

City of Farmington Hills Retiree Health Plan
Review of Plan Experience
July 1, 2013 through June 30, 2018





June 2, 2020

The Retirement Board
City of Farmington Hills
Retiree Health Plan
31555 Eleven Mile Road
Farmington Hills, Michigan 48336

Dear Board Members:

Presented in this report are the results of a review of the experience of the City of Farmington Hills Retiree Health Plan (the Plan). The investigation was conducted for the purpose of updating the actuarial assumptions used in valuing the Plan's actuarial liabilities and actuarially determined contributions.

The investigation was based upon the data furnished for the actuarial valuations during the period **July 1, 2013 through June 30, 2018**. We believe that the actuarial assumptions recommended in this experience study report represent individually, and in the aggregate, reasonable estimates of future experience of the Plan. This report should not be relied upon for any other purpose other than that described above. This report may be provided to parties other than the Trustees, only in its entirety and only with the permission of the Trustees. GRS is not responsible for unauthorized use of this report.

We have shown the expected impact of the proposed changes on valuation results as of June 30, 2018. This information is shown in Section D of this report.

Louise M. Gates and James D. Anderson are independent of the plan sponsor, Members of the American Academy of Actuaries (MAAA) and meet the qualification standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,

A handwritten signature in cursive script that reads "Louise M. Gates".

Louise M. Gates, ASA, FCA, MAAA

A handwritten signature in cursive script that reads "James D. Anderson".

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

LMG/JDA:dj

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Introduction

Every other year, as of June 30th, the actuarial liabilities of the City of Farmington Hills Retiree Health Plan are valued. In order to perform the valuation, assumptions must be made regarding the future experience of the Plan with regard to the following risk areas:

- Rates of **termination** of active members.
- Rates of **disability** among active members.
- Rates of **retirement** among active members.
- Rates of **mortality** among active members, retirants and beneficiaries.
- Long-term rates of **investment return** to be generated by the assets of the Plan.

Assumptions should be carefully chosen and continually monitored. Continued use of outdated assumptions can lead to:

- Understated costs resulting in either an inability to pay benefits when due, or sharp increases in required contributions at some point in the future; or
- Overstated costs resulting in either benefit levels that are kept below the level that could be supported by the computed rate or an unnecessarily large burden on the current generation of members, employers and taxpayers.

A single set of assumptions will not be suitable indefinitely. Things change, and our understanding of things also changes. In recognition of this, assumptions used to value the liabilities of the Retiree Health Plan should be reviewed and adjusted periodically to recognize changes in experience trends, a changing economic environment (or changing perceptions of the economic environment) and to maintain consistency within the universe of public employee retiree health plans. The results of this analysis are shown in Sections A and B of this report.

A common practice among public employee retirement plans is that the actuary recommends a set of demographic assumptions and suggests a range of reasonable alternate economic assumptions. Following discussion involving the actuary, the plan governing body, and other professionals, the plan governing body makes a final choice from the various alternatives.

SECTION A

DEMOGRAPHIC ASSUMPTIONS

Retirement

Discussion: Rates of retirement are used to measure the probabilities of an eligible member retiring from City employment during the next year and moving from active to retired status under the Plan. During the study period, the actual number of retirements among General division employees was generally consistent with the number projected by current assumptions. This experience suggests that the current retirement rates are a good fit with Plan experience for this group. For Court group employees, the actual number of retirements was significantly lower than projected by current assumptions during the study period. This experience suggests a need for lowering the expected rates of retirement for the Court group. The experience during the study period is summarized below:

| General | | | Court | | |
|------------------------------|-----------------|---------------|------------------------------|-----------------|---------------|
| Number of Retirements | | | Number of Retirements | | |
| Year | Expected | Actual | Year | Expected | Actual |
| 2013-2014 | 5.20 | 8 | 2013-2014 | 1.30 | 0 |
| 2014-2015 | 4.80 | 1 | 2014-2015 | 1.45 | 0 |
| 2015-2016 | 7.85 | 6 | 2015-2016 | 1.80 | 1 |
| 2016-2017 | 7.75 | 7 | 2016-2017 | 1.75 | 0 |
| 2017-2018 | 7.75 | 9 | 2017-2018 | 1.85 | 0 |
| Total | 33.35 | 31 | Total | 8.15 | 1 |

Recommendation: We recommend no change to the current retirement rates for General division employees. We recommend changing the retirement rates for the Court employees to the rates shown on page 5.

Retirement

Discussion: Rates of retirement are used to measure the probabilities of an eligible member retiring from City employment during the next year and moving from active to retired status under the Plan. During the study period, the actual number of retirements among firefighter employees was generally consistent with the number projected by current assumptions. This suggests that the current rates are a good fit with the retirement experience for this group.

