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

Actuarial Valuation Report
as of June 30, 2018

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GRS Retirement Consulting

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November 15, 2018

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

Ladies and Gentlemen:

The results of the June 30, 2018 annual actuarial valuation of the City of Farmington Hills Employees' Retirement System are presented in this report. The purpose of the valuation was to measure the System's funding progress and to determine the employer contribution for the 2019-2020 fiscal year. This report should not be relied upon for any other purpose. This report may be distributed to parties other than the Retirement Board only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

The valuation was based on the assumptions and methods adopted by the Board and upon information, furnished by the Finance Director, concerning Retirement System benefits, financial transactions, individual members, terminated members, retirees and beneficiaries. Data was checked for internal and year-to-year consistency, but was not audited, by us. As a result, we are unable to assume responsibility for the accuracy or completeness of the data provided.

Future actuarial measurements may differ significantly from those presented in this report due to such factors as experience differing from that anticipated by actuarial assumptions, changes in plan provisions, actuarial assumptions/methods or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. This valuation was based on the assumption that the plan sponsor will continue to be able to make all necessary contributions in the future. The determination of the plan sponsor's ability to make future contributions is beyond the scope of our ability and beyond the scope of this report.

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The employer contribution 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.

In addition, the contribution shown in this report was determined based on the actuarial assumptions and methods shown in Section D of this report. 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.

To the best of our knowledge, this report is complete and accurate and the valuation was conducted in accordance with standards of practice prescribed by the Actuarial Standards Board and in compliance with the applicable state statutes. Louise M. Gates and James D. Anderson are independent of the plan sponsor and are Members of the American Academy of Actuaries (MAAA) who meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. It is our opinion that the actuarial assumptions used for the valuation produce results which are reasonable.

Respectfully submitted,

Louise Gates

Louise M. Gates, ASA, FCA, MAAA

James D. Anderson

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

# SECTION A

## EXECUTIVE SUMMARY

# EXECUTIVE SUMMARY

***1. Required Employer Contributions - Fiscal Year Beginning July 1, 2019***

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

| | Required Employer Contribution | |
|---|---|---|
| Division | % of Payroll | $ Based on Projected Payroll |
| General | N/A | $2,314,162 |
| Court | N/A | 261,705 |
| Police | 27.13% | 2,378,241 |
| Fire | 21.20 | 973,481 |

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 2017 actuarial valuation of the System. Contributions are expressed as both percentages of payroll and dollar amounts where appropriate.

| Required Contributions by Indicated Valuation Date | | |
|---|---|---|
| Division | 6/30/2017 | 6/30/2018 |
| General | $ 2,180,113 | $ 2,314,162 |
| Court | 263,302 | 261,705 |
| Police | 2,201,997 | 2,378,241 |
| Fire | 932,051 | 973,481 |
| Total | $ 5,577,463 | $ 5,927,589 |

***3. 2018 Funding Position***

This year valuation assets represent 83% of accrued liabilities compared to last year's valuation where the funded percent was 84%. If the market value of assets was used in the development of the System's funded percent, the System would be 81% funded as of June 30, 2018.

***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.

This valuation of the System reflects the following change in practice. The System now pre-funds pension stipend benefits for eligible individuals. This change increased System accrued liabilities by $866,000 as of the valuation date.

### *5. 2018 Plan Experience*

System experience for the year ending June 30, 2018 was overall unfavorable. During the 2017-2018 plan year the rate of investment return on System assets was slightly higher 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 6.46%. Additional information related to the investment experience is shown on pages C-3 and C-4. In addition, retirees during the year from the Police division received higher benefits than anticipated by valuation assumptions which contributed to the experience loss. Although the plan change and unfavorable experience increased City contributions to the System, this increase was offset in part by additional City contributions made to the pension plan during the year.

