



***Village of Clarendon Hills  
Firefighters' Pension Fund***

*January 1, 2017  
Actuarial Valuation Report*

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At the request of the plan sponsor, this report summarizes the Village of Clarendon Hills Firefighters' Pension Fund as of January 1, 2017. The purpose of this report is to communicate the following results of the valuation:

- Funded Status;
- Recommended Village Contribution;
- Statutory Minimum 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:

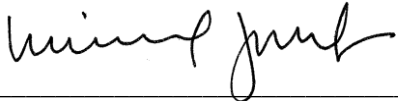
- plan experience differing from that anticipated by the economic or demographic assumptions;
- changes in economic or demographic assumptions;
- increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); 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

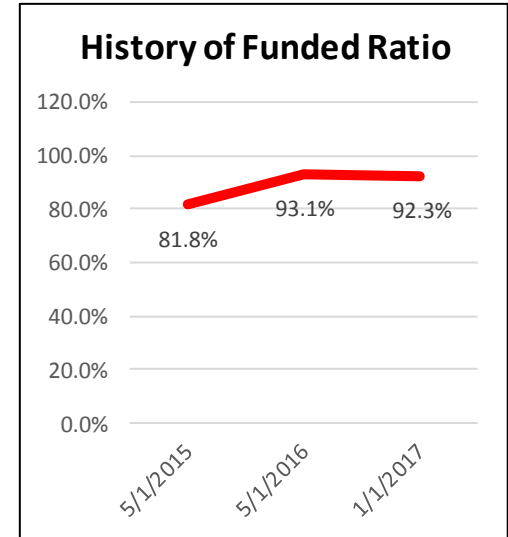
June 1, 2017

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 actuarial cost method.

	May 1, 2016	January 1, 2017
<b>Funded Status Measures</b>		
Accrued Liability	\$ 1,356,326	\$ 1,426,217
Actuarial Value of Assets	1,262,341	1,316,760
Unfunded Accrued Liability	\$ 93,985	\$ 109,457
Funded Percentage (AVA)	93.1%	92.3%
Funded percentage (MVA)	88.2%	87.2%
<b>Cost Measures</b>		
Recommended Total Pension Contribution	\$ 50,730	\$ 59,254
Expected Employee Contributions	(12,337)	(12,658)
Recommended Net Village Contribution	\$ 38,393	\$ 46,596
- as a Percentage of Payroll	30.2%	35.7%
<b>Asset Measures</b>		
Market Value of Assets (MVA)	\$ 1,196,467	\$ 1,243,703
Actuarial Value of Assets (AVA)	\$ 1,262,341	\$ 1,316,760
Actuarial Value/Market Value	105.5%	105.9%
<b>Participant Information</b>		
Active Participants	1	1
Terminated Vested Participants	-	-
Retirees, Beneficiaries, and Disabled Participants	-	-
Total	1	1
Payroll	\$ 127,296	\$ 130,604



## Changes since Prior Valuation and Key Notes

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

The mortality assumption was updated from the RP-2000 mortality table with blue collar adjustment projected to 2016 using scale AA to the RP-2000 mortality table with blue collar adjustment projected to 2017 using scale AA. The changes resulted in an increase in benefit obligations and an increase in the recommended contribution.

The interest rate assumption was changed to be net of investment expenses only. An explicit expense load equal to the anticipated administrative expenses during the current fiscal year is included in the recommended contribution.

The fiscal year was changed from May 1 through April 30 to the calendar year.

## Present Value of Future Benefits

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

January 1, 2017

### Present Value of Future Benefits

#### Active Participants

Retirement	\$ 1,317,647
Disability	247,051
Death	43,463
Termination	-
Total Active	\$ 1,608,161

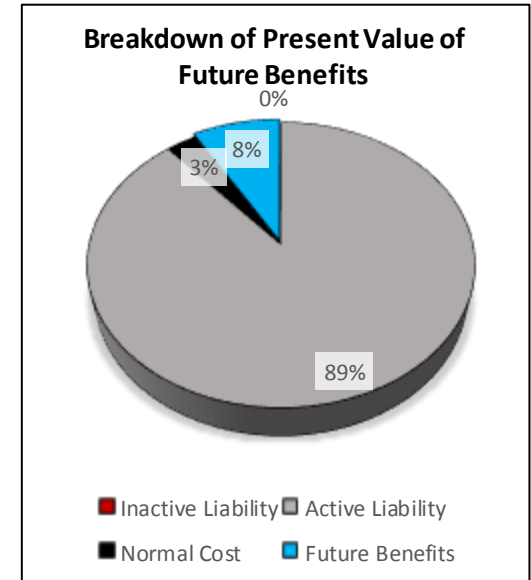
#### Inactive participants

Retired Participants	\$ -
Beneficiaries	-
Disabled Participants	-
Terminated Vested Participants	-
Total Inactive	\$ -

