 1, 2015	May 1, 2016
Funded Status Measures		
Accrued Liability	$1,441,327	$1,356,326
Actuarial Value of Assets	1,178,897	1,262,341
Unfunded Accrued Liability	$262,430	$93,985
Funded Percentage (AVA)	81.8%	93.1%
Funded percentage (MVA)	77.1%	88.2%
Cost Measures		
Recommended Total Village Contribution	$60,181	$50,730
Expected Employee Contributions	(12,152)	(12,337)
Recommended Net Village Contribution	$48,029	$38,393
- as a Percentage of Payroll	39.2%	30.2%
Asset Performance		
Market Value of Assets (MVA)	$1,111,800	$1,196,467
Actuarial Value of Assets (AVA)	$1,178,897	$1,262,341
Actuarial Value/Market Value	106.0%	105.5%
Participant Information		
Active Participants	1	1
Terminated Vested Participants	0	0
Retirees, Beneficiaries, and Disabled Participants	0	0
Total	1	1
Payroll	$122,400	$127,296



Changes since Prior Valuation and Key Notes

There have been no changes to the plan provisions since the last valuation.

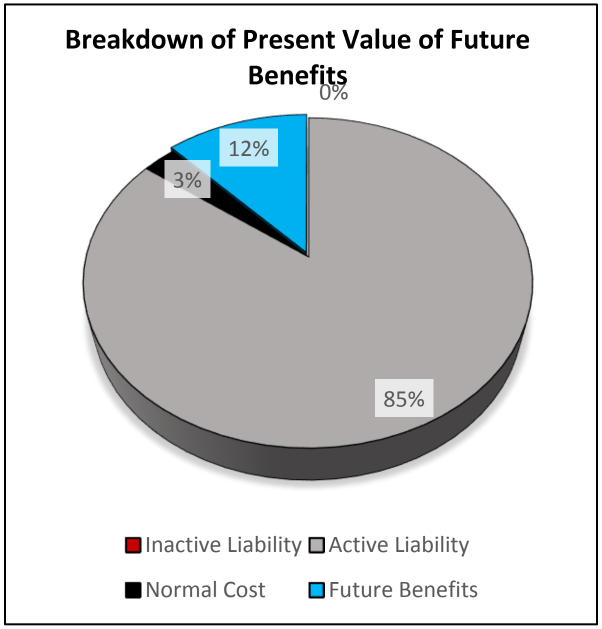
The mortality assumption was changed in 2016 from the RP-2000 mortality table with blue collar adjustment to the RP-2000 mortality table with blue collar adjustment projected to 2016 using scale AA. The change resulted in an increase in benefit obligations and an increase in the recommended contribution.

The assumed retirement rates were changed in 2016 to better reflect anticipated plan experience. The change resulted in a decrease in benefit obligations and a decrease in the recommended contribution.

Present Value of Future Benefits

The Present Value of Future Benefits represents the future benefits payable to the existing participants.

	May 1, 2016
Present Value of Future Benefits	
Active participants	
Retirement	$1,243,466
Disability	270,061
Death	46,338
Termination	0
Total active	$1,559,865
Inactive participants	
Retired participants	$0
Beneficiaries	0
Disabled participants	0
Terminated vested participants	0
Total inactive	$0
Total	$1,559,865
Present value of future payrolls	$575,147
Present value of future employee contributions	$54,380



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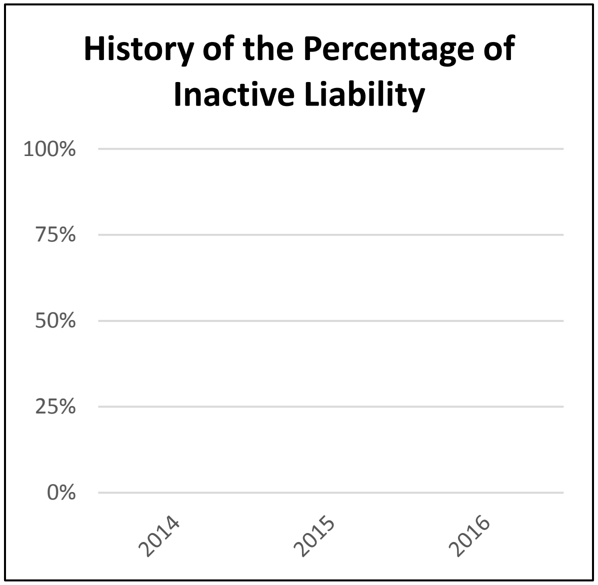
Accrued Liability

The Funding Liability measures the present value of benefits earned as of the valuation date, using a specified set of actuarial assumptions.