### *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 | $50,350,779 | $48,404,732 | $8,225,457 | $106,980,968 |
| Retiree Reserve | 45,790,795 | 44,105,024 | 8,253,855 | 98,149,674 |
| Shortfall / (Surplus) | 4,559,984 | 4,299,708 | (28,398) | 8,831,294 |

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*

Michigan Public Act 202 of 2017 has created new reporting and other requirements for local units of government. The Board may be asked to assist the City in its efforts to comply with these new requirements. We would be happy to assist the Board in its efforts to develop policies and procedures to facilitate compliance.

Given the current economic environment and elapsed time since the last study, we recommend a review of Retirement System assumptions for use in the annual valuations of the pension plan.

# 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, 2019 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 7.40% 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 25 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, 2019
# Member and Employer Portions

| Contributions for | General | Court | Police (% of Active Payroll) | Fire (% of Active Payroll) |
|---|---|---|---|---|
| Normal cost of benefits: | | | | |
| Age and service | $ 672,405 | $ 194,167 | 16.89% | 17.58% |
| Disability | 4,695 | 1,167 | 0.17 | 0.18 |
| Death before retirement | 29,212 | 6,356 | 0.71 | 0.72 |
| Stipend | 1,043 | 259 | 0.05 | 0.05 |
| Total | 707,355 | 201,949 | 17.82 | 18.53 |
| Member contributions | | | | |
| Total | 234,742 | 58,367 | 4.50 | 4.50 |
| Future refunds | 47,992 | 6,356 | 0.36 | 0.34 |
| Available for pensions | 186,750 | 52,011 | 4.14 | 4.16 |
| Administrative expenses | 122,046 | 14,529 | 1.15 | 1.15 |
| Employer normal cost | 642,651 | 164,467 | 14.83 | 15.52 |
| Unfunded accrued liability payment | 1,671,511 | 97,238 | 12.30 | 5.68 |
| Computed employer contribution | $2,314,162 | $261,705 | 27.13% | 21.20% |

Unfunded accrued liabilities were amortized over 9 years for the General group, 12 years for the Court Group, and over 25 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, 2018

| | | General | Court | Police | Fire | Total |
|---|---|---|---|---|---|---|
| A. | Accrued Liability | | | | | |
| | 1. For retirees and beneficiaries | $48,200,290 | $2,150,489 | $48,404,732 | $ 8,225,457 | $ 106,980,968 |
| | 2. For vested terminated members | 281,302 | 262,548 | 747,110 | 1,073,674 | 2,364,634 |
| | 3. For present active members | | | | | |
| | a. Value of expected future benefit payments | 33,467,203 | 7,349,097 | 47,456,258 | 23,555,836 | 111,828,394 |
| | b. Value of future normal costs | 4,585,119 | 1,485,131 | 14,853,716 | 7,419,061 | 28,343,027 |
| | c. Active member liability: (a) - (b) | 28,882,084 | 5,863,966 | 32,602,542 | 16,136,775 | 83,485,367 |
| | 4. Total | 77,363,676 | 8,277,003 | 81,754,384 | 25,435,906 | 192,830,969 |
| B. | Valuation Assets | 66,654,028 | 7,520,710 | 64,461,296 | 21,256,056 | 159,892,090 |
| C. | Unfunded Accrued Liability (A.4) - (B) | 10,709,648 | 756,293 | 17,293,088 | 4,179,850 | 32,938,879 |
| D. | Funding Ratio: (B) / (A.4) | 86% | 91% | 79% | 84% | 83% |

# Development of Experience Gain/(Loss)
# Period Ended June 30, 2018

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 | $ 30,212,475 |
| (2) | Normal cost for period | 2,808,834 |
| (3) | Actual contributions | 5,753,424 |
| (4) | Interest accrual on (1), (2) and (3) | 2,126,774 |
| (5) | Expected UAAL before changes: (1) + (2) - (3) + (4) | 29,394,659 |
| (6) | Change from plan provisions | 865,762 |
| (7) | Change in actuarial assumptions/methods | 0 |
| (8) | Expected UAAL after changes: (5) + (6) + (7) | 30,260,421 |
| (9) | Actual UAAL at end of period | 32,938,879 |
| (10) | Gain/(loss): (8) - (9) | (2,678,458) |
| (11) | Gain/(loss) as percent of actuarial accrued liabilities at start of period | (1.44%) |