Total \$ 1,608,161

Present Value of Future Payrolls \$ 512,364

Present Value of Future Employee Contributions \$ 48,444



## Accrued Liability

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

January 1, 2017

### Funding Liabilities

#### Active Participants

Retirement	\$ 1,194,928
Disability	196,015
Death	35,274
Termination	-
Total Active	\$ 1,426,217

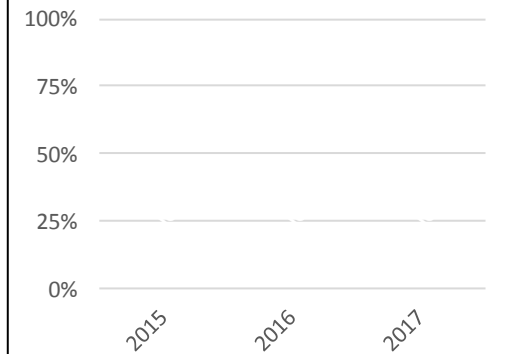
#### Inactive Participants

Retired Participants	\$ -
Beneficiaries	-
Disabled Participants	-
Terminated Vested Participants	-
Total Inactive	\$ -

Total \$ 1,426,217

Normal Cost \$ 46,378

### History of the Percentage of Inactive Liability





## 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.

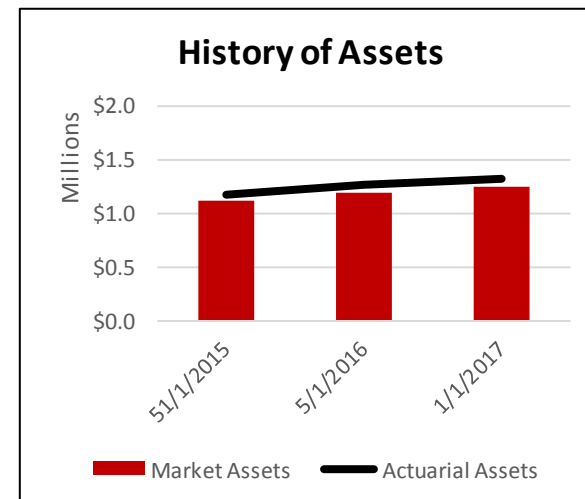
January 1, 2017

### Market Value Reconciliation

Market Value of Assets, Beginning of Prior Year	\$ 1,196,467
Contributions	
Employer Contributions	\$ 48,259
Member Contributions	8,438
Total	\$ 56,697
Investment Income	(3,385)
Benefit Payments	-
Administrative Expenses	(6,076)
Market Value of Assets, Beginning of Current Year	\$ 1,243,703
Return on Market Value	-0.3%

### Actuarial value of assets

Value at Beginning of Current Year	\$ 1,316,760
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**Asset Information (continued)**

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

	January 1, 2017
1. Expected Market Value of Assets	
(a) Market Value of Assets, Beginning of Prior Year	\$ 1,196,467
(b) Contributions	56,697
(c) Benefit Payments	-
(d) Administrative Expenses	(6,076)
(e) Expected Return	40,726
(f) Expected Market Value of Assets, Beginning of Current Year	<u>\$ 1,287,814</u>
2. Market Value of Assets, Beginning of Current Year	\$ 1,243,703
3. Actual Return on Market Value	\$ (3,385)
4. Amount Subject to Phase-in [(3)-(1e)]	\$ (44,111)
5. Phase-in of Asset Gain/(Loss)	
(a) Current Year [80% x \$ (44,111)]	\$ (35,289)
(b) First Prior Year [60% x \$ (32,265)]	(19,359)
(c) Second Prior Year [40% x \$ (10,162)]	(4,065)
(d) Third Prior Year [20% x \$ (71,718)]	(14,344)
(e) Total Phase-in	<u>\$ (73,057)</u>
6. Actuarial Value of Assets, Beginning of Current Year [(2)-(5e)]	\$ 1,316,760
7. Return on Actuarial Value of Assets	0.3%