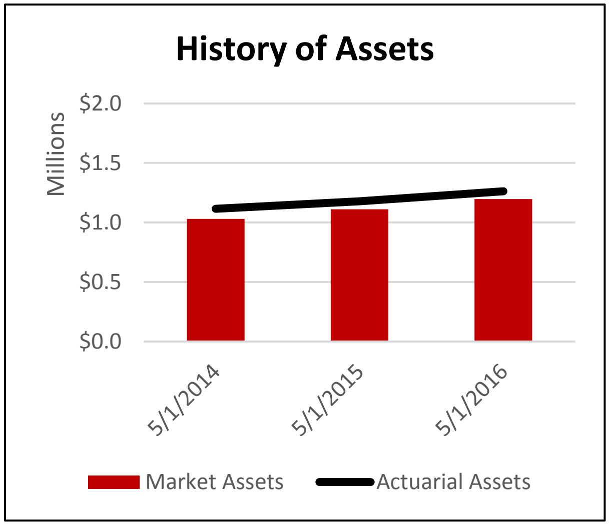
	May 1, 2016
Funding Liabilities	
Active participants	
Retirement	$1,106,220
Disability	213,059
Death	37,047
Termination	0
Total Active	$1,356,326
Inactive participants	
Retired participants	$0
Beneficiaries	0
Disabled participants	0
Terminated vested participants	0
Total Inactive	$0
Total	$1,356,326
Normal Cost	$45,049



Asset Information

The amount of assets backing the pension promise is the most significant driver of volatility and future costs within a pension plan. The investment performance of the assets directly offsets the ultimate cost.

	May 1, 2016
Market Value Reconciliation	
Market value of assets, beginning of prior year	$1,111,800
Contributions	
Employer contributions	$47,826
Member contributions	12,020
Total	$59,846
Investment income	31,458
Benefit payments	0
Administrative expenses	(6,637)
Market value of assets, beginning of current year	$1,196,467
Return on Market Value	2.8%
Actuarial value of assets	
Value at beginning of current year	$1,262,341



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Asset Information (continued)

Plan Assets are used to develop funded percentages and contribution requirements.

	May 1, 2016
1. Expected market value of assets	
(a) Market value of assets, beginning of prior year	$1,111,800
(b) Contributions	59,846
(c) Benefit payments	0
(d) Expenses	0
(e) Expected return	57,086
(f) Expected market value of assets, beginning of current year	$1,228,732
2. Market value of assets, beginning of current year	$1,196,467
3. Actual return on market value (net of expenses)	$24,821
4. Amount subject to phase in [(3)-(1e)]	($32,265)
5. Phase in of asset gain/(loss)	
(a) Current year [80% x ($32,265)]	($25,812)
(b) First prior year [60% x ($10,162)]	(6,097)
(c) Second prior year [40% x ($71,718)]	(28,687)
(d) Third prior year [20% x ($26,389)]	(5,278)
(e) Total phase-in	($65,874)
6. Actuarial value of assets, beginning of current year [(2)-(5e)]	$1,262,341
7. Return on actuarial value of assets	2.0%