* *Unfunded Actuarial Accrued Liabilities*

# SECTION C

## SUMMARY OF BENEFIT PROVISIONS

# Brief Summary of Basic Benefit Provisions
# (June 30, 2018)

| 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<br>At Age 67 | 2.65<br>2.375 | 1.00<br>1.00 | 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 | 50 & 25 or 30 years of service with 25 years as Police Officer | None | 3.00 | 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<br><50 & 25 | 2/10 of 1% for each month by which retirement precedes age 55<br>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, 2018)

| Eligibility | Amount |
|---|---|
| **Deferred Retirement** | |
| General: 8 or more years of service. Benefit generally begins at age 60.<br><br>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.<br>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.

# Reported Financial Information (Market Value) for Year Ending June 30, 2018

## Revenues and Disbursements

| | | |
|---|---|---|
| **Revenues:** | | |
| a. Member contributions | $ 914,276 | |
| b. Employer contributions | 5,753,424 | |
| c. Interest and dividends | 2,504,963 | |
| d. Gain on sale of investments | 6,985,451 | |
| e. Other Investment Income | 2,720,694 | |
| f. Total | | $ 18,878,808 |
| **Disbursements:** | | |
| a. Refunds of member contributions | 99,651 | |
| b. Benefits paid | 11,364,103 | |
| c. Investment Expenses | 1,080,082 | |
| d. Administrative Expenses | 289,010 | |
| e. Total | | 12,832,846 |
| **Reserve Increase** | | |
| Total revenues minus total disbursements | | |
| net increase in plan assets | | $ 6,045,962 |

## Assets and Reserves

| **Investments** | | **Reserve Accounts** | |
|---|---|---|---|
| a. Cash and Deposits | $ 10,204,332 | a. Member contributions | $ 17,375,658 |
| b. Receivables | 37,928 | b. Reserve for benefits now being paid | 98,149,674 |
| c. Fixed Income | 53,205,502 | c. Reserve for future benefits | 40,100,581 |
| d. Equities | 71,678,692 | d. Reserve for undistributed income | 0 |
| e. Real Estate | 11,754,602 | | |
| f. Hedge Funds | 8,995,341 | | |
| g. Accounts Payable | (250,484) | | |
| **Total Net Assets** | $155,625,913 | **Total** | $155,625,913 |

