

CITY OF GENEVA
FIREFIGHTERS' PENSION FUND

ACTUARIAL VALUATION
AS OF MAY 1, 2019

CONTRIBUTIONS APPLICABLE TO THE
PLAN/FISCAL YEAR ENDING APRIL 30, 2021

GASB 67/68 DISCLOSURE INFORMATION
AS OF APRIL 30, 2019



FOSTER & FOSTER
ACTUARIES AND CONSULTANTS

August 9, 2019

Ms. Rita Kruse
Finance Manager
City of Geneva
22 South First Street
Geneva, IL 60134

Re: Actuarial Valuation Report (including GASB Statements No. 67 and No. 68) – City of Geneva Firefighters' Pension Fund

Dear Ms. Kruse:

We are pleased to present to the City this report of the annual actuarial valuation of the City of Geneva Firefighters' Pension Fund. Included are the related results for GASB Statements No. 67 and No. 68. The funding valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits and to develop the appropriate funding requirements for the applicable plan year. The calculation of the liability for GASB results was performed for the purpose of satisfying the requirements of GASB Statements No. 67 and No. 68. Use of the results for other purposes may not be applicable and produce significantly different results.

The valuation has been conducted in accordance with generally accepted actuarial principles and practices, including the applicable Actuarial Standards of Practice as issued by the Actuarial Standards Board, and reflects laws and regulations issued to date pursuant to the provisions of Article 4, Illinois Pension Code, as well as applicable federal laws and regulations. In our opinion, the assumptions used in this valuation, as adopted by the Board of Trustees, represent reasonable expectations of anticipated plan experience. Future actuarial measurements may differ significantly from the current measurements presented in this report for a variety of reasons including: changes in applicable laws, changes in plan provisions, changes in assumptions, or plan experience differing from expectations. Due to the limited scope of the valuation, we did not perform an analysis of the potential range of such future measurements.

In conducting the valuation, we have relied on personnel, plan design, and asset information supplied by the City, financial reports prepared by the custodian bank and the actuarial assumptions and methods described in the Actuarial Assumptions section of this report. While we cannot verify the accuracy of all this information, the supplied information was reviewed for consistency and reasonableness. As a result of this review, we have no reason to doubt the substantial accuracy of the information and believe that it has produced appropriate results. This information, along with any adjustments or modifications, is summarized in various sections of this report.

The total pension liability, net pension liability, and certain sensitivity information shown in the GASB results are based on an actuarial valuation performed as of the valuation date.

The undersigned is familiar with the immediate and long-term aspects of pension valuations and meets the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein. All of the sections of this report are considered an integral part of the actuarial opinions.

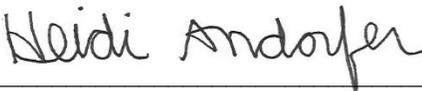
To our knowledge, no associate of Foster & Foster, Inc. working on valuations of the program has any direct financial interest or indirect material interest in the City of Geneva, nor does anyone at Foster & Foster, Inc. act as a member of the Board of Trustees of the City of Geneva Firefighters' Pension Fund. Thus, there is no relationship existing that might affect our capacity to prepare and certify this actuarial report.

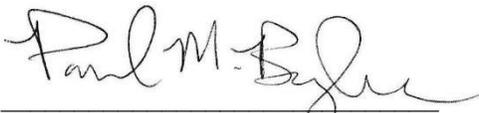
If there are any questions, concerns, or comments about any of the items contained in this report, please contact us at 630-620-0200.

Respectfully submitted,

Foster & Foster, Inc.

By: 
Jason L. Franken, FSA, EA, MAAA

By: 
Heidi E. Andorfer, FSA, EA, MAAA

By: 
Paul M. Baugher, FSA, EA, MAAA

JLF/lke
Enclosures

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SUMMARY OF REPORT

The regular annual actuarial valuation of the City of Geneva Firefighters' Pension Fund, performed as of May 1, 2019, has been completed and the results are presented in this Report. The contribution amounts set forth herein are applicable to the plan/fiscal year ended April 30, 2021.

The contribution requirements, compared with those set forth in the May 1, 2018 actuarial report, are as follows:

Valuation Date Applicable to Fiscal Year Ending	5/1/2019 <u>4/30/2021</u>	5/1/2018 <u>4/30/2020</u>
Total Recommended Contribution	\$956,334	\$870,277
% of Projected Annual Payroll	47.6%	46.7%
Member Contributions (Est.)	189,906	176,028
% of Projected Annual Payroll	9.5%	9.5%
City Recommended Contribution	766,428	694,249
% of Projected Annual Payroll	38.1%	37.2%

As you can see, the Total Recommended Contribution shows an increase when compared to the results determined in the May 1, 2018 actuarial valuation report. The increase is attributable to the increase in normal cost resulting from an increase in active membership, unfavorable experience realized by the plan during the year, and the natural increase in the amortization payment due to the payroll growth assumption.

Sources of unfavorable experience included an investment return of 4.11% (Actuarial Asset Basis) which fell short of the 7.25% assumption and less inactive mortality than expected. These losses were offset in part by a gain associated with an average salary increase of 4.62% which fell short of the 5.00% assumption.

CHANGES SINCE PRIOR VALUATION

Plan Changes Since Prior Valuation

No plan changes have occurred since the prior valuation.

Actuarial Assumption/Method Changes Since Prior Valuation

Based on the results of the 2017 Department of Insurance experience study, the following assumption changes were made:

- Updated retirement, termination and disability rate tables.
- Updated the percentage of disabilities assumed to be in the line of duty from 90% to 80%.
- Updated the percentage of deaths assumed to be in the line of duty from 5% to 20%.

In addition, mortality rates were updated to reflect the PubS-2010 tables.

There were no method changes since the prior valuation.

COMPARATIVE SUMMARY OF PRINCIPAL VALUATION RESULTS

	New Assump <u>5/1/2019</u>	Old Assump <u>5/1/2019</u>	<u>5/1/2018</u>
A. Participant Data			
Number Included			
Actives	21	21	20
Service Retirees	11	11	11
Beneficiaries	1	1	1
Disability Retirees	0	0	0
Terminated Vested	<u>5</u>	<u>5</u>	<u>4</u>
Total	38	38	36
Total Annual Payroll	\$2,008,525	\$2,008,525	\$1,861,742
Payroll Under Assumed Ret. Age	2,008,525	2,008,525	1,861,742
Annual Rate of Payments to:			
Service Retirees	779,983	779,983	757,166
Beneficiaries	16,952	16,952	16,952
Disability Retirees	0	0	0
Terminated Vested	3,287	3,287	3,287
B. Assets			
Actuarial Value	16,031,027	16,031,027	15,445,220
Market Value	15,169,457	15,169,457	15,085,968
C. Liabilities			
Present Value of Benefits			
Actives			
Retirement Benefits	13,354,334	12,791,004	11,734,495
Disability Benefits	1,545,869	1,957,120	1,838,199
Death Benefits	158,139	214,062	204,940
Vested Benefits	584,252	574,629	560,987
Service Retirees	12,168,685	11,902,946	11,710,646
Beneficiaries	55,632	55,483	58,468
Disability Retirees	0	0	0
Terminated Vested	<u>38,070</u>	<u>37,604</u>	<u>37,026</u>
Total	27,904,981	27,532,848	26,144,761

C. Liabilities - (Continued)	New Assump <u>5/1/2019</u>	Old Assump <u>5/1/2019</u>	<u>5/1/2018</u>
Present Value of Future Salaries	22,467,283	21,046,497	19,924,774
Present Value of Future Member Contributions	2,124,282	1,989,946	1,883,887
Normal Cost (Retirement)	373,617	356,978	333,528
Normal Cost (Disability)	79,494	111,042	103,154
Normal Cost (Death)	10,105	11,476	10,986
Normal Cost (Vesting)	<u>26,610</u>	<u>26,650</u>	<u>25,749</u>
Total Normal Cost	489,826	506,146	473,417
Present Value of Future Normal Costs	5,056,497	4,976,980	4,803,128
Accrued Liability (Retirement)	9,382,978	9,215,762	8,283,686
Accrued Liability (Disability)	758,213	855,447	786,852
Accrued Liability (Death)	51,100	101,953	93,028
Accrued Liability (Vesting)	393,806	386,673	371,927
Accrued Liability (Inactives)	<u>12,262,387</u>	<u>11,996,033</u>	<u>11,806,140</u>
Total Actuarial Accrued Liability	22,848,484	22,555,868	21,341,633
Unfunded Actuarial Accrued Liability (UAAL)	6,817,457	6,524,841	5,896,413
Funded Ratio (AVA / AL)	70.2%	71.1%	72.4%