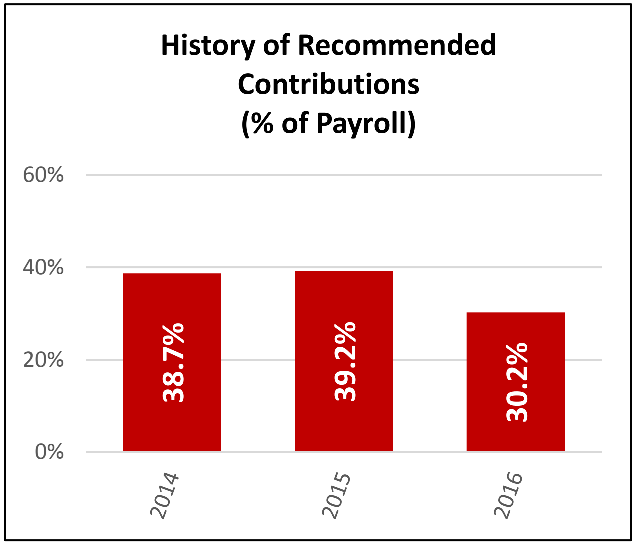
Reconciliation of Gain/Loss

	May 1, 2016
Liability (gain)/loss	
Actuarial liability, beginning of prior year	$1,441,327
Normal cost	21,696
Benefit payments	0
Expected interest	73,151
Expected actuarial liability, beginning of current year	$1,536,174
Actual actuarial liability, before changes	$1,519,075
Liability (gain)/loss	($17,099)
Asset (gain)/loss	
Actuarial value of assets, beginning of prior year	$1,178,897
Contributions	59,846
Benefit payments and expenses	0
Expected return	60,441
Expected actuarial value of assets, beginning of current year	$1,299,184
Actual actuarial value of assets, beginning of current year	$1,262,341
Asset (gain)/loss	$36,843
Total (gain)/loss	$19,744

Development of Recommended Contribution

The minimum required contribution is the annual amount necessary to fund the plan according to funding policies and/or applicable laws.

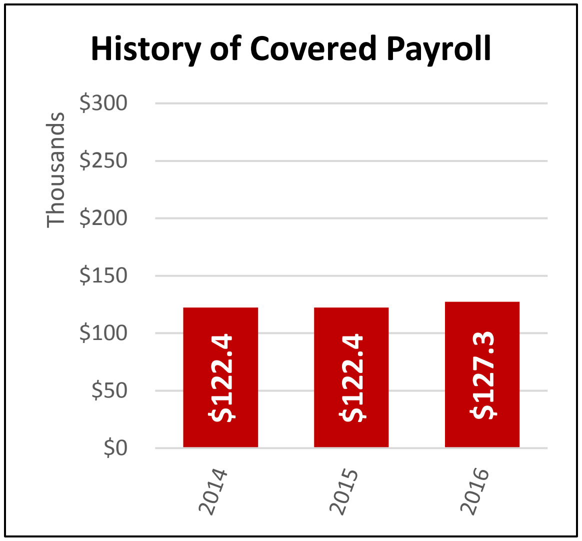
	May 1, 2016
Funded Position	
1. Entry age accrued liability	$1,356,326
2. Actuarial value of assets	1,262,341
3. Unfunded actuarial accrued liability (UAAL)	$93,985
Employer Contributions	
1. Normal Cost	$45,049
2. Administrative expenses	0
3. Amortization of UAAL	4,444
4. Applicable interest	1,237
5. Total recommended contribution	$50,730
6. Expected employee contributions	12,337
7. Net employer recommended contribution (5 – 6)	$38,393
8. Minimum contribution (Public Act 096-1495 Tax Levy Requirement)	$29,944
9. Final recommended contribution [max (7,8)]	$38,393
As a percentage of expected payroll	30.2%



Demographic Information

The foundation of a reliable actuarial report is the participant information provided by the plan sponsor. Monitoring trends in demographic information is crucial for long-term pension planning.

	May 1, 2016
Participant Counts	
Active Participants	1
Retired Participants	0
Beneficiaries	0
Disabled Participants	0
Terminated Vested Participants	0
Total Participants	1
Active Participant Demographics	
Average Age	61.0
Average Service	30.0
Average Compensation	$127,296
Covered Payroll	$127,296



Demographic Information (continued)

	May 1, 2016
Retiree Statistics	
Average Age	N/A
Average Monthly Benefit	N/A
Beneficiary Statistics	
Average Age	N/A
Average Monthly Benefit	N/A
Disabled Participants Statistics	
Average Age	N/A
Average Monthly Benefit	N/A
Terminated Participants Statistics	
Average Age	N/A

Participant Reconciliation

	Active	Terminated Vested	Disabled	Retired	Beneficiaries	Totals
Prior Year	1	0	0	0	0	1
Additions	0	0	0	0	0	0
Departures	0	0	0	0	0	0
Current Year	1	0	0	0	0	1

Active Participant Schedule

Active participant information grouped based on age and service.