# Development of Valuation Assets

| Valuation Date June 30: | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|
| 1. Beginning of Year Assets | | | | | | | |
| a) Market Value | $ 145,286,413 | $ 137,940,808 | $ 149,792,751 | | | | |
| b) Valuation Assets | 148,299,323 | 150,257,018 | 155,325,541 | | | | |
| c) Audit Adjustment | | | (212,800) | | | | |
| 2. End of Year Market Value Net Assets | 137,940,808 | 149,792,751 | 155,625,913 | | | | |
| 3. Net Additions to Market Value | | | | | | | |
| a) Net Contributions and Other Income | 5,618,585 | 5,624,863 | 6,667,700 | | | | |
| b) Net Investment Income | (2,531,824) | 17,168,981 | 11,131,026 | | | | |
| c) Benefit Payments and Refunds * | (10,432,366) | (10,941,901) | (11,752,764) | | | | |
| d) Total Additions to Market Value | (7,345,605) | 11,851,943 | 6,045,962 | | | | |
| 4. Average Valuation Assets | 145,892,433 | 147,598,499 | 152,783,009 | | | | |
| 5. Expected Income at Valuation Rate | 10,941,932 | 11,069,887 | 11,305,943 | | | | |
| 6. Gain (Loss) = (3b) - (5) | (13,473,756) | 6,099,094 | (174,917) | | | | |
| 7. Phased-In Recognition of Investment Return | | | | | | | |
| a) Current Year: 0.2 x (6) | (2,694,751) | 1,219,819 | (34,983) | | | | |
| b) First Prior Year | (2,396,196) | (2,694,751) | 1,219,819 | $ (34,983) | | | |
| c) Second Prior Year | 2,464,581 | (2,396,196) | (2,694,751) | 1,219,819 | $ (34,983) | | |
| d) Third Prior Year | 722,221 | 2,464,581 | (2,396,196) | (2,694,751) | 1,219,819 | $ (34,983) | |
| e) Fourth Prior Year | (2,266,311) | 722,221 | 2,464,581 | (2,396,196) | (2,694,751) | 1,219,819 | $ (34,983) |
| f) Total Recognized Investment Gain/ (Loss) | (4,170,456) | (684,326) | (1,441,530) | (3,906,111) | (1,509,915) | 1,184,836 | (34,983) |
| 8. Change in Valuation Assets (3a) + (3c) + (5) + (7f) | 1,957,695 | 5,068,523 | 4,779,349 | | | | |
| 9. End of Year Valuation Assets | 150,257,018 | 155,325,541 | 159,892,090 | | | | |
| 10. Recognized Rate of Return | 4.64% | 7.04% | 6.46% | | | | |
| 11. Market Rate of Return | (1.77%) | 12.69% | 7.57% | | | | |

* *Includes administrative expenses*

# Retired and Inactive Members

## Data as of June 30, 2018

| | Total Number | Annual Benefits* | Average Age |
|---|---|---|---|
| Benefit Recipients | 318 | $9,912,126 | 68.3 |
| Deferred Vested Members | 14 | $ 366,555 | 47.7 |

**excludes pension stipend payments*

# Active Members

## Comparative Schedule

| Valuation Date* | Active Members General | Court | Police | Fire | Totals | Valuation Payroll | Average Age | Service | Pay | % Inc. |
|---|---|---|---|---|---|---|---|---|---|---|
| 2003 | 265 | ** | 114 | 40 | 419 | $22,246,938 | 43.9 yrs. | 11.8 yrs. | $53,095 | 4.4% |
| 2004 | 263 | ** | 111 | 40 | 414 | 22,612,504 | 44.1 | 11.9 | 54,620 | 2.9 |
| 2006 | 259 | ** | 115 | 40 | 414 | 23,302,473 | 44.5 | 12.3 | 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 |

* *Years prior to 2006 had a valuation date of December 31st.*

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

## Active Members by Age and Years of Service

| Age | Years of Service on Valuation Date 0-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30 Plus | Totals No. | Valuation Payroll |
|---|---|---|---|---|---|---|---|---|---|
| 20-24 | 6 | | | | | | | 6 | $ 326,391 |
| 25-29 | 8 | 2 | | | | | | 10 | 656,236 |
| 30-34 | 10 | 12 | 4 | | | | | 26 | 1,967,947 |
| 35-39 | 5 | 11 | 22 | 8 | | | | 46 | 3,499,910 |
| 40-44 | 1 | 2 | 7 | 10 | 4 | | | 24 | 1,957,145 |
| 45-49 | 1 | 1 | 9 | 6 | 26 | 4 | | 47 | 3,986,316 |
| 50-54 | 1 | 1 | 2 | 3 | 15 | 8 | 8 | 38 | 3,114,421 |
| 55-59 | | | 6 | 7 | 11 | 1 | 5 | 30 | 2,355,428 |
| 60 | | | 3 | | 2 | | | 5 | 323,386 |
| 61 | | | 2 | 1 | | 1 | 1 | 5 | 333,962 |
| 62 | | | | 3 | | 1 | | 4 | 284,178 |
| 63 | | | 1 | 2 | 2 | 1 | | 6 | 324,369 |
| 64 | | | | 1 | | | 1 | 2 | 173,263 |
| 65 | | | | | 1 | | | 1 | 102,130 |
| 66 | | | 1 | 1 | 1 | | | 3 | 150,919 |
| 67 | | | | 2 | | | | 2 | 116,176 |
| 68 | | | | | 1 | 1 | | 2 | 160,826 |
| 70 | | | 1 | | | | | 1 | 62,360 |
| 76 | | | | 1 | | | | 1 | 46,163 |
| **Totals** | **32** | **29** | **58** | **45** | **63** | **17** | **15** | **259** | **$19,941,526** |