**Reconciliation of Gain/Loss**

**January 1, 2017**

**Liability (Gain)/Loss**

Actuarial Liability, Beginning of Prior Year	\$ 1,356,326
Normal Cost	45,049
Benefit Payments	-
Expected Interest	46,212
Expected Actuarial Liability, Beginning of Current Year	\$ 1,432,571
Actual Actuarial Liability, Before Changes	\$ 1,422,785
Liability (Gain)/Loss	\$ (9,786)

**Asset (Gain)/Loss**

Actuarial Value of Assets, Beginning of Prior Year	\$ 1,262,341
Contributions	56,697
Benefit Payments and Administrative Expenses	(6,076)
Expected Return	42,922
Expected Actuarial Value of Assets, Beginning of Current Year	\$ 1,355,884
Actual Actuarial Value of Assets, Beginning of Current Year	\$ 1,316,760
Asset (Gain)/Loss	\$ 39,124

**Total (Gain)/Loss**

\$ 29,338

## Development of Recommended Contribution

The recommended contribution is the annual amount needed to fund the plan to 100% by the end of the 2040 fiscal year as a level percentage of payroll, using the Entry Age Normal actuarial cost method. The recommended contribution is subject to the State statutory minimum, which is the annual amount needed to fund the plan to 90% by the end of the 2040 fiscal year as a level percentage of payroll, using the Projected Unit Credit actuarial cost method.

January 1, 2017

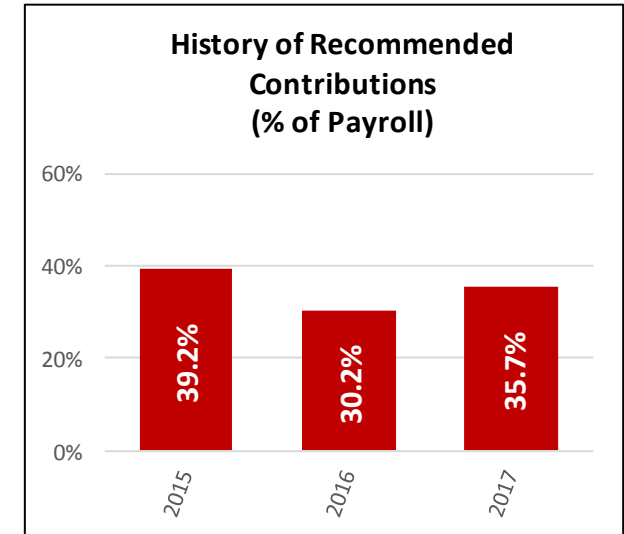
### Funded Position

1. Entry Age Normal Accrued Liability	\$ 1,426,217
2. 100% of Entry Age Normal Accrued Liability	\$ 1,426,217
3. Actuarial Value of Assets	1,316,760
4. Unfunded Actuarial Accrued Liability (UAAL) (2 – 3)	\$ 109,457

### Recommended Contribution

1. Normal Cost	\$ 46,378
2. Administrative Expenses	6,076
3. Amortization of UAAL	5,355
4. Applicable Interest	1,445
5. Total Recommended Contribution	\$ 59,254
6. Expected Employee Contributions	12,658
7. Net Employer Recommended Contribution (5 – 6)	\$ 46,596
8. Minimum Contribution (Public Act 096-1495 Tax Levy Requirement)	\$ 37,067
9. Final Recommended Contribution [max (7,8)]	\$ 46,596

As a Percentage of Expected Payroll 35.7%



## 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.

January 1, 2017

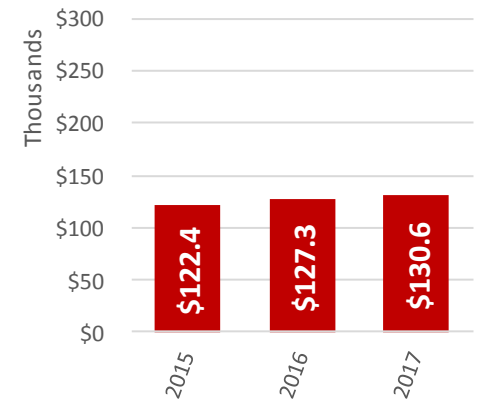
### Participant Counts

Active Participants	1
Retired Participants	-
Beneficiaries	-
Disabled Participants	-
Terminated Vested Participants	-
Total Participants	1