	New Assump <u>5/1/2019</u>	Old Assump <u>5/1/2019</u>	<u>5/1/2018</u>
D. Actuarial Present Value of Accrued Benefits			
Vested Accrued Benefits			
Inactives	12,262,387	11,996,033	11,806,140
Actives	3,014,719	3,273,136	3,462,236
Member Contributions	<u>1,933,865</u>	<u>1,933,865</u>	<u>1,749,729</u>
Total	17,210,971	17,203,034	17,018,105
Non-vested Accrued Benefits	<u>458,263</u>	<u>501,925</u>	<u>179,471</u>
Total Present Value Accrued Benefits	17,669,234	17,704,959	17,197,576
Funded Ratio (MVA / PVAB)	85.9%	85.7%	87.7%
Increase (Decrease) in Present Value of Accrued Benefits Attributable to:			
Plan Amendments	0	0	
Assumption Changes	(35,725)	0	
New Accrued Benefits	0	79,256	
Benefits Paid	0	(790,058)	
Interest	0	1,218,185	
Other	<u>0</u>	<u>0</u>	
Total	(35,725)	507,383	

	New Assump	Old Assump	
Valuation Date	5/1/2019	5/1/2019	5/1/2018
Applicable to Fiscal Year Ending	<u>4/30/2021</u>	<u>4/30/2021</u>	<u>4/30/2020</u>
E. Pension Cost			
Normal Cost ¹	\$525,338	\$542,842	\$507,740
% of Total Annual Payroll ¹	26.2	27.0	27.3
Administrative Expenses ¹	19,506	19,506	18,774
% of Total Annual Payroll ¹	1.0	1.0	1.0
Payment Required to Amortize Unfunded Actuarial Accrued Liability over 22 years (as of 5/1/2019) ¹	411,490	393,828	343,763
% of Total Annual Payroll ¹	20.4	19.6	18.4
Total Recommended Contribution	956,334	956,176	870,277
% of Total Annual Payroll ¹	47.6	47.6	46.7
Expected Member Contributions ¹	189,906	189,906	176,028
% of Total Annual Payroll ¹	9.5	9.5	9.5
Expected City Contribution	766,428	766,270	694,249
% of Total Annual Payroll ¹	38.1	38.1	37.2
F. Past Contributions			
Plan Years Ending:	<u>4/30/2019</u>		
Total Recommended Contribution	733,016		
City	543,009		
Actual Contributions Made:			
Members (excluding buyback)	190,007		
City	<u>569,824</u>		
Total	759,831		
G. Net Actuarial (Gain)/Loss	454,329		

¹ Contributions developed as of 5/1/2019 displayed above have been adjusted to account for assumed interest.

H. Schedule Illustrating the Amortization of the Total Unfunded Actuarial Accrued Liability as of:

<u>Year</u>	<u>Projected Unfunded Accrued Liability</u>
2019	6,817,457
2020	6,900,232
2021	6,968,434
2026	7,010,391
2031	6,274,817
2036	4,216,239
2041	0

I. (i) 3 Year Comparison of Actual and Assumed Salary Increases

		<u>Actual</u>	<u>Assumed</u>
Year Ended	4/30/2019	4.62%	5.00%
Year Ended	4/30/2018	4.73%	5.00%
Year Ended	4/30/2017	N/A	N/A

(ii) 3 Year Comparison of Investment Return on Actuarial Value

		<u>Actual</u>	<u>Assumed</u>
Year Ended	4/30/2019	4.11%	7.25%
Year Ended	4/30/2018	4.87%	7.25%
Year Ended	4/30/2017	N/A	N/A

DEVELOPMENT OF MAY 1, 2019 AMORTIZATION PAYMENT

(1) Unfunded Actuarial Accrued Liability as of May 1, 2018	\$5,896,413
(2) Sponsor Normal Cost developed as of May 1, 2018	297,389
(3) Expected administrative expenses for the year ended April 30, 2019	17,505
(4) Expected interest on (1), (2) and (3)	449,685
(5) Sponsor contributions to the System during the year ended April 30, 2019	569,824
(6) Expected interest on (5)	20,656
(7) Expected Unfunded Actuarial Accrued Liability as of April 30, 2019, (1)+(2)+(3)+(4)-(5)-(6)	6,070,512
(8) Change to UAAL due to Assumption Change	292,616
(9) Change to UAAL due to Actuarial (Gain)/Loss	454,329
(10) Unfunded Accrued Liability as of May 1, 2019	6,817,457
(11) UAAL Subject to Amortization (100% AAL less Actuarial Assets)	6,817,457

<u>Date</u> <u>Established</u>	<u>Years</u> <u>Remaining</u>	<u>5/1/2019</u> <u>Amount</u>	<u>Amortization</u> <u>Amount</u>
5/1/2019	22	6,817,457	383,674

DETAILED ACTUARIAL (GAIN)/LOSS ANALYSIS

(1) Unfunded Actuarial Accrued Liability (UAAL) as of May 1, 2018	\$5,896,413
(2) Expected UAAL as of May 1, 2019	6,070,512
(3) Summary of Actuarial (Gain)/Loss, by component:	
Investment Return (Actuarial Asset Basis)	483,802
Salary Increases	(103,002)
Active Decrements	(79,946)
Inactive Mortality	78,713
Other	<u>74,762</u>
Change in UAAL due to (Gain)/Loss	454,329
Assumption Changes	<u>292,616</u>
(4) Actual UAAL as of May 1, 2019	\$6,817,457

RECONCILIATION OF CHANGES IN CONTRIBUTION REQUIREMENT

(1) Contribution Determined as of May 1, 2018	\$	694,249
(2) Summary of Contribution Impact by component:		
Change in Normal Cost		35,102
Change in Assumed Administrative Expense		732
Investment Return (Actuarial Asset Basis)		29,201
Salary Increases		(6,217)
New Entrants		-
Active Decrements		(4,825)
Inactive Mortality		4,751
Data Corrections		-
Contributions (More) or Less than Recommended		(1,677)
Increase in Amortization Payment Due to Payroll Growth Assumption		17,188
Change in Expected Member Contributions		(13,878)
Assumption Change		158
Other		<u>11,644</u>
Total Change in Contribution		72,179
(3) Contribution Determined as of May 1, 2019		\$766,428

STATUTORY MINIMUM REQUIRED CONTRIBUTION

Contribution requirements shown on this page are calculated according to statutory minimum funding requirements of the Illinois Pension Code. We do not believe this method is sufficient to fund future benefits; as such, we recommend funding according to the contributions developed in Section E of this report.

	New Assump	Old Assump	
Valuation Date	5/1/2019	5/1/2019	5/1/2018
Applicable to Fiscal Year Ending	<u>4/30/2021</u>	<u>4/30/2021</u>	<u>4/30/2020</u>
Actuarial Accrued Liability (PUC)	21,973,083	21,863,282	20,642,440
Actuarial Value of Assets	<u>16,031,027</u>	<u>16,031,027</u>	<u>15,445,220</u>
Unfunded Actuarial Accrued Liability (UAAL)	5,942,056	5,832,255	5,197,220
UAAL Subject to Amortization	3,744,748	3,645,927	3,132,976
Normal Cost ¹	\$605,048	\$629,739	\$589,408
% of Total Annual Payroll ¹	30.1	31.4	31.7
Administrative Expenses ¹	19,506	19,506	18,774
% of Total Annual Payroll ¹	1.0	1.0	1.0
Payment Required to Amortize Unfunded Actuarial Accrued Liability over 21 years (as of 5/1/2019) ¹	234,481	228,293	189,101
% of Total Annual Payroll ¹	11.7	11.3	10.1
Total Required Contribution	859,035	877,538	797,283
% of Total Annual Payroll ¹	42.8	43.7	42.8
Expected Member Contributions ¹	189,906	189,906	176,028
% of Total Annual Payroll ¹	9.5	9.5	9.5
Expected City Contribution	669,129	687,632	621,255
% of Total Annual Payroll ¹	33.3	34.2	33.3

Assumptions and Methods:

Actuarial Cost Method	Projected Unit Credit
Amortization Method	90% Funding by 2040

All other assumptions and methods are as described in the Actuarial Assumptions and Methods section.

