City of Farmington Hills Employees' Retirement System – Basic Retirement Benefits

Actuarial Valuation Report
as of June 30, 2020

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November 17, 2020

Retirement Board
City of Farmington Hills
Employees' Retirement System
31555 Eleven Mile Road
Farmington Hills, Michigan 48336

Re: City of Farmington Hills Employees' Retirement System Actuarial Valuation as of June 30, 2020 Actuarial Disclosures

Ladies and Gentlemen:

The results of the June 30, 2020 Annual Actuarial Valuation of the City of Farmington Hills Employees' Retirement System are presented in this report. The purpose of the valuation is to measure the System's funding progress and to determine the employer contribution for the fiscal year beginning July 1, 2021. This report should not be relied on for any purpose other than the purposes described herein. Determinations of financial results, associated with the benefits described in this report, for purposes other than those identified above may be significantly different.

This report was prepared using the assumptions and methods adopted by the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the System only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

The findings in this report are based on data and other information through June 30, 2020. This valuation was based upon information furnished by the System, concerning Retirement System benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked the information provided for internal reasonability and year-to-year consistency, but did not audit the data. As a result, we are not able to take responsibility for the accuracy or completeness of the information provided to GRS.

This report includes risk metrics shown on page E-1 but does not include a more robust assessment of the risk of future experience not meeting actuarial assumptions. Additional assessment of risks was outside of the scope of this assignment. We encourage a review and assessment of investment and other significant risks which may have a material effect on the System's financial condition.

This report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

This valuation assumes the continuing ability of the plan sponsor to make the contributions necessary to fund this plan. A determination regarding whether or not the plan sponsor is actually able to do so is outside our scope of expertise and was not performed. The employer contributions shown in Section A may be considered a minimum contribution that complies with the Board's funding policy and state law. Users of this report should be aware that contributions made at this level do not guarantee benefit security. Given the importance of benefit security to any retirement system, we suggest that contributions to the System in excess of those presented in this report be considered.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge this report is accurate, complete and fairly presents the actuarial position of the City of Farmington Hills Employees' Retirement System as of the valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices and with the Actuarial Standards of Practice issued by the Actuarial Standards Board and applicable State statutes. Louise M. Gates and James D. Anderson are members of the American Academy of Actuaries. These actuaries meet the Academy's Qualification Standards to render the actuarial opinions contained herein. The signing actuaries are independent of the plan sponsor.

Respectfully submitted,

GABRIEL, ROEDER, SMITH & COMPANY

Louise Gates

Louise M. Gates, ASA, FCA, MAAA

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James D. Anderson, FSA, EA, FCA, MAAA

SECTION A

EXECUTIVE SUMMARY

Executive Summary

1. Required Employer Contributions - Fiscal Year Beginning July 1, 2021

The required City contributions for each employment division are as follows:

	Required Employer Contribution	
Division	% of Payroll	$ Based on Projected Payroll
General	N/A	$2,334,458
Court	N/A	289,436
Police	34.91%	3,245,435
Fire	24.51	1,310,992

The General and Court groups are closed to new hires. As a result, we have calculated the employer contributions using a financing method that is appropriate for these circumstances.

2. Contribution Comparison

The table below compares the results of this valuation with the results of the 2019 actuarial valuation of the System.

Required Contributions by Indicated Valuation Date		
Division	6/30/2019	6/30/2020
General	$ 2,152,007	$ 2,334,458
Court	281,742	289,436
Police	3,016,082	3,245,435
Fire	1,229,287	1,310,992
Total	$ 6,679,118	$ 7,180,321

3. 2020 Funding Position

This year valuation assets represent 74% of accrued liabilities compared to last year’s valuation where the funded percent was 76%. If the market value of assets was used in the development of the System’s funded percent, the System would be 70% funded as of June 30, 2020.

4. Reasons for Change

There are three general reasons why contribution rates change from one valuation to the next. The first is a change in the benefits or eligibility conditions of the Plan. The second is a change in the valuation assumptions or methods used to predict future occurrences. The third is the difference during the year between the System's actual experience and what the assumptions predicted.

5. 2020 Plan Experience

System experience for the year ending June 30, 2020 was overall unfavorable. During the 2019-2020 plan year the rate of investment return on System assets was lower than long term expectations. However, the market smoothing techniques used in this valuation of the System recognize both current and prior investment experience and, as a result, the recognized rate of investment return for the year was 4.28%. Higher than expected benefit payments, further reduced System assets and contributed to the loss. Additional information related to the investment experience is shown on pages C-3 and C-4 of this report. The unfavorable experience contributed to the increase computed City contributions to the System.

6. Retiree Reserve Balance

In each valuation, we develop the value of anticipated future benefit payments to retired members and their beneficiaries. We then compare this liability to the reported assets in the Retirement Reserve Fund. The liability amounts and the reported reserves are shown below.