During the same period, the actual number of command officer retirements was significantly higher than the number projected by the current assumptions. We also note that there were no command officers who retired under the “30 & out” provision during the study period, or stated differently, no command officer who retired during the period was hired before age 20. Furthermore, approximately 90% of the officers who retired during the study period were in the 50 – 54 age range. This experience suggests a need to increase the rates of retirement for this group, in particular at early eligibility ages.

The number of patrol officer retirements during the study period was slightly lower than anticipated by actuarial assumptions. During the study period we note that some retirees are working longer than anticipated by the current assumptions. This experience suggests a need for changing the retirement rates for this group. The experience during the study period is summarized below:

| Police Patrol | | | Police Command | | |
|------------------------------|-----------------|---------------|------------------------------|-----------------|---------------|
| Number of Retirements | | | Number of Retirements | | |
| <u>Year</u> | <u>Expected</u> | <u>Actual</u> | <u>Year</u> | <u>Expected</u> | <u>Actual</u> |
| 2013-2014 | 2.20 | 1 | 2013-2014 | 0.30 | 1 |
| 2014-2015 | 2.50 | 2 | 2014-2015 | 0.30 | 0 |
| 2015-2016 | 1.60 | 1 | 2015-2016 | 0.90 | 2 |
| 2016-2017 | 1.30 | 2 | 2016-2017 | 0.75 | 3 |
| 2017-2018 | 0.00 | 0 | 2017-2018 | 0.45 | 3 |
| Total | 7.60 | 6 | Total | 2.70 | 9 |

| Firefighter | | |
|------------------------------|-----------------|---------------|
| Number of Retirements | | |
| <u>Year</u> | <u>Expected</u> | <u>Actual</u> |
| 2013-2014 | 0.60 | 1 |
| 2014-2015 | 0.30 | 0 |
| 2015-2016 | 0.90 | 2 |
| 2016-2017 | 0.30 | 0 |
| 2017-2018 | 0.30 | 0 |
| Total | 2.40 | 3 |

Recommendation: We recommend no change to the firefighter retirement rates. We recommend changing police patrol and the police command officer retirement rates to the rates shown on page 5.

Retirement Rates

Current Rates of 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% | 30% | 15 | 30 | 40% |
| 56 | 25 | 25 | 15 | 31 | 40 |
| 57 | 25 | 25 | 15 | 32 | 40 |
| 58 | 25 | 25 | 15 | 33 | 40 |
| 59 | 25 | 25 | 15 | 34 | 40 |
| 60 | 25 | 25 | 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 | | | |

| Years of Service | Percent of Eligible Active Members Retiring | |
|---------------------|---|-------------------------------|
| | Police Patrol Hired Before 1/1/2008 | Fire Hired Before 7/1/2008 |
| 25 | 30% | 30 |
| 26 | 30 | 30 |
| 27 | 30 | 30 |
| 28 | 100 | 30 |
| 29 | 100 | 30 |
| 30 | 100 | 100 |

Retirement Rates

Proposed Rates of 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 | | | |

| Retirement Ages | Percent of Eligible Active Members Retiring | |
|--------------------|---|-------------------------------|
| | Police Patrol Hired Before 1/1/2008 | Fire Hired Before 7/1/2008 |
| 25 | 30% | 30 |
| 26 | 30 | 30 |
| 27 | 30 | 30 |
| 28 | 30 | 30 |
| 29 | 30 | 30 |
| 30 | 100 | 100 |

General and Court division members who retire under Rule of 80 (with minimum age of 55) and age 60 with completion of 15 or more years of service are eligible for benefits under the Plan. Police patrol and firefighters who retire with 25 or more years of service are eligible for benefits under the Plan. Police Command Officers who retire at age 50 with 25 or more years of service (or with 30 years of service at any age) are eligible for benefits under the Plan.



Turnover

Discussion: This assumption measures the probabilities of Plan members terminating City employment. Turnover rates are generally higher during the early years of employment and lower in subsequent years. In the past, a select period of five years was used to model this. Rates of separation from active membership (turnover rates) do not apply to members who are eligible to retire from the Plan.

We reviewed terminations among General and Court members of the Plan based on their years of service at the time their City employment terminated. If a Plan member terminates City employment before meeting eligibility requirements for benefits under the Plan they are only eligible for a refund of their contributions.

During the study period, the number of terminations among General and Court division members was generally consistent with expectations. This suggests that the current rates of termination may not need to be increased or decreased. Since the Plan was closed to new General employees at various dates between 2006 and 2008 and the Court group was closed to new hires in 2015, no Plan members in the future will have less than 5 years of service. Accordingly, removing the select period and establishing rates of termination based on service would be appropriate for the Plan.