¹ Contributions developed as of 5/1/2019 displayed above have been adjusted to account for assumed interest.

PROJECTION OF BENEFIT PAYMENTS

Year	Payments for Current Actives	Payments for Current Inactives	Total Payments
2019	30,928	802,387	833,315
2020	59,500	807,790	867,290
2021	90,250	823,818	914,068
2022	132,885	851,444	984,329
2023	180,092	870,173	1,050,265
2024	240,276	888,826	1,129,102
2025	304,990	907,248	1,212,238
2026	398,738	925,268	1,324,006
2027	515,940	942,699	1,458,639
2028	650,315	959,349	1,609,664
2029	778,203	978,218	1,756,421
2030	918,613	992,865	1,911,478
2031	1,057,598	1,006,283	2,063,881
2032	1,199,695	1,018,386	2,218,081
2033	1,332,637	1,029,086	2,361,723
2034	1,459,796	1,038,286	2,498,082
2035	1,582,521	1,045,831	2,628,352
2036	1,728,077	1,051,527	2,779,604
2037	1,852,926	1,055,132	2,908,058
2038	1,974,340	1,056,323	3,030,663
2039	2,105,246	1,054,723	3,159,969
2040	2,219,627	1,049,893	3,269,520
2041	2,328,029	1,041,362	3,369,391
2042	2,444,241	1,028,629	3,472,870
2043	2,566,225	1,011,189	3,577,414
2044	2,666,180	988,594	3,654,774
2045	2,757,297	960,562	3,717,859
2046	2,851,229	927,002	3,778,231
2047	2,970,126	888,019	3,858,145
2048	3,054,426	843,908	3,898,334
2049	3,131,696	795,175	3,926,871
2050	3,199,893	742,491	3,942,384
2051	3,261,330	686,720	3,948,050
2052	3,315,375	628,875	3,944,250
2053	3,361,642	570,016	3,931,658
2054	3,398,951	511,221	3,910,172
2055	3,428,532	453,543	3,882,075
2056	3,448,671	397,926	3,846,597
2057	3,459,700	345,137	3,804,837
2058	3,459,258	295,788	3,755,046

ACTUARIAL ASSUMPTIONS AND METHODS

Interest Rate	7.25% per year compounded annually, net of investment related expenses. This is supported by the target asset allocation of the trust and the expected long-term return by asset class.
Mortality Rate	<p><i>Active Lives:</i> PubS-2010 Employee mortality, projected 5 years past the valuation date with Scale MP-2018. 20% of active deaths are assumed to be in the line of duty.</p> <p><i>Inactive Lives:</i> PubS-2010 Healthy Retiree mortality, projected 5 years past the valuation date with Scale MP-2018.</p> <p><i>Beneficiaries:</i> PubS-2010 Survivor mortality, projected 5 years past the valuation date with Scale MP-2018.</p> <p><i>Disabled Lives:</i> PubS-2010 Disabled mortality, projected 5 years past the valuation date with Scale MP-2018.</p> <p>The mortality assumptions sufficiently accommodate anticipated future mortality improvements.</p>
Retirement Age	See table later in this section. This is based on a 2017 experience study performed for the State of Illinois Department of Insurance.
Disability Rate	See table later in this section. 80% of the disabilities are assumed to be in the line of duty. This is based on a 2017 experience study performed for the State of Illinois Department of Insurance.
Termination Rate	See table later in this section. This is based on a 2017 experience study performed for the State of Illinois Department of Insurance.
Inflation	2.50%.
Cost-of-Living Adjustment	<p><u>Tier 1:</u> 3.00% per year after age 55. Those that retire prior to age 55 receive an increase of 1/12 of 3.00% for each full month since benefit commencement upon reaching age 55.</p> <p><u>Tier 2:</u> 1.25% per year after the later of attainment of age 60 or first anniversary of retirement.</p>

Salary Increases	5.00%.
Marital Status	80% of Members are assumed to be married.
Spouse's Age	Males are assumed to be three years older than females.
Funding Method	Entry Age Normal Cost Method.
Actuarial Asset Method	Investment gains and losses are smoothed over a 5-year period.
Funding Policy Amortization Method	The UAAL is amortized according to a Level Percentage of Payroll method over a period ending in 2041. The initial amortization amount is 100% of the Accrued Liability less the Actuarial Value of Assets.
Payroll Growth	5.00% per year.
Administrative Expenses	Expenses paid out of the fund other than investment-related expenses are assumed to be equal to those paid in the previous year.

Decrement Tables

% Terminating During the Year		% Becoming Disabled During the Year		% Retiring During the Year (Tier 1)		% Retiring During the Year (Tier 2)	
Age	Rate	Age	Rate	Age	Rate	Age	Rate
20	7.00%	20	0.010%	50-51	10%	50-54	3%
25	5.80%	25	0.016%	52-53	12%	55	30%
30	3.50%	30	0.068%	54-55	15%	56-59	20%
35	1.75%	35	0.220%	56-59	20%	60-62	25%
40	1.10%	40	0.420%	60-62	25%	63-64	33%
45	1.00%	45	0.650%	63-64	33%	65-69	50%
50	1.00%	50	0.900%	65-69	50%	70+	100%
55+	0.00%	55	1.240%	70+	100%		
		60	1.580%				

GLOSSARY

Total Annual Payroll is the projected annual rate of pay for the fiscal year following the valuation date of all covered members.

Present Value of Benefits is the single sum value on the valuation date of all future benefits to be paid to current Members, Retirees, Beneficiaries, Disability Retirees and Vested Terminations.

Normal (Current Year's) Cost is the current year's cost for benefits yet to be funded.

Unfunded Accrued Liability is a liability which arises when a pension plan is initially established or improved and such establishment or improvement is applicable to all years of past service.

Total Recommended Contribution is equal to the Normal Cost plus an amount sufficient to amortize the Unfunded Accrued Liability over a period ending in 2041. The recommended amount is adjusted for interest according to the timing of contributions during the year.

Entry Age Normal Cost Method - Under this method, the normal cost is the sum of the individual normal costs for all active participants. For an active participant, the normal cost is the participant's normal cost accrual rate, multiplied by the participant's current compensation.

- (a) The normal cost accrual rate equals:
 - (i) the present value of future benefits for the participant, determined as of the participant's entry age, divided by
 - (ii) the present value of the compensation expected to be paid to the participant for each year of the participant's anticipated future service, determined as of the participant's entry age.
- (b) In calculating the present value of future compensation, the salary scale is applied both retrospectively and prospectively to estimate compensation in years prior to and subsequent to the valuation year based on the compensation used for the valuation.
- (c) The accrued liability is the sum of the individual accrued liabilities for all participants and beneficiaries. A participant's accrued liability equals the present value, at the participant's attained age, of future benefits less the present value at the participant's attained age of the individual normal costs payable in the future. A beneficiary's accrued liability equals the present value, at the beneficiary's attained age, of future benefits. The unfunded accrued liability equals the total accrued liability less the actuarial value of assets.
- (d) Under this method, the entry age used for each active participant is the participant's age at the time he or she would have commenced participation if the plan had always been in existence under current terms, or the age as of which he or she first earns service credits for purposes of benefit accrual under the current terms of the plan.

DISCUSSION OF RISK

ASOP No. 51, Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions, states that the actuary should identify risks that, in the actuary's professional judgment, may reasonably be anticipated to significantly affect the plan's future financial condition.