	General/Court	Police	Fire	Total
Retiree Liability	$57,151,705	$54,607,559	$10,800,618	$122,559,882
Retiree Reserve	49,250,986	48,483,258	9,353,476	107,087,720
Shortfall	7,900,719	6,124,301	1,447,142	15,472,162

The differences shown above could be covered by a transfer from the Retirement System's employer reserves to the retirement reserve fund.

7. Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based on the actuarial accrued liability and the actuarial value of assets. Unless otherwise indicated, with respect to any funded status measurement presented in this report:

- The measurement is inappropriate for assessing the sufficiency of System assets to cover the estimated cost of settling the System's benefit obligations.
- The measurement is inappropriate for assessing the need for or the amount of future employer contributions.
- The measurement will produce a different result if the market value of System assets is used instead of the actuarial value of System assets.

8. Other

In light of the recent experience study, we recommend a review and update of the Board's funding policy to ensure consistency with the assumptions and methods adopted by the Board.

SECTION B

VALUATION RESULTS

Financial Objective

The financial objective of the Retirement System is to establish and receive contributions, expressed as a percentage of active member payroll (for open groups), which will remain approximately level from year to year and will not have to be increased for future generations of citizens. The contributions, when combined with present assets and future investment income, will be sufficient to meet the financial obligations of the fund to present and future retirees and beneficiaries. Your annual actuarial valuations determine how well the objective is being met.

The contribution requirements for the fiscal year beginning July 1, 2021 are presented on the following page.

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 7.00% on the actuarial value of assets), it is expected that:

(1) The employer normal cost contributions are expected to decrease due to the closure of the General and Court groups;
(2) The unfunded actuarial accrued liabilities will be fully amortized after 23 years; and
(3) The funded status of the plan will increase gradually towards a 100% funded ratio.

Contributions to Provide Benefits
for the Fiscal Year Beginning July 1, 2021
Member and Employer Portions

Contributions for	General	Court	Police	Fire
			% of Active Payroll	
Normal cost of benefits:				
Age and service	$ 598,060	$ 185,425	17.30%	17.62%
Disability	4,065	1,087	0.17	0.18
Death before retirement	14,906	3,262	0.46	0.46
Stipend	903	121	0.05	0.05
Total	617,934	189,895	17.98	18.31
Member contributions				
Total	203,268	54,359	4.50	4.50
Future refunds	43,815	6,040	0.37	0.36
Available for pensions	159,453	48,319	4.13	4.14
Administrative expenses	127,439	15,541	1.15	1.15
Employer normal cost	585,920	157,117	15.00	15.32
Unfunded accrued liability payment	1,748,538	132,319	19.91	9.19
Computed employer contribution	$2,334,458	$289,436	34.91%	24.51%

Unfunded accrued liabilities were amortized over 19 years for the General and Court groups and over 23 years for the Police and Fire groups. A closed, level dollar amortization method was used for the General and Court groups, due to the closure of these groups to new employees. A closed, level percent of payroll amortization method was used for the Police and Fire groups due to the open nature of these groups.

Determination of Unfunded Accrued Liability
as of June 30, 2020

		General	Court	Police	Fire	Total
A.	Accrued Liability					
	1. For retirees and beneficiaries	$54,367,786	$2,783,919	$54,607,559	$ 10,800,618	$ 122,559,882
	2. For vested terminated members	354,216	218,226	484,067	471,224	1,527,733
	3. For present active members					
	a. Value of expected future benefit payments	34,031,044	7,911,834	52,405,912	28,031,370	122,380,160
	b. Value of future normal costs	4,014,055	1,388,086	15,293,406	8,895,789	29,591,336
	c. Active member liability: (a) - (b)	30,016,989	6,523,748	37,112,506	19,135,581	92,788,824
	4. Total	84,738,991	9,525,893	92,204,132	30,407,423	216,876,439
B.	Valuation Assets	65,803,350	8,090,631	64,536,318	23,051,347	161,481,646
C.	Unfunded Accrued Liability (A.4) - (B)	18,935,641	1,435,262	27,667,814	7,356,076	55,394,793
D.	Funding Ratio: (B) / (A.4)	78%	85%	70%	76%	74%

Development of Experience Gain/(Loss)
Period Ended June 30, 2020

Actual experience will never (except by coincidence) exactly match assumed experience. It is hoped that gains and losses will cancel each other over a period of years, but sizable year-to-year fluctuations are common. Detail on the derivation of the experience gain (loss) is shown below.