General Division Terminations

| Less Than 5 Years of Service | | | More Than 5 Years of Service | | |
|------------------------------|----------|----------|------------------------------|--------------|----------|
| Year | Expected | Actual | Year | Expected | Actual |
| 2013-2014 | 0.00 | 0 | 2013-2014 | 2.53 | 4 |
| 2014-2015 | 0.00 | 0 | 2014-2015 | 2.31 | 2 |
| 2015-2016 | 0.00 | 0 | 2015-2016 | 1.95 | 1 |
| 2016-2017 | 0.00 | 0 | 2016-2017 | 1.72 | 0 |
| 2017-2018 | 0.00 | 0 | 2017-2018 | 1.59 | 1 |
| Total | 0 | 0 | Total | 10.10 | 8 |

Court Division Terminations

| Less Than 5 Years of Service | | | More Than 5 Years of Service | | |
|------------------------------|-------------|----------|------------------------------|-------------|----------|
| Year | Expected | Actual | Year | Expected | Actual |
| 2013-2014 | 0.81 | 0 | 2013-2014 | 0.20 | 1 |
| 2014-2015 | 0.71 | 0 | 2014-2015 | 0.19 | 2 |
| 2015-2016 | 0.73 | 0 | 2015-2016 | 0.15 | 0 |
| 2016-2017 | 0.67 | 0 | 2016-2017 | 0.14 | 0 |
| 2017-2018 | 0.53 | 0 | 2017-2018 | 0.15 | 0 |
| Total | 3.45 | 0 | Total | 0.83 | 3 |

Recommendation: We recommend changing the turnover rates for the General and Court groups to the rates shown on page 8.

Turnover

Discussion: This assumption measures the probabilities of Plan members terminating City employment. Turnover rates are generally higher during the early years of employment and lower in subsequent years. In the past, a select period of five years was used to model this. Rates of separation from active membership (turnover rates) do not apply to members who are eligible to retire from the Plan.

We reviewed terminations among police patrol, police command, and firefighter employee members of the Plan based on their years of service at the time their City employment terminated. If a member terminates City employment before meeting eligibility requirements for benefits under the Plan they are only eligible for a refund of their contributions. During the study period, the number of terminations among public safety employees was generally consistent with expectations. This suggests that the current rates of termination do not need to be increased or decreased. Since the Plan was closed to new public safety officers in 2008, no Plan members in the future will have less than 5 years of service. Accordingly, removing the select period and establishing rates of termination based on service would be appropriate. The experience during the study period is summarized below.

Police Patrol Terminations

| Less Than 5 Years of Service | | | More Than 5 Years of Service | | |
|------------------------------|-------------|----------|------------------------------|-------------|----------|
| Year | Expected | Actual | Year | Expected | Actual |
| 2013-2014 | 0.00 | 0 | 2013-2014 | 0.86 | 0 |
| 2014-2015 | 0.00 | 0 | 2014-2015 | 0.77 | 1 |
| 2015-2016 | 0.00 | 0 | 2015-2016 | 0.70 | 1 |
| 2016-2017 | 0.00 | 0 | 2016-2017 | 0.59 | 1 |
| 2017-2018 | 0.00 | 0 | 2017-2018 | 0.51 | 2 |
| Total | 0.00 | 0 | Total | 3.43 | 5 |

Police Command Terminations

| Less Than 5 Years of Service | | | More Than 5 Years of Service | | |
|------------------------------|-------------|----------|------------------------------|-------------|----------|
| Year | Expected | Actual | Year | Expected | Actual |
| 2013-2014 | 0.00 | 0 | 2013-2014 | 0.14 | 0 |
| 2014-2015 | 0.00 | 0 | 2014-2015 | 0.14 | 0 |
| 2015-2016 | 0.00 | 0 | 2015-2016 | 0.11 | 0 |
| 2016-2017 | 0.00 | 0 | 2016-2017 | 0.13 | 0 |
| 2017-2018 | 0.00 | 0 | 2017-2018 | 0.15 | 0 |
| Total | 0.00 | 0 | Total | 0.67 | 0 |

Firefighter Terminations

| Less Than 5 Years of Service | | | More Than 5 Years of Service | | |
|------------------------------|-------------|----------|------------------------------|-------------|----------|
| Year | Expected | Actual | Year | Expected | Actual |
| 2013-2014 | 0.00 | 0 | 2013-2014 | 0.40 | 1 |
| 2014-2015 | 0.00 | 0 | 2014-2015 | 0.40 | 1 |
| 2015-2016 | 0.00 | 0 | 2015-2016 | 0.36 | 0 |
| 2016-2017 | 0.00 | 0 | 2016-2017 | 0.34 | 0 |
| 2017-2018 | 0.00 | 0 | 2017-2018 | 0.35 | 0 |
| Total | 0.00 | 0 | Total | 1.85 | 2 |

Recommendation: We recommend changing the turnover rates for the police patrol, police command, and firefighter groups to the rates shown on page 8.