Throughout this report, actuarial results are determined under various assumption scenarios. These results are based on the premise that all future plan experience will align with the plan's actuarial assumptions; however, there is no guarantee that actual plan experience will align with the plan's assumptions. Whenever possible, the recommended assumptions in this report reflect conservatism to allow for some margin of unfavorable future plan experience. However, it is still possible that actual plan experience will differ from anticipated experience in an unfavorable manner that will negatively impact the plan's funded position.

Below are examples of ways in which plan experience can deviate from assumptions and the potential impact of that deviation. Typically, this results in an actuarial gain or loss representing the current-year financial impact on the plan's unfunded liability of the experience differing from assumptions; this gain or loss is amortized over a period of time determined by the plan's amortization method. When assumptions are selected that adequately reflect plan experience, gains and losses typically offset one another in the long term, resulting in a relatively low impact on the plan's contribution requirements associated with plan experience. When assumptions are too optimistic, losses can accumulate over time and the plan's amortization payment could potentially grow to an unmanageable level.

- Investment Return: When the rate of return on the Actuarial Value of Assets falls short of the assumption, this produces a loss representing assumed investment earnings that were not realized. Further, it is unlikely that the plan will experience a scenario that matches the assumed return in each year as capital markets can be volatile from year to year. Therefore, contribution amounts can vary in the future.
- Salary Increases: When a plan participant experiences a salary increase that was greater than assumed, this produces a loss representing the cost of an increase in anticipated plan benefits for the participant as compared to the previous year. The total gain or loss associated with salary increases for the plan is the sum of salary gains and losses for all active participants.
- Payroll Growth: The plan's payroll growth assumption, if one is used, causes a predictable annual increase in the plan's amortization payment in order to produce an amortization payment that remains constant as a percentage of payroll if all assumptions are realized. If payroll does not increase according to the plan's payroll growth assumption, the plan's amortization payment can increase significantly as a percentage of payroll even if all assumptions other than the payroll growth assumption are realized.
- Demographic Assumptions: Actuarial results take into account various potential events that could happen to a plan participant, such as retirement, termination, disability, and death. Each of these potential events is assigned a liability based on the likelihood of the event and the financial consequence of the event for the plan. Accordingly, actuarial liabilities reflect a blend of financial consequences associated with various possible outcomes (such as retirement at one of various possible ages). Once the outcome is known (e.g. the participant retires) the liability is adjusted to reflect the known outcome. This adjustment produces a gain or loss depending on whether the outcome was more or less favorable than other outcomes that could have occurred.

- Contribution risk: Risks associated with the items outlined above will inherently create varying liabilities and assets resulting in volatility in contributions. Actuarial losses on assets and liabilities will lead to higher contribution amounts, while actuarial gains on assets and liabilities will lead to lower contribution amounts.

Impact of Plan Maturity on Risk

For newer pension plans, most of the participants and associated liabilities are related to active members who have not yet reached retirement age. As pension plans continue in operation and active members reach retirement ages, liabilities begin to shift from being primarily related to active members to being shared amongst active and retired members. Plan maturity is a measure of the extent to which this shift has occurred. It is important to understand that plan maturity can have an impact on risk tolerance and the overall risk characteristics of the plan. For example, plans with a large amount of retired liability do not have as long of a time horizon to recover from losses (such as losses on investments due to lower than expected investment returns) as plans where the majority of the liability is attributable to active members. For this reason, less tolerance for investment risk may be warranted for highly mature plans with a substantial inactive liability. Similarly, mature plans paying substantial retirement benefits resulting in a small positive or net negative cash flow can be more sensitive to near term investment volatility, particularly if the size of the fund is shrinking, which can result in less assets being available for investment in the market.

To assist with determining the maturity of the plan, we have provided some relevant metrics in table following titled “Plan Maturity Measures and Other Risk Metrics”. Highlights of this information are discussed below:

- The Support Ratio, determined as the ratio of active to inactive members has decreased from 181.8% to 123.5% over the last three years, meaning the plan has been rapidly maturing.
- The Accrued Liability Ratio, determined as the ratio of the Inactive Accrued Liability, which is the accrued liability associated with those receiving payments to the Total Accrued Liability, is 53.7%. With a plan of this maturity, losses due to lower than expected investment returns or demographic factors will need to be made up for over a shorter time horizon than would be needed for a less mature plan.
- The Funded Ratio, determined as the ratio of the Actuarial Value of Assets to the Total Accrued Liability has decreased from 75.1% on May 1, 2017 to 70.2% on May 1, 2019 due mainly to plan experience including the transition of actuarial services.

It is important to note that the actuary has identified the risks above as the most significant risks based on the characteristics of the plan and the nature of the project, however, it is not an exhaustive list of potential risks that could be considered. Additional advanced modelling, as well as the identification of additional risks, can be provided at the request of the reader.

PLAN MATURITY MEASURES AND OTHER RISK METRICS

	<u>5/1/2017</u>	<u>5/1/2018</u>	<u>5/1/2019</u>
<u>Support Ratio</u>			
Total Actives	20	20	21
Total Inactives	11	16	17
Actives / Inactives	181.8%	125.0%	123.5%
 <u>Asset Volatility Ratio</u>			
Market Value of Assets (MVA)	14,111,592	15,085,968	15,169,457
Total Annual Payroll	1,886,849	1,861,742	2,008,525
MVA / Total Annual Payroll	747.9%	810.3%	755.3%
 <u>Accrued Liability (AL) Ratio</u>			
Inactive Accrued Liability	8,616,038	11,806,140	12,262,387
Total Accrued Liability	19,713,705	21,341,633	22,848,484
Inactive AL / Total AL	43.7%	55.3%	53.7%
 <u>Funded Ratio</u>			
Actuarial Value of Assets (AVA)	14,811,059	15,445,220	16,031,027
Total Accrued Liability	19,713,705	21,341,633	22,848,484
AVA / Total Accrued Liability	75.1%	72.4%	70.2%

STATEMENT OF FIDUCIARY NET POSITION
April 30, 2019

<u>ASSETS</u>	MARKET VALUE
Cash and Cash Equivalents:	
Checking Account	171,370
Money Market	52,281
Total Cash and Equivalents	223,651
Receivables:	
Prepays	1,720
Accrued Past Due Interest	33,107
Total Receivable	34,827
Investments:	
U.S. Gov't and Agency Obligations	4,786,260
Mutual Funds	10,127,157
Total Investments	14,913,417
Total Assets	15,171,895
 <u>LIABILITIES</u>	
Liabilities:	
Payable:	
Expenses	2,438
Total Liabilities	2,438
Net Assets:	
Active and Retired Members' Equity	15,169,457
NET POSITION RESTRICTED FOR PENSIONS	15,169,457
TOTAL LIABILITIES AND NET ASSETS	15,171,895

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION
 FOR THE YEAR ENDED April 30, 2019
 Market Value Basis

ADDITIONS

Contributions:

Member	190,007
City	569,824

Total Contributions 759,831

Investment Income:

Miscellaneous Income	2,062	
Net Realized Gain (Loss)	78,813	
Unrealized Gain (Loss)	(478,055)	
Net Increase in Fair Value of Investments		(397,180)
Interest & Dividends		558,510
Less Investment Expense ¹		(29,427)

Net Investment Income 131,903

Total Additions 891,734

DEDUCTIONS

Distributions to Members:

Benefit Payments	782,900
Refund of Contributions/Transfers	7,158

Total Distributions 790,058

Administrative Expenses 18,187

Total Deductions 808,245

Net Increase in Net Position 83,489

NET POSITION RESTRICTED FOR PENSIONS

Beginning of the Year 15,085,968
 Adjustment to beginning of year 0

End of the Year 15,169,457

¹ Investment Related expenses include investment advisory, custodial and performance monitoring fees.