	All Groups Combined
(1) UAAL* at start of period	$ 49,619,702
(2) Normal cost for period	3,861,208
(3) Actual contributions	6,900,236
(4) Interest accrual on (1), (2) and (3)	3,367,013
(5) Expected UAAL before changes: (1) + (2) - (3) + (4)	49,947,687
(6) Change in plan provisions	0
(7) Change in actuarial assumptions/methods	0
(8) Expected UAAL after changes: (5) + (6) + (7)	49,947,687
(9) Actual UAAL at end of period	55,394,793
(10) Gain/(loss): (8) - (9)	(5,447,106)
(11) Gain/(loss) as percent of actuarial accrued liabilities at start of period	(2.59%)

* *Unfunded Actuarial Accrued Liabilities*

Risks Associated with Measuring the Accrued Liability and Actuarially Determined Contribution

The determination of the actuarial liability and the actuarially determined contribution requires the use of assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the actuarial liability and the actuarially determined contribution that result from the differences between actual experience and the actuarial assumptions.

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 due to changing conditions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period, or additional cost or contribution requirements based on the System's funded status); and changes in plan provisions or applicable law. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the plan's future financial condition include:

1. **Investment Risk** – actual investment returns may differ from the expected returns;
2. **Asset/Liability Mismatch** – changes in asset values may not match changes in liabilities, thereby altering the gap between the actuarial liability and assets and consequently altering the funded status and contribution requirements;
3. **Contribution Risk** – actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the plan's funding policy or material changes may occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base;
4. **Salary and Payroll Risk** – actual salaries and total payroll may differ from expected, resulting in actual future actuarial liability and contributions differing from expected;
5. **Longevity Risk** – members may live longer or shorter than expected and receive pensions for a period of time other than assumed; and
6. **Other Demographic Risks** – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future actuarial liability and contributions differing from expected.

The effects of certain trends in experience can generally be anticipated. For example, if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise, if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.

SECTION C

SUMMARY OF BENEFIT PROVISIONS

Brief Summary of Basic Benefit Provisions
(June 30, 2020)

Normal Retirement (No reduction for age)						
			FAC[1] Times Sum of			
Group	Eligibility	Age Change	Up To 25 Years	Over 25 Years	Maximum Benefit[2]	Member Contributions
AFSCME[3]	60 & 8 or Sum of Age & Service equals 80 (minimum age 55)	None	2.80 %	1.00 %	75 %	4.50%
Teamsters, Exempt, and Court[3],[4]	60 & 8 or Sum of Age & Service equals 80 (minimum age 55)	None	2.80	1.00	80	4.50%
Dispatchers (Group D)[3]	60 & 8 Sum of Age & Service equals 80 (minimum age 55)	Until Age 67 At Age 67	2.80 2.375	1.00 1.00	75 70	4.50%
Executive[3]	60 & 8 or Sum of Age & Service equals 80 (minimum age 55)	None	3.00	1.00	80	4.50%
Police Command Hired before January 1, 2008	50 & 25 or 30 years of service with 25 years as Police Officer	None	3.00	1.00	80	4.50%
Police Command Hired after January 1, 2008	50 & 25 or 30 years of service with 25 years as Police Officer	None	2.80	1.00	80	4.50%
Fire Hired before July 1, 2008 and Police Patrol Hired before January 1, 2008	25 & Out	None	2.80	1.00	75	4.50%
Fire Hired after July 1, 2008 and Police Patrol Hired after January 1, 2008	50 & 25	None	2.25	1.00	60	4.50%

Early Retirement (Computed as regular retirement with an age reduction factor used.)		
Group	Eligibility	Reduction
Teamsters and Dispatchers	57 & 8	1/2 of 1% for each month by which retirement precedes age 60
AFSCME, Executive, Exempt, and Court	57 & 8	2/10 of 1% for each month by which retirement precedes age 60
Police Command	50 & 15 <50 & 25	2/10 of 1% for each month by which retirement precedes age 55 6/10 of 1% for each month by which retirement precedes age 50
Police Patrol	50 & 20	2.08/10 of 1% for each month by which retirement precedes age 55
Fire	50 & 20	2/10 of 1% for each month by which retirement precedes age 55

(1) *Type of final average compensation (FAC): highest 3 consecutive years out of last 10. FAC includes longevity pay for civilian members and longevity and holiday pay for Police, Fire and Dispatch members.*
(2) *Maximum benefit is computed as a percent of FAC.*
(3) *All Civilian groups have been closed to new hires.*
(4) *Three Court employees are covered by the Executive group benefit structure.*

Brief Summary of Basic Benefit Provisions
(June 30, 2020)

Eligibility	Amount
Deferred Retirement	
General: 8 or more years of service. Benefit begins at age 60. Police and Fire: 15 or more years of service. Benefit generally begins at age 55.	Computed as a regular or early retirement but based upon service and final average compensation at termination date.
Non-Duty Death	
10 or more years of service, or age 57 with 8 years of service.	Computed as a regular retirement but actuarially reduced in accordance with a 100% joint and survivor option.
Duty Death	
No age or service requirements.	Surviving spouse pension computed as a duty disability retirement.
Duty Disability	
No age or service requirements.	General: 40% of compensation at time of disability, plus 10% of compensation (not to exceed 25% of total) for each unmarried child under age 18. Other disability payments offset. Police and Fire: 66-2/3% of final compensation.