Age Group	Years of Service										Total	Average Pay
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up		
Under 25											0	-
25 to 29											0	-
30 to 34											0	-
35 to 39											0	-
40 to 44											0	-
45 to 49											0	-
50 to 54											0	-
55 to 59											0	-
60 to 64								1			1	127,296
65 to 69											0	
70 & up											0	
Total	0	0	0	0	0	0	0	1	0	0	1	127,296

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Eligibility for Participation

Firefighters of the Village of Clarendon Hills

Accrual of Benefits

For employees hired prior to January 1, 2011, the normal retirement benefit is equal to 50% of the final salary plus 2.5% of any service over 20 years (with a maximum of 30) times the final salary. There is a minimum benefit of $1,000 per month. The benefit is paid as a 100% joint and survivor benefit with the spouse, children under 18, or dependent parents of the participants as the survivor.

For employees hired after or on January 1, 2011, the normal retirement benefit is equal to 2.5% of the final average salary times benefit service (maximum 30 years.) The benefit is paid as a 66.67% joint and survivor benefit with the spouse, children under 18, or dependent parents of the participants as the survivor.

Benefits

Normal Retirement

Eligibility

For employees hired prior to January 1, 2011, the normal retirement date is the first day of the month on or after completion of 20 years of service and attainment of age 50.

For employees hired after or on January 1, 2011, the normal retirement date is the first day of the month on or after completion of 10 years of service and attainment of age 55.

Benefit

Unreduced Accrued Benefit payable immediately.

Early Retirement

Eligibility

For employees hired prior to January 1, 2011 and terminating with less than 20 years of service
For employees hired after or on January 1, 2011 who has attained age 50 and has 10 years of service.

Benefit

For those hired prior to January 1, 2011 a reduced Accrued Benefit shall be paid at age 60 based on the schedule below.
For those hired after or on January 1, 2011 the Accrued Benefit is reduced by 0.5% for each month prior to age 55.

Benefit Service	Accrual Percentage	Benefit Service	Accrual Percentage
10	15.0%	15	30.0%
11	17.6%	16	33.6%
12	20.4%	17	37.4%
13	23.4%	18	41.4%
14	26.6%	19	45.6%

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Termination

Eligibility	Participants terminating before 20 years of service.
Benefit	Refund of Contributions

Disability In The Line of Duty

Eligibility	For participants who become disabled in the line of duty.
Benefit	The greater of 65% of the final salary or the accrued benefit

Disability Not In The Line of Duty

Eligibility	For participants who become disabled outside of the line of duty.
Benefit	50% of the final salary

Death In the Line of Duty

Eligibility	For participants who die in the line of duty.
Benefit	The benefit is 100% of final salary paid to the survivor.

Death Not In the Line of Duty

Eligibility	For participants who die outside of the line of duty.
Benefit	For those hired before 1/1/2011 with greater than 20 years of service, a benefit of 100% of the accrued benefit is paid to the survivor. For those with more than 10 years of service, but less than 20 years of service, a benefit of 54% of the final salary is paid to the survivor. For those hired after 1/1/2011 a benefit of 66.67% of the accrued benefit is paid to the survivor.

Compensation

Final Salary is the salary attached to the rank held on the last day of service, or one year prior to the last day, whichever is greater.

Final Average Salary is the average monthly salary obtained by dividing the total salary of the police office during the 96 consecutive months of service within the last 120 months of service in which the total salary was the highest by the number of months of service in that period. Salary will not exceed $106,800 adjusted from January 1, 2011 with the lesser of 3% and 50% of the CPI on November 1.

Credited Service

For Vesting and Benefit Accrual purposes, pension service credit is based on elapsed time from hire.