# 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 the above 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.

This method was first adopted for the December 31, 2003 actuarial valuation. Valuation dates prior to 2006 were December 31st of each year.

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 25 years for the Police and Fire groups. The period is reduced with each annual actuarial valuation. The amortization method was first used for the December 31, 2013 actuarial valuation. Active member payroll was assumed to increase 3.5% for the purpose of determining the level-percent contributions.

A level dollar amortization method (principle and interest combined) was used for the General and Court groups. The amortization periods are 9 years for the General group and 12 years for the Court group. The period is reduced with each annual actuarial valuation. This method was first adopted for the June 30, 2006 actuarial valuation for the General group and June 30, 2015 for the Court group.

# Actuarial Assumptions Used for the Valuation

***Investment Return*** (net of investment expenses): 7.40% per year compounded annually. This rate consists of a real rate of return of 3.9% a year plus a long-term assumed rate of wage inflation of 3.5% per year.

This assumption is used to equate the value of payments due at different points in time and was first used for the December 31, 2003 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, | | | | |
|---|---|---|---|---|---|
| | **2018** | **2017** | **2016** | **2015** | **2014** |
| Rate of Investment Return (Recognized on Valuation Assets) | 6.5% | 7.0% | 4.6% | 6.6% | 8.3% |

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, 2013 valuation.

## Annual Rate of Pay Increase

| Years of Service | General and Court Members | | |
|---|---|---|---|
| | **Base (Economic)** | **Merit & Longevity** | **Total** |
| 1 to 5 | 3.5% | 4.0% | 7.5% |
| 6 to 10 | 3.5% | 2.0% | 5.5% |
| thereafter | 3.5% | 1.0% | 4.5% |

# 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 | 3.5% | 20.0% | 23.5% | 3.5% | 17.0% | 20.5% |
| 2 | 3.5% | 15.0% | 18.5% | 3.5% | 12.0% | 15.5% |
| 3 | 3.5% | 7.0% | 10.5% | 3.5% | 12.0% | 15.5% |
| thereafter | 3.5% | 1.0% | 4.5% | 3.5% | 1.0% | 4.5% |

If the number of active members (in the open groups) remains constant, the total active member payroll will increase 3.5% 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 averaged as follows:

| | Period Ended June 30, 2018 | 2017 | 2016 | 2015 | 2014 |
|---|---|---|---|---|---|
| Average Increase in Pay@ | 4.0% | 4.3% | 4.0% | 4.6% | 2.6% |

*@ Excludes new hires and terminations.*

***The mortality table (a risk assumption)*** used was the RP-2000 Mortality Combined Healthy Tables, projected 20 years with U.S. Projection Scale BB. This table was first used for the June 30, 2013 valuation. Sample values follow:

| | **Single Life Retirement Values** | | | |
|---|---|---|---|---|
| | **Present Value of $1 Monthly for Life*** | | **Future Life Expectancy (Years)** | |
| **Sample Ages** | **Men** | **Women** | **Men** | **Women** |
| 50 | $146.08 | $149.34 | 32.99 | 35.59 |
| 55 | 138.74 | 142.92 | 28.37 | 30.90 |
| 60 | 129.57 | 134.60 | 23.94 | 26.34 |
| 65 | 118.45 | 124.30 | 19.74 | 21.98 |
| 70 | 105.27 | 112.23 | 15.83 | 17.93 |
| 75 | 90.22 | 98.54 | 12.26 | 14.25 |
| 80 | 74.06 | 83.44 | 9.13 | 10.95 |

* *Reflects the 7.40% interest rate assumption.*

This assumption is used to measure the probabilities of members dying before retirement and the probabilities of each pension payment being made after retirement. The RP-2000 Mortality Combined Healthy Tables, projected 20 years with U.S. Projection Scale BB with ages set forward 4 years was used for disabled lives.