ACTUARIAL ASSET VALUATION

April 30, 2019

Actuarial Assets for funding purposes are developed by recognizing the total actuarial investment gain or loss for each Plan Year over a five year period. In the first year, 20% of the gain or loss is recognized. In the second year 40%, in the third year 60%, in the fourth year 80%, and in the fifth year 100% of the gain or loss is recognized. The actuarial investment gain or loss is defined as the actual return on investments minus the actuarial assumed investment return. Actuarial Assets shall not be less than 80% nor greater than 120% of the Market Value of Assets.

Plan Year Ending	Gain/(Loss)	Gains/(Losses) Not Yet Recognized				
		Amounts Not Yet Recognized by Valuation Year				
		2019	2020	2021	2022	2023
4/30/2016	(1,329,701)	(265,940)	0	0	0	0
4/30/2017	372,842	149,137	74,568	0	0	0
4/30/2018	38,821	23,293	15,528	7,764	0	0
4/30/2019	(960,075)	(768,060)	(576,045)	(384,030)	(192,015)	0
Total		(861,570)	(485,949)	(376,266)	(192,015)	0

Development of Investment Gain/Loss

Market Value of Assets, 4/30/2018	15,085,968
Contributions Less Benefit Payments & Administrative Expenses	(48,414)
Expected Investment Earnings ¹	1,091,978
Actual Net Investment Earnings	<u>131,903</u>
2019 Actuarial Investment Gain/(Loss)	(960,075)

¹ Expected Investment Earnings = 7.25% x (15,085,968 + 0.5 x -48,414)

Development of Actuarial Value of Assets

Market Value of Assets, 4/30/2019	15,169,457
(Gains)/Losses Not Yet Recognized	<u>861,570</u>
Actuarial Value of Assets, 4/30/2019	16,031,027
(A) 4/30/2018 Actuarial Assets:	15,445,220
(I) Net Investment Income:	
1. Interest and Dividends	560,572
2. Realized Gains (Losses)	78,813
3. Change in Actuarial Value	24,263
4. Investment Expenses	<u>(29,427)</u>
Total	634,221
(B) 4/30/2019 Actuarial Assets:	16,031,027
Actuarial Asset Rate of Return = (2 x I) / (A + B - I):	4.11%
Market Value of Assets Rate of Return:	0.88%
4/30/2019 Limited Actuarial Assets:	16,031,027
Actuarial Gain/(Loss) due to Investment Return (Actuarial Asset Basis)	(483,802)

CHANGES IN NET ASSETS AVAILABLE FOR BENEFITS
 April 30, 2019
 Actuarial Asset Basis

INCOME		
Contributions:		
Member	190,007	
City	569,824	
Total Contributions		759,831
Earnings from Investments		
Interest & Dividends	558,510	
Miscellaneous Income	2,062	
Net Realized Gain (Loss)	78,813	
Change in Actuarial Value	24,263	
Total Earnings and Investment Gains		663,648
EXPENSES		
Administrative Expenses:		
Investment Related ¹	29,427	
Other	18,187	
Total Administrative Expenses		47,614
Distributions to Members:		
Benefit Payments	782,900	
Refund of Contributions/Transfers	7,158	
Total Distributions		790,058
Change in Net Assets for the Year		585,807
Net Assets Beginning of the Year		15,445,220
Net Assets End of the Year ²		16,031,027

¹ Investment Related expenses include investment advisory, custodial and performance monitoring fees.

² Net Assets may be limited for actuarial consideration.

STATISTICAL DATA ¹

	<u>5/1/2016</u>	<u>5/1/2017</u>	<u>5/1/2018</u>	<u>5/1/2019</u>
<u>Actives - Tier 1</u>				
Number	N/A	16	14	14
Average Current Age	N/A	N/A	43.3	44.3
Average Age at Employment	N/A	N/A	25.2	25.2
Average Past Service	N/A	N/A	18.1	19.1
Average Annual Salary	N/A	N/A	\$99,908	\$103,939
<u>Actives - Tier 2</u>				
Number	N/A	4	6	7
Average Current Age	N/A	N/A	34.4	35.4
Average Age at Employment	N/A	N/A	32.4	32.9
Average Past Service	N/A	N/A	2.0	2.5
Average Annual Salary	N/A	N/A	\$77,172	\$79,055
<u>Service Retirees</u>				
Number	N/A	9	11	11
Average Current Age	N/A	N/A	61.1	62.1
Average Annual Benefit	N/A	\$64,532	\$68,833	\$70,908
<u>Beneficiaries</u>				
Number	N/A	1	1	1
Average Current Age	N/A	N/A	94.3	95.3
Average Annual Benefit	N/A	\$16,952	\$16,952	\$16,952
<u>Disability Retirees</u>				
Number	N/A	0	0	0
Average Current Age	N/A	N/A	N/A	N/A
Average Annual Benefit	N/A	N/A	N/A	N/A
<u>Terminated Vested</u>				
Number	N/A	1	4	5
Average Current Age	N/A	N/A	38.4	35.9
Average Annual Benefit ²	N/A	\$3,287	\$3,287	\$3,287

¹ Foster & Foster does not have enough historical data to include complete data prior to 5/1/2018. We will add historical data going forward.

² Average Annual Benefit for Terminated Vested members reflects the benefit for members entitled to a future annual benefit from the plan.

AGE AND SERVICE DISTRIBUTION

PAST SERVICE

AGE	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30+	Total
15 - 19	0	0	0	0	0	0	0	0	0	0	0	0
20 - 24	0	0	0	0	0	0	0	0	0	0	0	0
25 - 29	1	0	1	0	0	0	0	0	0	0	0	2
30 - 34	1	0	0	1	0	1	0	0	0	0	0	3
35 - 39	0	1	0	0	0	1	0	1	0	0	0	3
40 - 44	0	0	0	0	0	0	1	3	1	0	0	5
45 - 49	0	0	0	0	0	0	1	0	4	0	0	5
50 - 54	0	0	0	0	0	0	0	0	0	2	0	2
55 - 59	0	0	1	0	0	0	0	0	0	0	0	1
60 - 64	0	0	0	0	0	0	0	0	0	0	0	0
65+	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	1	2	1	0	2	2	4	5	2	0	21

VALUATION PARTICIPANT RECONCILIATION

1. Active lives

a. Number in prior valuation 5/1/2018	20
b. Terminations	
i. Vested (partial or full) with deferred benefits	(1)
ii. Non-vested or full lump sum distribution received	0
iii. Transferred service to other fund	0
c. Deaths	
i. Beneficiary receiving benefits	0
ii. No future benefits payable	0
d. Disabled	0
e. Retired	<u>0</u>
f. Continuing participants	19
g. New entrants	<u>2</u>
h. Total active life participants in valuation	21

2. Non-Active lives (including beneficiaries receiving benefits)

	Service Retirees, Vested Receiving <u>Benefits</u>	Receiving Death <u>Benefits</u>	Receiving Disability <u>Benefits</u>	Vested <u>Deferred</u>	<u>Total</u>
a. Number prior valuation	11	1	0	4	16
Retired	0	0	0	0	0
Vested Deferred	0	0	0	1	1
Death, With Survivor	0	0	0	0	0
Death, No Survivor	0	0	0	0	0
Disabled	0	0	0	0	0
Refund of Contributions	0	0	0	(2)	(2)
Rehires	0	0	0	0	0
Expired Annuities	0	0	0	0	0
Data Corrections	0	0	0	0	0
Hired/Termed in Same Year	0	0	0	2	2
b. Number current valuation	11	1	0	5	17

SUMMARY OF CURRENT PLAN

Article 4 Pension Fund

The Plan is established and administered as prescribed by “Article 4. Firefighters’ Pension Fund – Municipalities 500,000 and Under” of the Illinois Pension Code.

Plan Administration

The Plan is administered by a Board of Trustees comprised of:

- a) Two members appointed by the Municipality,
- b) Two active Members of the Fire Department elected by the Membership, and
- c) One retired Member of the Fire Department elected by the Membership.

Credited Service

Years and fractional parts of years of service (except as noted below) as a sworn Firefighter employed by the Municipality.

Salary

Annual salary, including longevity, attached to firefighter’s rank, as established by the municipality appropriation ordinance, excluding overtime pay, bonus pay and holiday pay except for the base 8 hours of the 10 pensionable holidays which is included.