Defined Benefit Plan Eligibility

Employees hired after July 1, 2006 in the AFSCME, General and Executives employment groups are not covered by this plan. Employees hired after January 1, 2007 in the Dispatch group and employees hired after January 1, 2008 in the Teamsters group are not covered by this defined benefit plan. Employees hired after September 1, 2015 in the Court division are not covered by this defined benefit plan. The System remains "open" to new Police Command Officers, Police Officers, and Fire Fighters.

Other

Eligible Retiree Health Care (RHC) Plan members who also participate in this plan may elect to receive a monthly pension stipend benefit ranging from $200-$400 per month and paid from the pension trust. This stipend benefit is paid in lieu of traditional RHC plan benefits. Police Patrol Officers hired after July 1, 2008, who are promoted to Command Officer will continue to receive the Police Patrol Officer pension benefits described on the prior page.

Reported Financial Information (Market Value) for Year Ending June 30, 2020

Revenues and Disbursements

Revenues:		
a. Member contributions	$ 972,647	
b. Employer contributions	5,927,589	
c. Interest and dividends	2,202,994	
d. Gain on sale of investments	347,253	
e. Other Investment Income	779,542	
f. Total		$ 10,230,025
Disbursements:		
a. Refunds of member contributions	37,957	
b. Benefits paid	12,810,803	
c. Investment Expenses	1,127,298	
d. Administrative Expenses	162,544	
e. Other	37,661	
f. Total		14,176,263
Reserve Increase		
Total revenues minus total disbursements		
net increase in plan assets		$(3,946,238)

Assets and Reserves

Investments		**Reserve Accounts**	
a. Cash and Short Term	$ 5,030,520	a. Member contributions	$ 17,783,677
b. Receivables	31,798	b. Reserve for benefits now being paid	107,087,720
c. Fixed Income	27,825,479	c. Reserve for future benefits	27,672,573
d. Equities	95,746,066	d. Reserve for undistributed income	0
e. Real Estate	18,213,669		
f. Hedge Funds	6,046,831		
g. Accounts Payable	(350,393)		
Total Net Assets	$152,543,970	**Total**	$152,543,970

Development of Valuation Assets

Valuation Date June 30:	2018	2019	2020	2021	2022	2023	2024
1. Beginning of Year Assets							
a) Market Value	$ 149,792,751	$ 155,625,913	$ 156,490,208				
b) Valuation Assets	155,325,541	159,892,090	160,957,615				
c) Audit Adjustment	(212,800)	0	0				
2. End of Year Market Value Net Assets	155,625,913	156,490,208	152,543,970				
3. Net Additions to Market Value							
a) Net Contributions and Other Income	6,667,700	6,679,942	6,900,236				
b) Net Investment Income	11,131,026	6,489,699	2,289,991				
c) Benefit Payments and Refunds *	(11,752,764)	(12,305,346)	(13,136,465)				
d) Total Additions to Market Value	6,045,962	864,295	(3,946,238)				
4. Average Valuation Assets	152,783,009	157,079,388	157,839,501				
5. Expected Income at Valuation Rate	11,305,943	11,623,875	11,048,765				
6. Gain (Loss) = (3b) - (5)	(174,917)	(5,134,176)	(8,758,774)				
7. Phased-In Recognition of Investment Return							
a) Current Year: 0.2 x (6)	(34,983)	(1,026,835)	(1,751,755)				
b) First Prior Year	1,219,819	(34,983)	(1,026,835)	$ (1,751,755)			
c) Second Prior Year	(2,694,751)	1,219,819	(34,983)	(1,026,835)	$ (1,751,755)		
d) Third Prior Year	(2,396,196)	(2,694,751)	1,219,819	(34,983)	(1,026,835)	$ (1,751,755)	
e) Fourth Prior Year	2,464,581	(2,396,196)	(2,694,751)	1,219,819	(34,983)	(1,026,835)	$ (1,751,755)
f) Total Recognized Investment Gain/ (Loss)	(1,441,530)	(4,932,946)	(4,288,505)	(1,593,754)	(2,813,573)	(2,778,590)	(1,751,755)
8. Change in Valuation Assets							
(3a) + (3c) + (5) + (7f)	4,779,349	1,065,525	524,031				
9. End of Year Valuation Assets							
a) Preliminary End of Year Valuation Assets	159,892,090	160,957,615	161,481,646				
b) Corridor Percent		20%	20%				
c) Upper Corridor Limit		187,788,250	183,052,764				
d) Lower Corridor Limit		125,192,166	122,035,176				
e) End of Year Valuation Assets		160,957,615	161,481,646				
10. Recognized Rate of Return	6.46%	4.26%	4.28%				
11. Market Rate of Return	7.57%	4.25%	1.49%				