Turnover Rates

Current Rates of Turnover

| Sample Ages | Years of Service | % of Active Members Separating within Next Year | | | |
|-------------|------------------|---|--------|--------|-------|
| | | 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 | |

Proposed Rates of Turnover (Sample rates)

| Years of Service | % of Active Members Separating within Next Year | |
|------------------|---|---------------|
| | General & Court | Police & Fire |
| 10 | 2.70% | 1.10% |
| 15 | 1.40% | 0.50% |
| 20 | 1.40% | 0.40% |
| 25 | 1.40% | 0.40% |
| 30 & over | 1.40% | 0.40% |

Disability

Discussion: Rates of disability are used to measure the probabilities of an eligible member becoming disabled and leaving City employment with Plan benefits. Disability rates do not apply to members who are eligible for retirement. During the study period, the number of disabilities was low and the actual number of disability retirements was generally consistent with the number expected during the study period for each of the groups. This suggests that the current disability rates continue to be a good fit with Plan experience. The experience during the study period is summarized below:

| Number of Disabilities | | |
|-------------------------------|-----------------|---------------|
| Group | Expected | Actual |
| General | 1.16 | 0 |
| Court | 0.21 | 0 |
| Police Patrol | 0.35 | 1 |
| Police Command | 0.19 | 0 |
| Fire | 0.25 | 0 |
| Total | 2.16 | 1 |

Proposal: We recommend no change to the current disability rates at this time. The current and proposed rates are shown below:

Disability Rates

Current and Proposed Rates of Disability

| 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 |

Mortality

Discussion: The mortality assumption used in the biennial valuations of the City of Farmington Hills Retiree Health Plan measures the probabilities of members dying before retirement and the probability of each benefit being provided during the Plan members retirement years. The incidence of pre-retirement mortality is a relatively minor ingredient in the determination of Plan liabilities. This is due to the small incidence of death among current employees. In contrast, the assumed incidence of post-retirement mortality is a more significant component of Plan liabilities. The mortality tables currently being used in the biennial valuation of the Plan are the RP-2000 mortality tables projected to the year 2020 using projection scale BB.

Newer mortality tables have been released since the year 2000. Things change and our understanding of things also changes. This is reflected in the most recent published mortality tables released in final form in 2019 by the Society of Actuaries (Pub-2010 mortality tables). These mortality tables include mortality rates based on analysis of experience of public plan populations using both a head count weighted approach and a benefit weighted approach. Head count weighted tables are a good fit for populations that are relatively uniform while the amount weighted tables are more appropriate for populations with a wide range of benefit amounts. Accordingly, we recommend the use of the Pub-2010 General amount weighted tables for the General and Court group valuations and the head count weighted Safety tables for the Police and Fire groups. These tables were adopted by the Board for use in the annual pension plan valuations.

Proposal: We recommend the following mortality tables for use in future valuations of the Plan:

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, 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, with future mortality improvements projected to 2025 using scale MP-2018.

Mortality

Summary of Life Expectancies Based on the Current Tables

| Sample Ages | Single Life Retirement Values | |
|----------------|--------------------------------|-------|
| | Future Life Expectancy (Years) | |
| | Men | Women |
| 50 | 32.99 | 35.59 |
| 55 | 28.37 | 30.90 |
| 60 | 23.94 | 26.34 |
| 65 | 19.74 | 21.98 |
| 70 | 15.83 | 17.93 |
| 75 | 12.26 | 14.25 |
| 80 | 9.13 | 10.95 |

The table above is based on healthy life mortality rates.

Summary of Life Expectancies Based on the Proposed Tables

| Sample Ages | General and Court | | | | | |
|----------------|--------------------------------|-------|--------------------------------|-------|--------------------------------|-------|
| | Healthy Pre-Retirement | | Healthy Post-Retirement | | Disabled Retirement | |
| | Future Life Expectancy (Years) | | Future Life Expectancy (Years) | | Future Life Expectancy (Years) | |
| | Men | Women | Men | Women | Men | Women |
| 50 | 37.72 | 39.84 | 33.79 | 36.65 | 24.62 | 27.12 |
| 55 | 33.00 | 35.02 | 29.29 | 32.06 | 21.53 | 24.09 |
| 60 | 28.38 | 30.26 | 24.94 | 27.54 | 18.74 | 21.23 |
| 65 | 23.86 | 25.57 | 20.75 | 23.12 | 16.10 | 18.27 |
| 70 | 19.43 | 20.96 | 16.75 | 18.85 | 13.51 | 15.17 |
| 75 | 15.08 | 16.45 | 13.04 | 14.84 | 10.95 | 12.13 |
| 80 | 10.83 | 12.06 | 9.74 | 11.21 | 8.54 | 9.38 |