Normal Retirement

Date

Tier 1: Age 50 and 20 years of Credited Service.

Tier 2: Age 55 and 10 years of Credited Service.

Benefit

Tier 1: 50% of annual salary attached to rank on last day of service plus 2.50% of annual salary for each year of service over 20 years, up to a maximum of 75% of salary. The minimum monthly benefit is \$1,159.27 per month.

Tier 2: 2.50% per year of service times the average salary for the eight consecutive years prior to retirement times the number of years of service, up to a maximum of 75% of average salary. The minimum monthly benefit is \$1,159.27 per month.

Form of Benefit

Tier 1: For married retirees, an annuity payable for the life of the Member; upon the death of the member, 100% of the Member’s benefit payable to the spouse until death. For unmarried retirees, the normal form is a Single Life Annuity.

Tier 2: Same as above, but with 66 2/3% of benefit continued to spouse.

Early Retirement

Date	Tier 1: Age 60 and 10 years of Credited Service. Tier 2: Age 50 and 10 years of Credited Service.
Benefit	Tier 1: 1.5% plus 0.1% for each year of service in excess of 10 years, times salary x service (complete years). Tier 2: Normal Retirement Benefit, reduced 6% for each year before age 55, with no minimum benefit.
Form of Benefit	Same as Normal Retirement

Disability Benefit

Eligibility Total and permanent as determined by the Board of Trustees. Seven years of service required for non-service connected disability.

Benefit Amount A maximum of:
a.) 65% of salary attached to the rank held by Member on last day of service, and;
b.) The monthly retirement pension that the Member is entitled to receive if he or she retired immediately.

For non-service connected disabilities, a benefit of 50% of salary attached to rank held by Member on last day of service.

Cost-of-Living Adjustment

Tier 1:
Retirees: An annual increase equal to 3.00% per year after age 55. Those that retire prior to age 55 receive an increase of 1/12 of 3.00% for each full month since benefit commencement upon reaching age 55.
Disabled Retirees: An annual increase equal to 3.00% per year of the original benefit amount beginning at age 60. Those that become disabled prior to age 60 receive an increase of 3.00% of the original benefit amount for each year since benefit commencement upon reaching age 60.
Tier 2: An annual increase each January 1 equal to 3.00% per year or one-half of the annual unadjusted percentage increase in the consumer price index-u for the 12 months ending with the September preceding each November 1, whichever is less, of the original pension after the attainment of age 60 or first anniversary of pension start date whichever is later.

Pre-Retirement Death Benefit

Service Incurred	100% of salary attached to rank held by Member on last day of service.
Non-Service Incurred	A maximum of: a.) 54% of salary attached to the rank held by Member on last day of service, and; b.) The monthly retirement pension earned by the deceased Member at the time of death, regardless of whether death occurs before or after age 50.

Vesting (Termination)

Vesting Service Requirement	10 years.
Non-Vested Benefit	Refund of Member Contributions.
Vested Benefit	Either the termination benefit, payable upon reaching age 60 (55 for Tier 2), provided contributions are not withdrawn, or a refund of member contributions.
Termination Benefit	Based on the monthly salary attached to the Member's rank at separation from service and equals: Tier 1: 1.5% plus 0.1% for each year of service in excess of 10 years, times salary x service (based on complete years). Tier 2: 2.50% of 8-year final average salary times creditable service.

Contributions

Employee	9.455% of Salary.
Municipality	Remaining amount necessary for payment of Normal (current year's) Cost and amortization of the accrued past service liability.

SUMMARY OF PARTICIPANT DATA

Plan Membership:

	<u>5/1/2019</u>	<u>5/1/2018</u>
Inactive Plan Members or Beneficiaries Currently Receiving Benefits	12	12
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	5	4
Active Plan Members	<u>21</u>	<u>20</u>
Total	38	36
Covered Payroll	\$2,008,525	\$1,861,742

SCHEDULE OF CHANGES IN NET PENSION LIABILITY

GASB 68 Reporting Period Ending	04/30/2019	04/30/2018
Measurement Date	04/30/2019	04/30/2018
Total Pension Liability		
Service Cost	480,915	489,935
Interest	1,541,244	1,437,150
Changes of Benefit Terms	-	-
Differences Between Expected and Actual Experience	(26,930)	293,635
Changes of Assumptions	260,873	-
Benefit Payments, Including Refunds of Employee Contributions	(790,058)	(761,771)
Net Change in Total Pension Liability	1,466,044	1,458,949
Total Pension Liability - Beginning	21,172,654	19,713,705
Total Pension Liability - Ending (a)	\$ 22,638,698	\$ 21,172,654
Plan Fiduciary Net Position		
Contributions - Employer	569,824	518,475
Contributions - Employee	190,007	176,328
Net Investment Income	131,903	1,058,849
Benefit Payments, Including Refunds of Employee Contributions	(790,058)	(761,771)
Administrative Expense	(18,187)	(17,504)
Net Change in Plan Fiduciary Net Position	83,489	974,377
Plan Fiduciary Net Position - Beginning	15,085,969	14,111,592
Adjustment to beginning of year	(1)	-
Plan Fiduciary Net Position - Ending (b)	\$ 15,169,457	\$ 15,085,969
Net Pension Liability - Ending (a) - (b)	\$ 7,469,241	\$ 6,086,685
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	67.01%	71.25%
Covered Payroll	\$ 2,008,525	\$ 1,861,742
Net Pension Liability as a Percentage of Covered Payroll	371.88%	326.93%

Changes reflected in April 30, 2019 results:

The results reflect the assumption changes noted in the assumptions section of the report.

STATEMENT OF CHANGES IN NET PENSION LIABILITY

	Increase (Decrease)		
	Total Pension Liability	Plan Fiduciary Net Position	Net Pension Liability
	(a)	(b)	(a)-(b)
Balances at April 30, 2018	\$ 21,172,654	\$ 15,085,969	\$ 6,086,685
Adjustment to beginning of year	-	(1)	1
Changes for a Year:			
Service Cost	480,915	-	480,915
Interest	1,541,244	-	1,541,244
Differences Between Expected and Actual Experience	(26,930)	-	(26,930)
Changes of Assumptions	260,873	-	260,873
Changes of Benefit Terms	-	-	-
Contributions - Employer	-	569,824	(569,824)
Contributions - Employee	-	190,007	(190,007)
Net Investment Income	-	131,903	(131,903)
Benefit Payments, Including Refunds of Employee Contributions	(790,058)	(790,058)	-
Administrative Expense	-	(18,187)	18,187
Net Changes	1,466,044	83,489	1,382,555
Balances at April 30, 2019	\$ 22,638,698	\$ 15,169,457	\$ 7,469,241

Sensitivity of Net Pension Liability to changes in the Discount Rate:

	Current Discount		
	1% Decrease	Rate	1% Increase
	6.25%	7.25%	8.25%
Sponsor's Net Pension Liability	\$ 11,035,949	\$ 7,469,241	\$ 4,574,312

Pension Plan Fiduciary Net Position

Detailed information about the Pension Plan's Fiduciary Net Position is available in a separately issued Plan financial report.