** Includes administrative expenses*

Retired and Inactive Members

Data as of June 30, 2020

	Total Number	Annual Benefits*	Average Age
Benefit Recipients	347	$11,053,458	68.8
Deferred Vested Members	10	$ 240,770	46.8

**Excludes pension stipend payments*

Active Members

Comparative Schedule

Valuation Date	Active Members: General	Court	Police	Fire	Totals	Valuation Payroll	Average: Age	Service	Pay	% Inc.
2006	259	**	115	40	414	$23,302,473	44.5 yrs.	12.3 yrs.	$56,286	3.1%
2007	252	**	120	44	416	24,080,517	44.9	12.8	57,886	2.8
2008	239	**	118	45	402	24,662,884	45.3	13.4	61,350	6.0
2009	225	**	117	44	386	24,904,782	46.0	14.3	64,520	5.2
2010	181	**	105	41	327	21,749,242	45.0	13.8	66,511	3.1
2011	148	27	102	41	318	21,236,510	45.8	14.9	66,781	0.4
2012	133	26	102	40	301	20,415,113	45.7	15.1	67,824	1.6
2013	123	26	105	45	299	19,898,614	45.0	14.6	66,551	(1.9)
2014	111	25	105	47	288	19,549,678	45.1	14.9	67,881	2.0
2015	108	24	103	48	283	20,047,647	45.7	15.3	70,840	4.4
2016	101	23	102	51	277	20,046,105	45.8	15.5	72,369	2.2
2017	94	23	101	51	269	20,089,578	46.2	15.8	74,682	3.2
2018	84	23	101	51	259	19,941,526	46.0	15.9	76,994	3.1
2019	77	21	104	58	260	20,521,228	45.3	15.7	78,928	2.5
2020	68	20	101	58	247	20,404,488	45.3	15.9	82,609	4.7

*** Included with General division prior to the June 30, 2011 valuation.*

Active Members by Age and Years of Service

	Years of Service on Valuation Date							Totals	
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30 Plus**	**No.**	**Valuation Payroll**
20-24	6							6	$ 369,405
25-29	18							18	1,259,835
30-34	10	15	2					27	2,167,046
35-39	3	10	15	5				33	2,742,741
40-44	1	4	10	14	3			32	2,638,349
45-49		2	3	9	14	5		33	3,161,283
50-54	1	1		7	18	9	5	41	3,507,518
55-59		2	1	7	9	2	5	26	2,103,259
60				1	3	2	3	9	909,198
61				1	2			3	204,894
62			2		2			4	281,847
63				2				2	134,438
64				2	1			3	223,490
65			1			2		3	173,410
66				1			1	2	180,750
68			1					1	63,874
70						2		2	169,770
72				1				1	65,353
78				1				1	48,028
Totals	**39**	**34**	**35**	**51**	**52**	**22**	**14**	**247**	**$20,404,488**

SECTION D

SUMMARY OF VALUATION METHODS AND ASSUMPTIONS

Valuation Methods

Actuarial Cost Method: Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using an individual entry-age actuarial cost method having the following characteristics:

(i) the annual normal costs for each individual active member, payable from the hire date to the date of retirement, are sufficient to accumulate to the value of the member's benefit earned.
(ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Asset Valuation Method: The actuarial value equals:

(a) Actuarial value of assets from the previous valuation, plus
(b) employer and member contributions since the last valuation, minus
(c) benefit payments and refunds since the last valuation, plus
(d) estimated investment income at the assumed investment return, plus
(e) portion of gain (loss) recognized in the current valuation.

For this purpose, gain (loss) is defined as the excess during the period of the investment return on the market value of assets over the expected investment income. 20% of the difference is recognized over a 5-year period in the actuarial value of assets. The actuarial value of assets is not permitted to deviate from the market value of assets by more than 20%.

The Funding Value of Assets is allocated between groups based on actual group experience and investment income such that each group's return equals the return for the System in total.

Amortization of Unfunded Actuarial Accrued Liabilities: Unfunded actuarial accrued liabilities were amortized by level percent-of-payroll contributions over 23 years for the Police and Fire groups. The period is reduced with each annual actuarial valuation. The amortization method was first used for the June 30, 2019 actuarial valuation. Active member payroll was assumed to increase 3.0% for the purpose of determining the level-percent contributions.

A level dollar amortization method was used for the General and Court groups. The amortization period was 19 years for the General and Court groups. The period is reduced with each annual actuarial valuation. This amortization period was first used for the General and Court groups in the June 30, 2019 actuarial valuation.