| Sample Ages | Police and Fire | | | | | |
|----------------|--------------------------------|-------|--------------------------------|-------|--------------------------------|-------|
| | Healthy Pre-Retirement | | Healthy Post-Retirement | | Disabled Retirement | |
| | Future Life Expectancy (Years) | | Future Life Expectancy (Years) | | Future Life Expectancy (Years) | |
| | Men | Women | Men | Women | Men | Women |
| 50 | 36.28 | 39.00 | 32.74 | 35.20 | 31.04 | 32.59 |
| 55 | 31.51 | 34.21 | 28.18 | 30.56 | 26.73 | 28.18 |
| 60 | 26.84 | 29.48 | 23.74 | 26.12 | 22.61 | 24.07 |
| 65 | 22.28 | 24.78 | 19.58 | 21.89 | 18.76 | 20.19 |
| 70 | 17.87 | 20.15 | 15.64 | 17.86 | 15.13 | 16.41 |
| 75 | 13.67 | 15.70 | 12.03 | 14.11 | 11.78 | 12.91 |
| 80 | 9.73 | 11.51 | 8.87 | 10.75 | 8.82 | 9.94 |

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

SECTION B

ECONOMIC ASSUMPTIONS

Economic Assumptions

Investment Return and Inflation

Background

Economic assumptions include long-term rates of investment return and wage inflation (the across-the-board portion of salary increases). Unlike demographic activities, economic activities do not lend themselves to analysis solely on the basis of internal historical patterns because both salary increases and investment return are affected more by external forces; namely inflation (both wage and price), general productivity changes and the local economic environment which defy accurate long-term prediction. Estimates of economic activities are generally selected on the basis of the expectations in an inflation-free environment and then both long-term rates of investment return and wage inflation are increased by some provision for long-term inflation.

While no specific price inflation assumption is necessary in order to perform the actuarial valuation of the Plan, price inflation is a key component of the underlying wage inflation and investment return assumptions. The chart on the following page shows historical averages of both price and wage inflation. The long-term historical average is 4.0% while short-term averages are in the 2.0% range. For the purpose of this study we considered future rates of price inflation from a variety of sources including a survey of price inflation expectations from 14 investment advisors that we survey. Most of the investment firms in our survey expect price inflation to be between 2.0% and 2.5% over the next 10 years. The 2019 annual report of the Social Security Trustees uses 2.60% as the long-term intermediate inflation assumption. The federal reserve bank of Philadelphia 2019 projection of price inflation over the next 10 years is 2.20%.

Based upon the reviewed data, we recommend no change to the current price inflation assumption of 2.5% per year.

Wage inflation consists of two components: 1) a portion due to pure price inflation (i.e., increases due to changes in the CPI); and 2) increases in average salary levels in excess of pure price inflation (i.e., increases due to changes in productivity levels, supply and demand in the labor market and other macroeconomic factors). The rate of increase in National Average Earnings over the last 30 years is generally consistent with the current Plan assumption. The shorter-term averages are below this rate and the 50-year average is above it. It is expected that, in the long run, salary increases in all parts of the country will be close to the national averages. However, few economists are forecasting a repeat of the high inflation rates experienced in the 1970s. Given our recommendation for a 2.5% price inflation assumption, we believe a reasonable range for this assumption is from 3.00% to 3.50% a year.

Economic Assumptions

The chart below shows average annual rates of price and wage inflation along with rates of productivity based on the indicated historical averages.

| Year | Annual Increase in | | |
|--------------|--------------------|-------------|------------|
| | Prices (CPI-U) | Wages (NAE) | Difference |
| 3-Year Avg. | 2.0 % | 2.6 % | 0.6 % |
| 5-Year Avg. | 1.5 % | 2.9 % | 1.4 % |
| 10-Year Avg. | 1.8 % | 2.3 % | 0.5 % |
| 20-Year Avg. | 2.2 % | 3.0 % | 0.8 % |
| 30-Year Avg. | 2.5 % | 3.3 % | 0.8 % |
| 50-Year Avg. | 4.0 % | 4.6 % | 0.6 % |

Economic Assumptions

Investment Return: The investment return assumption has a significant impact on the actuarial valuation results of the Plan. As the population matures more of the actuarial accrued liabilities are related to non-active members. Under the circumstances, the need for asset liquidity increases to meet the increasing cash flow needs of the Plan.