GASB 68

PENSION EXPENSE AND DEFERRED OUTFLOWS OF RESOURCES AND DEFERRED INFLOWS OF
RESOURCES RELATED TO PENSIONS
YEAR-END APRIL 30, 2019

For the year ended April 30, 2019, the Sponsor will recognize a pension expense of \$1,315,854. On April 30, 2019, the Sponsor reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between actual and expected experience	209,740	357,092
Changes of assumptions	581,337	0
Net difference between projected and actual earnings on pension plan investments	861,573	0
Total	\$1,652,650	\$357,092

Amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense as follows:

Year-ended April 30:

2020	\$557,495
2021	\$206,921
2022	\$196,852
2023	\$204,613
2024	\$71,191
Thereafter	\$58,486

COMPONENTS OF PENSION EXPENSE
YEAR-END APRIL 30, 2019

	Net Pension Liability	Deferred Inflows	Deferred Outflows	Pension Expense
Beginning Balance	\$ 6,086,685	\$ 697,340	\$ 1,356,373	
Total Pension Liability Factors:				
Service Cost	480,915	-	-	480,915
Interest	1,541,244	-	-	1,541,244
Changes in Benefit Terms	-	-	-	-
Differences Between Expected and Actual Experience With Regard to Economic or Current Year Amortization	(26,930)	26,930	-	-
Changes in Assumptions About Future Economic or Demographic Factors or Other Inputs Current Year Amortization	260,873	-	260,873	-
	-	-	(252,340)	252,340
Benefit Payments, Including Refunds of Employee Contributions	(790,058)	-	-	-
Net Change	<u>1,466,044</u>	<u>(85,487)</u>	<u>(33,415)</u>	<u>2,204,030</u>
Plan Fiduciary Net Position:				
Contributions - Employer	569,824	-	-	-
Contributions - Employee	190,007	-	-	(190,007)
Projected Net Investment Income	1,091,978	-	-	(1,091,978)
Difference Between Projected and Actual Earnings on Pension Plan Investments Current Year Amortization	(960,075)	-	960,075	-
	-	(82,333)	(457,955)	375,622
Benefit Payments, Including Refunds of Employee Contributions	(790,058)	-	-	-
Administrative Expenses	(18,187)	-	-	18,187
Net Change	<u>83,489</u>	<u>(82,333)</u>	<u>502,120</u>	<u>(888,176)</u>
Adjustment to beginning of year	(1)	-	-	-
Ending Balance	<u>\$ 7,469,241</u>	<u>\$ 529,520</u>	<u>\$ 1,825,078</u>	<u>\$ 1,315,854</u>

AMORTIZATION SCHEDULE – EXPERIENCE

Increase (Decrease) in Pension Expense Arising from the Recognition of the Effects of Differences between Expected and Actual Experience

Year Base Established	Differences Between Expected and Actual Experience	Recognition Period (Years)	2019	2020	2021	2022	2023	2024	2025	2026
2019	\$ (26,930)	8	\$ (3,368)	\$ (3,366)	\$ (3,366)	\$ (3,366)	\$ (3,366)	\$ (3,366)	\$ (3,366)	\$ (3,366)
2018	\$ 293,635	7	\$ 41,948	\$ 41,948	\$ 41,948	\$ 41,948	\$ 41,948	\$ 41,948	\$ -	\$ -
2017	\$ (475,876)	7	\$ (67,982)	\$ (67,982)	\$ (67,982)	\$ (67,982)	\$ (67,984)	\$ -	\$ -	\$ -
2016	\$ (225,868)	5.5	\$ (41,067)	\$ (41,067)	\$ (20,533)	\$ -	\$ -	\$ -	\$ -	\$ -
Net Increase (Decrease) in Pension Expense			(70,469)	(70,467)	(49,933)	(29,400)	(29,402)	38,582	(3,366)	\$ (3,366)

AMORTIZATION SCHEDULE – CHANGES OF ASSUMPTIONS

Increase (Decrease) in Pension Expense Arising from the Recognition of the Effects of Changes of Assumptions

Year Base Established	Effects of Changes in Assumptions	Recognition Period (Years)	2019	2020	2021	2022	2023	2024	2025	2026
2019	\$ 260,873	8	\$ 32,610	\$ 32,609	\$ 32,609	\$ 32,609	\$ 32,609	\$ 32,609	\$ 32,609	\$ 32,609
2017	\$ 65,743	7	\$ 9,392	\$ 9,392	\$ 9,392	\$ 9,392	\$ 9,391	\$ -	\$ -	\$ -
2016	\$ 1,156,859	5.5	\$ 210,338	\$ 210,338	\$ 105,169	\$ -	\$ -	\$ -	\$ -	\$ -
Net Increase (Decrease) in Pension Expense			\$ 252,340	\$ 252,339	\$ 147,170	\$ 42,001	\$ 42,000	\$ 32,609	\$ 32,609	\$ 32,609

AMORTIZATION SCHEDULE – INVESTMENTS

Increase (Decrease) in Pension Expense Arising from the Recognition of the Differences Between Projected and Actual Earnings on Pension Plan Investments

Year Base Established	Differences		Increase (Decrease) in Pension Expense Arising from the Recognition of the Differences Between Projected and Actual Earnings on Pension Plan Investments							
	Between Projected and Actual Earnings	Recognition Period (Years)	2019	2020	2021	2022	2023	2024		
2019	\$ 960,075	5	\$ 192,015	\$ 192,015	\$ 192,015	\$ 192,015	\$ 192,015	\$ 192,015	\$ -	\$ -
2018	\$ (38,821)	5	\$ (7,764)	\$ (7,764)	\$ (7,764)	\$ (7,764)	\$ -	\$ -	\$ -	\$ -
2017	\$ (372,843)	5	\$ (74,569)	\$ (74,569)	\$ (74,567)	\$ -	\$ -	\$ -	\$ -	\$ -
2016	\$ 1,329,701	5	\$ 265,940	\$ 265,941	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Net Increase (Decrease) in Pension Expense			\$ 375,622	\$ 375,623	\$ 109,684	\$ 184,251	\$ 192,015	\$ -	\$ -	\$ -

SCHEDULE OF CONTRIBUTIONS

Plan Year-End	Actuarially Determined Contribution	Contributions in Relation to the Actuarially Determined Contributions	Contribution Deficiency (Excess)	Contributions Covered Payroll	Contributions as a Percentage of Covered Payroll
04/30/2019	543,009	569,824	(26,815)	2,008,525	28.37%
04/30/2018	493,786	518,475	(24,689)	1,861,742	27.85%

The following assumptions were used to determine the Actuarially Determined Contribution as of May 1, 2017:

Calculation Timing	The Actuarially Determined Contribution is calculated as of May 1 two years prior to the year in which contributions are reported.
Interest Rate	7.25%
Mortality Rate	RP 2014 Mortality Table (BCHA) projected to 2017 using improvement scale MP-2016.
Assumptions	All other assumptions and methods used for determining the Actuarially Determined Contribution can be found in the May 1, 2017 Actuarial Valuation Report for the City of Geneva Firefighters' Pension Fund prepared by the prior Actuary, Timothy W. Sharpe, Geneva, IL.

SCHEDULE OF INVESTMENT RETURNS

For the year ended April 30, 2019, the annual money-weighted return on Pension Plan investments, net of pension plan investment expense, was 1.02 percent. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

Plan Year-End	Annual Money-Weighted Rate of Return Net of Investment Expense
04/30/2019	1.02%
04/30/2018	7.65%

ASSUMPTIONS – TOTAL PENSION LIABILITY

Based on the results of the 2017 Department of Insurance experience study, the following assumption changes were made:

- Updated retirement, termination and disability rate tables.
- Updated the percentage of disabilities assumed to be in the line of duty from 90% to 80%.
- Updated the percentage of deaths assumed to be in the line of duty from 5% to 20%.

In addition, mortality rates were updated to reflect the PubS-2010 tables.

The following assumptions were used to determine the Net Pension Liability:

Valuation Date	May 1, 2019
Measurement Date	April 30, 2019
GASB 68 Expense Measurement Period	May 1, 2018 - April 30, 2019
Reporting Period	May 1, 2018 - April 30, 2019
Discount Rate	7.25%
Mortality Rate	<p>Active Lives: PubS-2010 Employee mortality, projected 5 years past the valuation date with Scale MP-2018. 20% of active deaths are assumed to be in the line of duty.</p> <p>Inactive Lives: PubS-2010 Healthy Retiree mortality, projected 5 years past the valuation date with Scale MP-2018.</p> <p>Beneficiaries: PubS-2010 Survivor mortality, projected 5 years past the valuation date with Scale MP-2018.</p> <p>Disabled Lives: PubS-2010 Disabled mortality, projected 5 years past the valuation date with Scale MP-2018.</p> <p>The mortality assumptions sufficiently accommodate anticipated future mortality improvements.</p>
Retirement Age	See table later in this section. This is based on a 2017 experience study performed for the State of Illinois Department of Insurance.