Actuarial Assumptions Used for the Valuation

Investment Return (net of investment expenses): 7.00% per year compounded annually. This rate consists of a real rate of return of 4.00% a year plus a long-term assumed rate of wage inflation of 3.00% per year.

This assumption is used to equate the value of payments due at different points in time and was first used for the June 30, 2019 valuation. Approximate rates of investment return, for the purpose of comparisons with assumed rates, are shown below. Actual increases in average active member pay are also shown for comparative purposes.

	Period Ended June 30,				
	2020	**2019**	**2018**	**2017**	**2016**
Rate of Investment Return (Recognized on Valuation Assets)	4.3%	4.3%	6.5%	7.0%	4.6%

These rates of return should not be used for measurement of an investment advisor's performance or for comparisons with other systems.

Pay Projections: These assumptions are used to project current pays to those upon which benefits will be based. The assumptions were first used for the June 30, 2019 valuation.

Annual Rate of Pay Increase

Years of Service	General and Court Members		
	Base (Economic)	**Merit & Longevity**	**Total**
1 to 5	3.0%	4.0%	7.0%
6 to 10	3.0%	2.0%	5.0%
thereafter	3.0%	1.0%	4.0%

Annual Rate of Pay Increase

Years of Service	Police Members Base (Economic)	Police Members Merit & Longevity	Police Members Total	Fire Members Base (Economic)	Fire Members Merit & Longevity	Fire Members Total
1	3.0%	20.0%	23.0%	3.0%	17.0%	20.0%
2	3.0%	15.0%	18.0%	3.0%	12.0%	15.0%
3	3.0%	7.0%	10.0%	3.0%	12.0%	15.0%
thereafter	3.0%	1.0%	4.0%	3.0%	1.0%	4.0%

If the number of active members (in the open public safety groups) remains constant, the total active member payroll is expected to increase 3.0% annually, the base portion of the individual pay increase assumptions. This increasing payroll was recognized in amortizing unfunded actuarial accrued liabilities for the Police and Fire groups.

Changes actually experienced in pay have been as follows:

	Period Ended June 30,				
	2020	2019	2018	2017	2016
Average Increase in Pay@	4.6%	4.2%	4.0%	4.3%	4.0%

@ *Excludes new hires and terminations.*

The mortality tables (a risk assumption) used in the valuation are described below:

General and Court

- **Healthy Pre-Retirement**: The Pub-2010 Amount-Weighted, General, Employee, Male and Female tables, with future mortality improvements projected to 2025 using scale MP-2018.
- **Healthy Post-Retirement**: The Pub-2010 Amount-Weighted, General, Healthy Retiree, Male and Female tables, with future mortality improvements projected to 2025 using scale MP-2018.
- **Disability Retirement**: The Pub-2010 Amount-Weighted, General, Disabled Retiree, Male and Female tables, with future mortality improvements projected to 2025 using scale MP-2018.

Police and Fire

- **Healthy Pre-Retirement**: The Pub-2010 Headcount-Weighted, Safety, Employee, Male and Female tables, with future mortality improvements projected to 2025 using scale MP-2018.
- **Healthy Post-Retirement**: The Pub-2010 Headcount-Weighted, Safety, Healthy Retiree, Male and Female tables, with future mortality improvements projected to 2025 using scale MP-2018.
- **Disability Retirement**: The Pub-2010 Headcount-Weighted, Safety, Disabled Retiree, Male and Female tables, with future mortality improvements projected to 2025 using scale MP-2018.

General and Court

Sample Ages	Healthy Pre-Retirement Future Life Expectancy (Years)		Healthy Post-Retirement Future Life Expectancy (Years)		Disabled Retirement Future Life Expectancy (Years)	
	Men	Women	Men	Women	Men	Women
50	37.72	39.84	33.79	36.64	24.60	27.09
55	32.99	35.01	29.27	32.04	21.47	24.04
60	28.37	30.26	24.91	27.53	18.68	21.19
65	23.85	25.57	20.73	23.11	16.05	18.25
70	19.42	20.95	16.74	18.84	13.47	15.14
75	15.07	16.43	13.01	14.81	10.90	12.08
80	10.80	12.04	9.68	11.16	8.47	9.31

Police and Fire

Sample Ages	Healthy Pre-Retirement Future Life Expectancy (Years)		Healthy Post-Retirement Future Life Expectancy (Years)		Disabled Retirement Future Life Expectancy (Years)	
	Men	Women	Men	Women	Men	Women
50	36.27	39.00	32.74	35.19	31.04	32.58
55	31.51	34.20	28.16	30.55	26.71	28.16
60	26.83	29.47	23.72	26.11	22.59	24.05
65	22.27	24.78	19.56	21.87	18.73	20.17
70	17.86	20.14	15.62	17.84	15.11	16.39
75	13.65	15.68	11.99	14.07	11.74	12.86
80	9.69	11.48	8.81	10.70	8.76	9.87

The Pub-2010 rates shown above were based on a generational projection of mortality rates to the year 2025 using theMP-2018 projection scale.