Presented below is the target asset allocation for the City of Farmington Hills Retiree Health Plan:

| <u>Asset Class</u> | <u>Target Allocation</u> |
|----------------------|--------------------------|
| Domestic Equity | 25.00 % |
| International Equity | 18.00 % |
| Domestic Bonds | 19.00 % |
| International Bonds | 2.00 % |
| Real Estate | 5.00 % |
| Alternative Assets | 29.00 % |
| Cash and Equivalents | 2.00 % |
| Total | 100.00 % |

Based upon the target asset allocation, future expectations of investment returns for this portfolio were analyzed using the capital market expectations of various investment advisors. The final expected nominal investment return results are based upon a 2.5% price inflation assumption, which is the recommended assumption. Furthermore, the investment results presented are net of investment expenses. The following page shows the results of this analysis.

Economic Assumptions

Investment Return Expectations

| Investment Return Forecaster | Investment Forecaster Expected Nominal Return | Investment Forecaster Inflation Assumption | Expected Real Return (2)-(3) | Actuary Inflation Assumption | Expected Nominal Return (4)+(5) | Plan Incurred Administrative Expenses | Expected Nominal Return Net of Expenses (6)-(7) | Standard Deviation of Expected Return (1-Year) |
|------------------------------|---|--|------------------------------|------------------------------|---------------------------------|---------------------------------------|---|--|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| 1 | 5.43% | 2.20% | 3.23% | 2.50% | 5.73% | 0.00% | 5.73% | 12.77% |
| 2 | 6.30% | 2.50% | 3.80% | 2.50% | 6.30% | 0.00% | 6.30% | 11.93% |
| 3 | 6.36% | 2.50% | 3.86% | 2.50% | 6.36% | 0.00% | 6.36% | 12.16% |
| 4 | 6.09% | 2.20% | 3.89% | 2.50% | 6.39% | 0.00% | 6.39% | 9.76% |
| 5 | 6.15% | 2.00% | 4.15% | 2.50% | 6.65% | 0.00% | 6.65% | 10.51% |
| 6 | 6.63% | 2.25% | 4.38% | 2.50% | 6.88% | 0.00% | 6.88% | 11.99% |
| 7 | 6.84% | 2.21% | 4.63% | 2.50% | 7.13% | 0.00% | 7.13% | 12.82% |
| 8 | 6.67% | 2.00% | 4.67% | 2.50% | 7.17% | 0.00% | 7.17% | 12.28% |
| 9 | 7.05% | 2.26% | 4.79% | 2.50% | 7.29% | 0.00% | 7.29% | 12.68% |
| 10 | 6.90% | 2.30% | 4.60% | 2.50% | 7.10% | 0.00% | 7.10% | 10.29% |
| 11 | 7.17% | 2.31% | 4.87% | 2.50% | 7.37% | 0.00% | 7.37% | 12.05% |
| 12 | 7.48% | 2.15% | 5.34% | 2.50% | 7.84% | 0.00% | 7.84% | 12.50% |
| 13 | 7.00% | 1.70% | 5.30% | 2.50% | 7.80% | 0.00% | 7.80% | 11.60% |
| 14 | 7.61% | 2.00% | 5.61% | 2.50% | 8.11% | 0.00% | 8.11% | 11.32% |
| Average | 6.69% | 2.18% | 4.51% | 2.50% | 7.01% | 0.00% | 7.01% | 11.76% |

| Investment Return Forecaster | Distribution of 20-Year Average Geometric Net Nominal Return | | | Probability of Exceeding 7.50% |
|------------------------------|--|--------------|--------------|--------------------------------|
| | 40th | 50th | 60th | |
| (1) | (2) | (3) | (4) | (5) |
| 1 | 4.25% | 4.96% | 5.68% | 18.73% |
| 2 | 4.97% | 5.64% | 6.31% | 24.23% |
| 3 | 4.99% | 5.67% | 6.35% | 25.01% |
| 4 | 5.40% | 5.95% | 6.50% | 23.87% |
| 5 | 5.55% | 6.14% | 6.73% | 28.11% |
| 6 | 5.54% | 6.21% | 6.89% | 31.49% |
| 7 | 5.66% | 6.37% | 7.09% | 34.63% |
| 8 | 5.78% | 6.47% | 7.16% | 35.29% |
| 9 | 5.84% | 6.55% | 7.26% | 36.81% |
| 10 | 6.03% | 6.61% | 7.19% | 34.85% |
| 11 | 6.02% | 6.70% | 7.38% | 38.22% |
| 12 | 6.42% | 7.12% | 7.82% | 44.54% |
| 13 | 6.53% | 7.18% | 7.84% | 45.12% |
| 14 | 6.89% | 7.52% | 8.16% | 50.40% |
| Average | 5.71% | 6.36% | 7.03% | 33.67% |

Economic Assumptions

Investment Return Expectations

Actuaries are bound by Actuarial Standards of Practice (ASOP). ASOP No. 27 provides guidelines for the selection of economic assumptions for measuring pension obligations. The standard requires that economic assumptions be internally consistent with wage inflation and price inflation assumptions used in the valuation of the plan. The ASOP defines a reasonable assumption to have the following characteristics:

- It is appropriate for the purpose of the measurement;
- It reflects the actuary’s professional judgement;
- It takes into account relevant current and historical economic data as of the measurement date;
- It reflects the actuary’s estimate of future experience, the actuary’s observation of the estimates inherent in the market data or a combination of the two; and
- It has no significant bias (it is not significantly optimistic or pessimistic).