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Disability Rate See table later in this section. 80% of the disabilities are assumed to be in the line of duty. This is based on a 2017 experience study performed for the State of Illinois Department of Insurance.

Termination Rate See table later in this section. This is based on a 2017 experience study performed for the State of Illinois Department of Insurance.

Inflation 2.50%.

Cost-of-Living Adjustment Tier 1: 3.00% per year after age 55. Those that retire prior to age 55 receive an increase of 1/12 of 3.00% for each full month since benefit commencement upon reaching age 55.

Tier 2: 1.25% per year after the later of attainment of age 60 or first anniversary of retirement.

Salary Increases See table below. This is based on a 2017 experience study performed for the State of Illinois Department of Insurance.

Salary Scale	
Service	Rate
0	12.50%
1	12.00%
2	10.00%
3	8.50%
4	7.50%
5	6.00%
6	4.50%
7-26	4.00%
27-30	3.75%
31+	3.50%

Marital Status 80% of Members are assumed to be married.

Spouse's Age Males are assumed to be three years older than females.

Method Entry Age Normal Cost Method.

Decrement Tables

<u>% Terminating During the Year</u>		<u>% Becoming Disabled During the Year</u>		<u>% Retiring During the Year (Tier 1)</u>		<u>% Retiring During the Year (Tier 2)</u>	
<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
20	7.00%	20	0.010%	50-51	10%	50-54	3%
25	5.80%	25	0.016%	52-53	12%	55	30%
30	3.50%	30	0.068%	54-55	15%	56-59	20%
35	1.75%	35	0.220%	56-59	20%	60-62	25%
40	1.10%	40	0.420%	60-62	25%	63-64	33%
45	1.00%	45	0.650%	63-64	33%	65-69	50%
50	1.00%	50	0.900%	65-69	50%	70+	100%
55+	0.00%	55	1.240%	70+	100%		
		60	1.580%				

NOTES TO THE FINANCIAL STATEMENTS

Support for Long-Term Expected Rate of Return

The Long-Term Expected Rate of Return on Pension Plan investments can be determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of Pension Plan investment expenses and inflation) are developed for each major asset class.

These ranges are combined to produce the Long-Term Expected Rate of Return by weighting the expected future real rates of return by target asset allocation percentage and by adding expected inflation.

Best estimates of geometric real rates of return for each major asset class included in the Pension Plan’s target asset allocation adopted as of April 30, 2019, as provided by AHC Advisors, are summarized in the following table:

Asset Class	Target Allocation	Long Term Expected Real Rate of Return
T Bill	1.00%	0.40%
Short Gov/Credit	3.00%	1.90%
Intermediate Govt	34.00%	1.70%
Large	6.00%	4.45%
Large Value	7.00%	4.70%
Mid Value	7.00%	5.20%
Small	7.00%	5.60%
Small Value	7.00%	6.50%
International Developed	5.00%	4.45%
International Value	6.00%	6.60%
International Small	6.00%	7.45%
Emerging Markets	8.00%	7.50%
REIT	3.00%	3.90%
Total	100.00%	

Inflation rate of investment advisor 3.00%

Concentrations

The Plan did not hold investments in any one organization that represent 5 percent or more of the Pension Plan’s fiduciary net position.

Discount Rate

The Discount Rate used to measure the Total Pension Liability was 7.25 percent.

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 Sponsor 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 plan members. Therefore, the Long-Term Expected Rate of Return on Pension Plan investments (7.25 percent) was applied to all periods of projected benefit payments to determine the Total Pension Liability.

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.25 percent. The municipal bond rate is 3.21 percent (based on the daily rate closest to, but not later than the measurement date of the S&P Municipal Bond 20 Year High Grade Rate Index). The resulting single discount rate is 7.25 percent.

SUMMARY OF CURRENT PLAN

Article 4 Pension Fund

The Plan is established and administered as prescribed by “Article 4. Firefighters’ Pension Fund – Municipalities 500,000 and Under” of the Illinois Pension Code.

Plan Administration

The Plan is a single employer defined benefit pension plan administered by a Board of Trustees comprised of:

- a) Two members appointed by the Municipality,
- b) Two active Members of the Fire Department elected by the Membership, and
- c) One retired Member of the Fire Department elected by the Membership.

Credited Service

Years and fractional parts of years of service (except as noted below) as a sworn Firefighter employed by the Municipality.

Salary

Annual salary, including longevity, attached to firefighter’s rank, as established by the municipality appropriation ordinance, excluding overtime pay, bonus pay and holiday pay except for the base 8 hours of the 10 pensionable holidays which is included.

Normal Retirement

Date

Tier 1: Age 50 and 20 years of Credited Service.

Tier 2: Age 55 and 10 years of Credited Service.

Benefit

Tier 1: 50% of annual salary attached to rank on last day of service plus 2.50% of annual salary for each year of service over 20 years, up to a maximum of 75% of salary. The minimum monthly benefit is \$1,159.27 per month.

Tier 2: 2.50% per year of service times the average salary for the eight consecutive years prior to retirement times the number of years of service, up to a maximum of 75% of average salary. The minimum monthly benefit is \$1,159.27 per month.

Form of Benefit

Tier 1: For married retirees, an annuity payable for the life of the Member; upon the death of the member, 100% of the Member’s benefit payable to the spouse until death. For unmarried retirees, the normal form is a Single Life Annuity.

Tier 2: Same as above, but with 66 2/3% of benefit continued to spouse.

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Early Retirement

Date	Tier 1: Age 60 and 10 years of Credited Service. Tier 2: Age 50 and 10 years of Credited Service.
Benefit	Tier 1: 1.5% plus 0.1% for each year of service in excess of 10 years, times salary x service (complete years). Tier 2: Normal Retirement Benefit, reduced 6% for each year before age 55, with no minimum benefit.
Form of Benefit	Same as Normal Retirement

Disability Benefit

Eligibility	Total and permanent as determined by the Board of Trustees. Seven years of service required for non-service connected disability.
Benefit Amount	A maximum of: <ul style="list-style-type: none">a.) 65% of salary attached to the rank held by Member on last day of service, and;b.) The monthly retirement pension that the Member is entitled to receive if he or she retired immediately.

For non-service connected disabilities, a benefit of 50% of salary attached to rank held by Member on last day of service.

Cost-of-Living Adjustment

Tier 1:

Retirees: An annual increase equal to 3.00% per year after age 55. Those that retire prior to age 55 receive an increase of 1/12 of 3.00% for each full month since benefit commencement upon reaching age 55.

Disabled Retirees: An annual increase equal to 3.00% per year of the original benefit amount beginning at age 60. Those that become disabled prior to age 60 receive an increase of 3.00% of the original benefit amount for each year since benefit commencement upon reaching age 60.

Tier 2: An annual increase each January 1 equal to 3.00% per year or one-half of the annual unadjusted percentage increase in the consumer price index-u for the 12 months ending with the September preceding each November 1, whichever is less, of the original pension after the attainment of age 60 or first anniversary of pension start date whichever is later.

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Pre-Retirement Death Benefit

Service Incurred	100% of salary attached to rank held by Member on last day of service.
Non-Service Incurred	A maximum of: <ul style="list-style-type: none">a.) 54% of salary attached to the rank held by Member on last day of service, and;b.) The monthly retirement pension earned by the deceased Member at the time of death, regardless of whether death occurs before or after age 50.

Vesting (Termination)

Vesting Service Requirement	10 years.
Non-Vested Benefit	Refund of Member Contributions.
Vested Benefit	Either the termination benefit, payable upon reaching age 60 (55 for Tier 2), provided contributions are not withdrawn, or a refund of member contributions.
Termination Benefit	Based on the monthly salary attached to the Member's rank at separation from service and equals: Tier 1: 1.5% plus 0.1% for each year of service in excess of 10 years, times salary x service (based on complete years). Tier 2: 2.50% of 8-year final average salary times creditable service.

Contributions

Employee	9.455% of Salary.
Municipality	Remaining amount necessary for payment of Normal (current year's) Cost and amortization of the accrued past service liability.