75% of deaths are assumed to be non-duty for the General and Court groups, while 50% of deaths are assumed to be non-duty for the Police and Fire groups.

These tables were first used for the June 30, 2019 valuation of the System.

Rates of Retirement: These rates are used to measure the probability of eligible members retiring during the next year. Early retirement rates do not apply to members eligible for regular retirement.

Retirement Ages	Percent of Eligible Active Members Retiring				
	General	Court	Police Command	Years of Service	Police Command
50			30%	25	
51			30	26	
52			30	27	
53			30	28	
54			30	29	
55	30%	20%	20	30	40%
56	25	15	15	31	40
57	25	15	15	32	40
58	25	15	15	33	40
59	25	15	15	34	40
60	25	20	100	35	100
61	25	25			
62	30	30			
63	20	20			
64	25	25			
65	25	25			
66	30	30			
67	30	30			
68	30	30			
69	30	30			
70	100	100			

The court and police command retirement rates were first used in the June 30, 2019 valuation.

Retirement Ages	Percent of Eligible Active Members Retiring			
	Police Patrol Hired After 1/1/2008 and Fire Hired After 7/1/2008	Years of Service	Police Patrol Hired Before 1/1/2008	Fire Hired Before 7/1/2008
50	30%	25	30%	30%
51	30	26	30	30
52	30	27	30	30
53	30	28	30	30
54	30	29	30	30
55	20	30	100	100
56	20			
57	20			
58	20			
59	20			
60	100			

The service based retirement rates shown above for patrol officers hired before 1/1/2008 were first used in the June 30, 2019 valuation.

Retirement Ages	Percent of Eligible Active Members Retiring (Early Retirement) General & Court	Police & Fire
50		1%
51		1
52		1
53		1
54		1
55		1
56		1
57	1%	1
58	1	1
59	1	1

Rates of Separation from Active Membership: The rates do not apply to members eligible for regular retirement and do not include separation on account of death or disability. This assumption measures the probabilities of members remaining in employment.

Sample Ages	Years of Service	% of Active Members Separating within Next Year			
		General	Court	Police	Fire
ALL	0	11.00%	12.00%	8.00%	7.00%
	1	10.00	12.00	6.00	5.00
	2	8.00	10.00	5.00	3.50
	3	8.00	9.00	4.00	3.50
	4	7.00	9.00	3.00	3.00
20	5 & Over	6.00	6.00	3.00	3.00
25		5.50	5.50	3.00	3.00
30		4.40	4.40	2.50	2.50
35		3.90	3.90	1.00	1.50
40		3.40	3.40	0.70	0.70
45		3.00	3.00	0.50	0.50
50		2.00	2.00	0.50	0.50
55		1.40	1.40	0.50	0.50
60		1.40	1.40	0.50	0.50

The Police rates were first used for the June 30, 2019 valuation.

Rates of Disability: These rates represent the probabilities of active members becoming disabled.

Sample Ages	Number of Disabilities Per 100 Eligible Members
20	0.01
25	0.02
30	0.04
35	0.07
40	0.12
45	0.19
50	0.28
55	0.40
60	0.57

These rates were first used for the December 31, 1993 valuation.

Load for Administrative Expenses: Administrative expenses used in the contribution determination are based on the average dollar amount over the last 5 years (a rolling period), ending on the valuation date one year preceding the current valuation date. This flat dollar administrative expense load is allocated between the General group (closed), the Court group (closed), and the remaining two open groups based on the funding value of assets as of the administrative expense calculation date. The flat dollar portion of the administrative expense allocated to the two open groups is then converted to a percent of pay based on the combined projected fiscal year payroll for the open groups.

Pension Stipend Benefit Election: Ten percent of eligible active RHC plan members are assumed to elect cash payments (the pension stipend).