The standard suggests that either the expected geometric return (i.e., 50th percentile) or the expected arithmetic return is suitable for use as a reasonable investment return assumption. Based on the average of each of the investment consultants’ expectations, this would result in a range of 6.36% to 7.01% if all fourteen investment advisors were included.

The historical returns over the last five plan years (shown below) result in an average annual rate of return of 6.5%.

| <u>2018</u> | <u>2017</u> | <u>2016</u> | <u>2015</u> | <u>2014</u> |
|-------------|-------------|-------------|-------------|-------------|
| 7.45% | 12.39% | -1.67% | -0.47% | 15.78% |

Recommendation: We recommend lowering the investment return assumption.

SECTION C

ACTUARIAL METHODS

Actuarial Methods

Amortization Policy: The most recent actuarial valuation of the Plan includes a 12-year closed amortization period for all groups. All groups accrued liabilities are amortized using a level dollar amortization method. We recommend lengthening the amortization period to 15 years beginning with the June 30, 2020 valuation.

Actuarial Cost Method: The actuarial cost method is the liability allocation method the actuary uses to develop City contributions. The City of Farmington Hills Retiree Health Plan currently uses the entry age normal cost method. We recommend no change to the current actuarial cost method.

Asset Valuation Method: The Plan currently uses a five-year asset smoothing method with no corridor. The funding value of assets recognizes assumed investment income fully each year. Differences between actual and assumed investment income are phased-in over closed five-year periods. This is a very common method among public employee retirement systems. Most Michigan systems use an averaging period of four or five years. We recommend establishing a corridor, so that the funding value of assets does not diverge too far from the underlying market value. Systems that use a corridor will vary on the amount of the corridor, but it is typically between 10% and 30%. A Corridor in this range would have no impact on 2018 actuarial valuation results. We recommend adding a corridor to the funding value of assets used in the annual valuations of the Plan in the following range: 80% -120% of the market value.

Administrative Expenses: Currently, administrative expenses are paid for by City contributions to the Plan. The current method expresses these contributions as percentages of payroll. Since the Plan is closed to new members, this methodology results in an increasing rate over time as payroll declines. Given the closed nature of the Plan, we recommend setting the contribution for this expense equal to the reported administrative expense.

Opt-Out Assumption: Currently, 90% of eligible retirees are assumed to elect health care coverage at the time of retirement. Individuals who opt-out of this coverage are assumed to “opt-back” into the Plan at age 65. The available data provided for this activity was insufficient for the purpose of analyzing this assumption. As a result, no change in the current assumption is recommended at this time.

Other: The 2018 and prior valuations of the Plan include a liability load for the Cadillac Tax (based on the provisions of the Affordable Care Act) and future contingencies including claims volatility based on Plan size. The Cadillac Tax was repealed in December 2019. Future valuations of the Plan will reflect an adjustment for this. In addition, the claims experience of the Plan has been very good during the study period. In light of the favorable claims experience it would be reasonable to lower the load a bit but continue including a contingency liability for potential unfavorable future experience.

SECTION D

CONTRIBUTIONS BASED ON PROPOSED CHANGES

Summary of Current and Proposed Assumptions

| Assumption Set | Investment Return | Liability Load | Demographic Assumptions |
|-------------------------|------------------------------|---------------------------|------------------------------------|
| A. Current | 7.50% | 30% | Current |
| B. Proposed Demographic | 7.50% | 28% | Proposed |
| C. Alternate I | 7.00% | 18% | Proposed |
| D. Alternate II | 6.75% | 18% | Proposed |

Proposed demographic assumptions and methods include all of the recommended changes shown in Sections A and C of this report. In addition, Assumption Sets C and D include a 15-year amortization period.

The amortization periods used in the most recent valuation of the Plan and assumption set B include a 12-year period.