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.

***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 | | 15% | 25 | |
| 51 | | 15 | 26 | |
| 52 | | 15 | 27 | |
| 53 | | 15 | 28 | |
| 54 | | 15 | 29 | |
| 55 | 30% | 15 | 30 | 40% |
| 56 | 25 | 15 | 31 | 40 |
| 57 | 25 | 15 | 32 | 40 |
| 58 | 25 | 15 | 33 | 40 |
| 59 | 25 | 15 | 34 | 40 |
| 60 | 25 | 100 | 35 | 100 |
| 61 | 25 | | | |
| 62 | 30 | | | |
| 63 | 20 | | | |
| 64 | 25 | | | |
| 65 | 25 | | | |
| 66 | 30 | | | |
| 67 | 30 | | | |
| 68 | 30 | | | |
| 69 | 30 | | | |
| 70 | 100 | | | |

| 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 | 100 | 30 |
| 54 | 30 | 29 | 100 | 30 |
| 55 | 20 | 30 | 100 | 100 |
| 56 | 20 | | | |
| 57 | 20 | | | |
| 58 | 20 | | | |
| 59 | 20 | | | |
| 60 | 100 | | | |

The incidence of retirement for Police Patrol hired before January 1, 2008 and Fire hired before July 1, 2008 is assumed to be 100% when the participant reaches the benefit maximum. The incidence of retirement for Fire members is assumed to be 100% at age 62.

| 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.

| | | % of Active Members Separating within Next Year | | | |
|---|---|---|---|---|---|
| Sample Ages | Years of Service | General | Court | Police | Fire |
| ALL | 0 | 11.00% | 12.00% | 6.00% | 7.00% |
| | 1 | 10.00 | 12.00 | 4.00 | 5.00 |
| | 2 | 8.00 | 10.00 | 3.50 | 3.50 |
| | 3 | 8.00 | 9.00 | 3.00 | 3.50 |
| | 4 | 7.00 | 9.00 | 2.50 | 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 | 1.50 | 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 rates were first used for the June 30, 2013 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
# June 30, 2018

| | |
|---|---|
| **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:** | Middle 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 7.5% interest of the 1994 GA Mortality Table setback 1 year with an 80% Male and 20% 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:** | The following loads were applied to active members for subsidized annuity withdrawal and special pays in final average compensation:<br>General: 7.0% Court: 5.0%<br>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 Percentage of Covered Payroll [(b) – (a)] / (c) |
|---|---|---|---|---|---|---|
| 06/30/09# | $ 123,309,158 | $ 140,261,150 | $ 16,951,992 | 87.9 % | $24,904,782 | 68.1 % |
| 6/30/2010 | 122,384,733 | 149,204,540 | 26,819,807 | 82.0 | 21,749,242 | 123.3 |
| 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 |
| 6/30/2018@ | 159,892,090 | 192,830,969 | 32,938,879 | 82.9 | 19,941,526 | 165.2 |

@ *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 12/31/13 valuation): | |
| - Net Investment Return | 7.40% |
| - Projected Salary Increases | |
| General and Court | 4.5% to 7.5% |
| Police | 4.5% to 23.5% |
| Fire | 4.5% to 20.5% |
| - Post-Retirement Cost of Living Adjustments | None |

GRS Retirement Consulting

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November 15, 2018

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

Attention: Retirement Board

Enclosed is one 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