Employee Contributions

9.455% of Compensation

COLA

Eligibility	All Participants
Benefit	For employees hired prior to January 1, 2011 a compound COLA of 3% is granted each year after attainment of age 55 and 1 year of payments. For employees hired after or on January 1, 2011 a simple COLA of the lesser of 3% and 50% of the CPI on November 1 is granted each year after attainment of age 60 and 1 year of payments. For disabled employees, a simple COLA is available after attainment of age 60 and 1 year of payments. For employees hired prior to January 1, 2011 the COLA is 3%. For employees hired after January 1, 2011, the COLA is the lesser of 3% and 50% of the CPI on November 1.

Plan Provisions Not Included

We are not aware of any plan provisions not included in the valuation

Adjustments Made for Subsequent Events

We are not aware of any event following the measurement date and prior to the date of this report that would materially impact the results of this report.

Except where otherwise indicated, the following assumptions were selected by the plan sponsor with the concurrence of the actuary. Prescribed assumptions are based on the requirements of the relevant law, the Internal Revenue Code, and applicable regulation. The actuary was not able to evaluate the prescribed assumptions for reasonableness for the purpose of the measurement.

Valuation Date	May 1, 2016
Participant and Asset Information Collected as of	May 1, 2016
Actuarial Cost Method (CO)	Entry Age Method
Amortization Method (CO)	Closed level percentage of payroll amortization of 100% of the Unfunded Actuarial Accrued Liability using a 3.50% payroll growth assumption over the period ending on April 30, 2041 (25-year amortization in 2016)
Asset Method	5 year smoothing of asset gains and losses
Interest Rates (CO)	5.00%, net of investment and administrative expenses
Inflation (FE)	2.5%
Annual Pay Increases (FE)	3.50%
Ad-hoc Cost-of-living Increases	3.0% (1.25% for those hired after 1/1/2011)
Mortality Rates (FE)	
Healthy	RP-2000 Mortality Table with blue collar adjustment, projected to 2016 using Scale AA
Disabled	RP-2000 Disabled Mortality Table, projected to 2016 using Scale AA
	5% of deaths are assumed to be service related

Retirement Rates (FE)

Age	Rate
50-64	5%
65-69	50%
70	100%

Disability Rates (FE)

Recommended rates from the DOI experience study. Sample rates include:

Age	Rate
20	0.10%
30	0.14%
40	0.50%
50	1.00%

90% of disabilities are assumed to be in the line of duty

Termination Rates (FE)

Recommended rates from the DOI experience study. Sample rates include:

Age	Rate
20	9.00%
30	2.50%
40	1.00%
50	1.00%

Marital Status and Ages (FE)

80% of participants are assumed to be married with female spouses 3 years younger.

Expense Load

None. The assumed investment return is net of expenses.

Funding Policy (Recommended Contribution)

Equal to the normal cost plus and amortization of the unfunded liability to fund the plan to 100% as a level percentage of payroll by the end of the 2040 fiscal year using the Entry Age Normal cost method.

FE indicates an assumption representing an estimate of future experience
MD indicates an assumption representing observations of estimates inherent in market data
CO indicates as assumption representing a combination of an estimate of future experience and observations of market data

The actuarial report also shows the necessary items required for plan reporting and the any state requirements.

- ✓ Minimum contribution (Public Act 096-1495 Tax Levy Requirement)

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Minimum Contribution (Public Act 096-1495 Tax Levy Requirement)

	May 1, 2016
1. Accrued liability using projected unit credit cost method	$1,399,614
2. 90% of Accrued liability	$1,259,653
3. Actuarial value of assets	$1,262,341
4. Unfunded liability to be amortized [(2)-(3)]	($2,688)
5. Total normal cost using projected unit credit cost method	$41,250
6. Administrative expenses	0
7. 25 year level pay amortization of (4)	0
8. Applicable interest	1,031
9. Minimum contribution (5 + 6 + 7 + 8)	$42,281
10. Expected employee contributions	$12,337
11. Net employer minimum contribution (9 – 10)	$29,944

Actuarial Cost Method	Projected Unit Credit
Amortization Method	Closed level percentage of payroll amortization of 90% of Unfunded Actuarial Accrued Liability using a 3.50% payroll growth assumption over the period ending on April 30, 2041 (25 year amortization in 2016)
Asset Method	5 year smoothing of asset gains and losses
Interest Rates	5.00%, net of investment expenses

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