Effects of Recommended Changes in Actuarial Assumptions on Actuarial Liabilities and Employer Contributions Illustrative Results as of June 30, 2018

| Assumption Set | General | | | | Court | | | |
|--|---------------|---------------|---------------|---------------|--------------|--------------|--------------|--------------|
| | A | B | C | D | A | B | C | D |
| Interest Rate | 7.50% | 7.50% | 7.00% | 6.75% | 7.50% | 7.50% | 7.00% | 6.75% |
| Liability Load | 30.00% | 28.00% | 18.00% | 18.00% | 30.00% | 28.00% | 18.00% | 18.00% |
| Amortization Period | 12 | 12 | 15 | 15 | 12 | 12 | 15 | 15 |
| A. Employer Normal Cost | \$ 182,058 | \$ 210,636 | \$ 222,785 | \$ 240,758 | \$ 50,066 | \$ 55,020 | \$ 57,655 | \$ 61,873 |
| B. Actuarial Accrued Liability | \$ 33,325,973 | \$ 34,065,719 | \$ 33,125,280 | \$ 34,043,246 | \$ 2,778,158 | \$ 2,688,215 | \$ 2,626,155 | \$ 2,705,218 |
| C. Actuarial Value of Assets | 32,213,599 | 32,213,599 | 32,213,599 | 32,213,599 | 2,864,709 | 2,864,709 | 2,864,709 | 2,864,709 |
| D. Unfunded Accrued Liability (UAL) (B - C) | 1,112,374 | 1,852,120 | 911,681 | 1,829,647 | (86,551) | (176,494) | (238,554) | (159,491) |
| E. UAL Payment | 143,774 | 247,305 | 102,762 | 203,505 | (11,187) | (25,473) | (28,635) | (19,327) |
| F. Employer Contribution \$ (A + E) | 325,832 | 457,941 | 325,547 | 444,263 | 38,879 | 29,547 | 29,020 | 42,546 |

Effect of Recommended Changes in Actuarial Assumptions on Actuarial Liabilities and Employer Contributions Illustrative Results as of June 30, 2018

| Assumption Set | Police | | | | Fire | | | |
|--|---------------|---------------|---------------|---------------|--------------|--------------|--------------|--------------|
| | A | B | C | D | A | B | C | D |
| Interest Rate | 7.50% | 7.50% | 7.00% | 6.75% | 7.50% | 7.50% | 7.00% | 6.75% |
| Liability Load | 30.00% | 28.00% | 18.00% | 18.00% | 30.00% | 28.00% | 18.00% | 18.00% |
| Amortization Period | 12 | 12 | 15 | 15 | 12 | 12 | 15 | 15 |
| A. Employer Normal Cost | \$ 374,277 | \$ 396,101 | \$ 416,713 | \$ 449,460 | \$ 162,073 | \$ 174,181 | \$ 183,087 | \$ 196,449 |
| B. Actuarial Accrued Liability | \$ 31,930,730 | \$ 31,746,461 | \$ 31,082,227 | \$ 32,056,546 | \$ 9,516,393 | \$ 9,407,143 | \$ 9,223,640 | \$ 9,519,822 |
| C. Actuarial Value of Assets | 34,864,665 | 34,864,665 | 34,864,665 | 34,864,665 | 9,264,354 | 9,264,354 | 9,264,354 | 9,264,354 |
| D. Unfunded Accrued Liability (UAL) (B - C) | (2,933,935) | (3,118,204) | (3,782,438) | (2,808,119) | 252,039 | 142,789 | (40,714) | 255,468 |
| E. UAL Payment | (379,210) | (406,459) | (419,810) | (303,949) | 32,576 | 14,098 | (8,901) | 24,309 |
| F. Employer Contribution \$(A + E) | - | - | - | 145,511 | 194,649 | 188,279 | 174,186 | 220,758 |

**Effect of Recommended Changes in Actuarial Assumptions on
Actuarial Liabilities and Employer Contributions
Summary of Illustrative Results as of June 30, 2018**

| Assumption Set | A | B | C | D |
|----------------------------|---------------|---------------|---------------|---------------|
| Interest Rate | 7.50% | 7.50% | 7.00% | 6.75% |
| Amortization Period | 12 | 12 | 15 | 15 |
| Accrued Liability | \$ 77,551,254 | \$ 77,907,538 | \$ 76,057,302 | \$ 78,324,832 |
| Funding Value of Assets | 79,207,327 | 79,207,327 | 79,207,327 | 79,207,327 |
| Funding Percent | 102.14% | 101.67% | 104.14% | 101.13% |
| Employer Contribution \$ | 559,360 | 675,767 | 528,753 | 853,078 |



June 2, 2020

The Retirement Board
City of Farmington Hills
Retiree Health Plan
31555 Eleven Mile Road
Farmington Hills, Michigan 48336

Dear Board Members:

Enclosed is one copy of our report of the Retiree Health Plan experience.

I look forward to meeting with the Board to discuss the results of our review.

Sincerely,

A handwritten signature in cursive script that reads "Louise M. Gates". The signature is written in a dark blue or black ink.

Louise M. Gates, ASA, FCA, MAAA

LMG:dj
Enclosure