### Active Participant Demographics

Average Age	61.7
Average Service	30.7
Average Compensation	\$ 130,604
Covered Payroll	\$ 130,604

### History of Covered Payroll



Demographic Information (continued)

January 1, 2017

**Retiree Statistics**

Average Age	-
Average Monthly Pension Benefit	\$ -

**Beneficiary Statistics**

Average Age	-
Average Monthly Pension Benefit	\$ -

**Disabled Participants Statistics**

Average Age	-
Average Monthly Pension Benefit	\$ -

**Terminated Participants Statistics**

Average Age	-
Average Monthly Pension Benefit*	\$ -

\* Average monthly pension benefit does not include participants eligible for a return of contributions only.

Participant Reconciliation

	Active	Terminated Vested	Disabled	Retired	Beneficiaries	Totals
<b>Prior Year</b>	1	0	0	0	0	1
<b>Active</b>						
To Retired	0	0	0	0	0	0
To Disabled	0	0	0	0	0	0
To Terminated Vested	0	0	0	0	0	0
Terminated Nonvested (return of employee contributions)	0	0	0	0	0	0
<b>Terminated Vested</b>						
To Retired	0	0	0	0	0	0
Return of employee contributions	0	0	0	0	0	0
<b>Disabled</b>						
To Death with Beneficiary	0	0	0	0	0	0
Death without Beneficiary	0	0	0	0	0	0
<b>Retired</b>						
To Death with Beneficiary	0	0	0	0	0	0
Death without Beneficiary	0	0	0	0	0	0
<b>Additions</b>	0	0	0	0	0	0
<b>Departures</b>	0	0	0	0	0	0
<b>Current Year</b>	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	130,604
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	
65 to 69											0	
70 & up											0	130,604
Total	0	0	0	0	0	0	0	1	0	0	1	



## 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%

### 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	<p>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.</p> <p>For those hired after 1/1/2011 a benefit of 66.67% of the accrued benefit is paid to the survivor.</p>

### 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 officer 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.

<b>Valuation Date</b>	January 1, 2017
<b>Participant and Asset Information Collected as of</b>	January 1, 2017
<b>Actuarial Cost Method (CO)</b>	Entry Age Normal Cost Method
<b>Amortization Method – Recommended Contribution (CO)</b>	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 December 31, 2040 (24-year amortization in 2017)
<b>Asset Method</b>	5 year smoothing of asset gains and losses
<b>Interest Rates (CO)</b>	5.00%, net of investment expenses
<b>Inflation (FE)</b>	2.50%
<b>Annual Pay Increases (FE)</b>	3.50%
<b>Ad-hoc Cost-of-living Increases</b>	3.0% (1.25% for those hired after 1/1/2011)
<b>Mortality Rates (FE)</b>	
Healthy	RP-2000 Mortality Table with blue collar adjustment, projected to 2017 using Scale AA
Disabled	RP-2000 Disabled Mortality Table, projected to 2017 using Scale AA
	5% of deaths are assumed to be service related

**Retirement Rates (FE)**

<u>Age</u>	<u>Rate</u>
50-64	5%
65-69	50%
70	100%

**Disability Rates (FE)**

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

<u>Age</u>	<u>Rate</u>
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:

<u>Age</u>	<u>Rate</u>
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**

Equal to the administrative expenses paid in the prior year.

**Funding Policy**

Equal to the normal cost plus an 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 an 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)

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

**January 1, 2017**

1. Accrued liability using projected unit credit cost method	\$ 1,471,681
2. 90% of Accrued liability	\$ 1,324,513
3. Actuarial value of assets	<u>1,316,760</u>
4. Unfunded liability to be amortized [(2)-(3)]	\$ 7,753
5. Total normal cost using projected unit credit cost method	\$ 42,057
6. Administrative expenses	6,076
7. 25 year level pay amortization of (4)	379
8. Applicable interest	<u>1,213</u>
9. Minimum contribution (5 + 6 + 7 + 8)	\$ 49,725
10. Expected employee contributions	<u>12,658</u>
11. Net employer minimum contribution (9 – 10)	\$ 37,067

**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 December 31, 2040 (24-year amortization in 2017)

**Asset Method**

5 year smoothing of asset gains and losses

**Interest Rate**

5.00%, net of investment expenses