Miscellaneous and Technical Assumptions

Marriage Assumption:	100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses.
Pay Increase Timing:	Beginning of (Fiscal) year.
Decrement Timing:	Decrements of all types are assumed to occur mid-year.
Eligibility Testing:	Eligibility for benefits is determined using the age nearest birthday and the service nearest whole year on the date the decrement is assumed to occur.
Decrement Relativity:	Decrement rates are used directly from experience, without adjustment for multiple decrement table effects.
Decrement Operation:	Disability and mortality decrements do not operate during the first 5 years of service. Disability also does not operate during retirement eligibility.
Service Credit Accruals:	It is assumed that members accrue one year of service credit per year.
Option Factors:	Factors for optional forms of payment (option factors) are based upon 7.0% interest of the: General and Court: Pub-2010 Amount-Weighted, General, Healthy Retiree, Male and Female tables, with future mortality improvements projected to 2025 using scale MP-2018 with an 50% Male and 50% Female Unisex Blend. Police and Fire: Pub-2010 Headcount-Weighted, Safety, Healthy Retiree, Male and Female tables, with future mortality improvements projected to 2025 using scale MP-2018 with an 90% Male and 10% Female Unisex Blend.
Incidence of Contributions:	Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.
Normal Form of Benefit:	The normal form of benefit is a straight life annuity.
Benefit Service:	Exact fractional service is used to determine the amount of benefit payable.
Loads:	Active member liabilities were loaded to account for subsidized annuity withdrawal and promotions from the police patrol to command units as follows: General: 7.0% Court: 5.0% Police: 10.0% Fire: 13.0%
Forfeiture Assumption:	General members who terminate close to retirement were assumed to elect a deferred retirement while those terminating with less service were assumed to elect a refund of their contributions in lieu of deferred retirement benefits. All non-General members were assumed to elect a deferred retirement benefit.

Glossary

Actuarial Accrued Liability - The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as "accrued liability" or "past service liability." Under the actuarial cost method used the "AAL" differs somewhat from the value of future payments based on benefits earned as of the valuation date.

Accrued Service - The service credited under the plan that was rendered before the date of the actuarial valuation.

Actuarial Assumptions - Estimates of future plan experience with respect to rates of mortality, disability, retirement, investment income and salary increases. Decrement assumptions (rates of mortality, separation and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate appropriate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Actuarial Cost Method - A mathematical budgeting procedure for allocating the dollar amount of the "actuarial present value of future plan benefits" between the normal costs to be paid in the future and the actuarial accrued liability. Sometimes referred to as the "actuarial funding method."

Actuarial Equivalent - Benefits whose actuarial present values are equal.

Actuarial Present Value - The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Amortization - Paying of an interest-bearing liability by means of periodic contributions of interest and principal, as opposed to a lump sum payment.

Experience Gain (Loss) - A measure of the difference between actual experience and experience anticipated by a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

Normal Cost - The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as "current service cost." An amortization payment toward the unfunded actuarial accrued liability is in addition to the normal cost.

Reserve Account - An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

Unfunded Actuarial Accrued Liability - The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as “unfunded accrued liability.”

Valuation Assets - The value of current plan assets recognized for valuation purposes.

SECTION E

FINANCIAL DISCLOSURES

Retirement System
Schedule of Pension Plan Funding Progress

Actuarial Valuation Date	Actuarial Value of Pension Assets (a)	Pension Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b) – (a)	Funded Ratio (a) / (b)	Covered Payroll (c)	UAAL as a % of Covered Payroll UAAL / (c)
06/30/11	$ 126,993,894	$ 152,271,739	$ 25,277,845	83.4 %	$21,236,510	119.0 %
06/30/12	127,759,371	157,810,232	30,050,861	81.0	20,415,113	147.2
06/30/13@#	135,447,393	163,515,916	28,068,523	82.8	19,898,614	141.1
06/30/14	142,635,461	168,555,933	25,920,472	84.6	19,549,678	132.6
06/30/15@#	148,299,323	171,958,385	23,659,062	86.2	20,047,647	118.0
06/30/16	150,257,018	177,254,145	26,997,127	84.8	20,046,105	134.7
06/30/17#	155,325,541	185,538,016	30,212,475	83.7	20,089,578	150.4
6/30/18@	159,892,090	192,830,969	32,938,879	82.9	19,941,526	165.2
6/30/19@#	160,957,615	210,577,317	49,619,702	76.4	20,521,228	241.8
6/30/20	161,481,646	216,876,439	55,394,793	74.5	20,404,488	271.5

@ *Plan provision change*

\# *Certain assumptions or methods revised*

Actuarial Cost Method	Individual Entry Age
Asset Valuation Method	Market Value with 5-Year Smoothing of Gains and Losses
Principal Actuarial Assumptions (last revised for the 12/31/19 valuation):	
- Net Investment Return	7.00%
- Projected Salary Increases	
General and Court	4.0% to 7.0%
Police	4.0% to 23.0%
Fire	4.0% to 20.0%
- Post-Retirement Cost of Living Adjustments	None

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November 17, 2020

Retirement Board
City of Farmington Hills
Employees' Retirement System
31555 Eleven Mile Road
Farmington Hills, Michigan 48336-1165

Ladies and Gentlemen:

Enclosed is a copy of the annual actuarial valuation of the City of Farmington Hills Employees' Retirement System.

We will be happy to meet with the Retirement Board to discuss the results of the valuation.

Sincerely,

Louise Gates

Louise M. Gates, ASA, FCA, MAAA

Enclosures

One Towne Square | Suite 800 | Southfield, Michigan 48076-3723