

City of Dearborn Heights  
Police and Fire Retirement System  
Annual Actuarial Valuation Report  
July 1, 2018



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April 13, 2018

Board of Trustees  
City of Dearborn Heights  
Police and Fire Retirement System  
Dearborn Heights, Michigan

Dear Board Members:

The results of the July 1, 2018 annual actuarial valuation of the City of Dearborn Heights Police and Fire 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 2018-2019 fiscal year. This report should not be relied upon for any other purpose. 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 at the request of 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 contribution rate shown on page A-2 may be considered as a minimum contribution rate that complies with the Board's funding policy. Users of this report should be aware that contributions made at that rate 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.

The findings in this report are based on data and other information through July 1, 2018. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period, or additional cost or contribution requirements based on the plan'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.

This valuation assumed 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 valuation was based upon information, furnished by the City, concerning Retirement System benefits, financial transactions, and 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.

In addition, this report was prepared using certain assumptions approved by the Board as described in the section of this report entitled Assumption and Methods.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge, the information contained in this report is accurate and fairly presents the actuarial position of the City of Dearborn Heights Police and Fire 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.

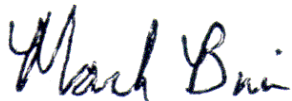
Mark Buis and Francois Pieterse are Members of the American Academy of Actuaries (MAAA). These actuaries meet the Academy's Qualification Standards to render the actuarial opinions contained herein.

The signing actuaries are independent of the plan sponsor.

Gabriel, Roeder, Smith & Company will be pleased to review this valuation with the Board of Trustees and to answer any questions pertaining to the valuation.

Respectfully submitted,

GABRIEL, ROEDER, SMITH & COMPANY



Mark Buis, FSA, EA, FCA, MAAA



Francois Pieterse, ASA, FCA, MAAA

MB/FP:dj

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## **SECTION A**

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### **VALUATION RESULTS**

## Funding Objective

The funding objective of the Retirement System is to establish and receive contributions, expressed as level percents of active member payroll that will accumulate assets during each member’s working years which, together with investment income, will be sufficient to pay promised benefits after retirement.

## Employer Contributions

The Retirement System is supported by member contributions, City contributions and investment income from Retirement System assets.

Employer Contributions which satisfy the funding objective are determined by the annual actuarial valuation and are sufficient to:

- (1) Cover the actuarial present value of benefits allocated to the current year by the actuarial cost method described in Section C (the normal cost); and
- (2) Finance over a period of future years the actuarial present value of benefits not covered by valuation assets and anticipated future normal costs (the unfunded actuarial accrued liability).

**Computed employer contributions** for the fiscal year beginning July 1, 2018 are shown on page A-2.

| Contributions                         | Fiscal Year Beginning July 1, |                    |
|---------------------------------------|-------------------------------|--------------------|
|                                       | 2017                          | 2018               |
| Number Active <sup>(1)</sup>          | 90                            | 93                 |
| Payroll                               | \$6,449,832                   | \$6,986,226        |
| Projected Payroll                     | 6,675,576                     | 7,230,744          |
| Total Normal Cost Rate                | 18.11 %                       | 18.84 %            |
| Employee Contribution Rate            | 4.70 %                        | 5.66 %             |
| Net Employer Normal Cost Rate         | 13.41 %                       | 13.18 %            |
| Employer Normal Cost (Dollars)        | \$ 895,195                    | \$ 953,012         |
| Amortization Payment <sup>(2)</sup>   | 2,040,724                     | 2,225,623          |
| <b>Net City Contribution</b>          | <b>\$2,935,919</b>            | <b>\$3,178,635</b> |
| Estimated Percent of Pay Contribution | 43.98 %                       | 43.96 %            |

<sup>(1)</sup> Data as of one year prior to the valuation date. Liabilities and normal costs were “rolled-forward” from July 1, 2017 to July 1, 2018. Estimated payroll shown above includes only active members who have not applied for DROP.

<sup>(2)</sup> Amortization payment based on a 17-year amortization of Unfunded Accrued Liability as of July 1, 2018 and 18-year amortization of the Unfunded Accrued Liability as of July 1, 2017.

## Present Value of Future Benefits and Accrued Liability as of July 1, 2018

|   | June 30,       |                |
|---|----------------|----------------|
|   | 2017           | 2018           |
| A. Accrued Liability  |                |                |
| 1. For retirees and beneficiaries (including supplemental)* | \$ 178,193,199 | \$ 185,943,140 |
| 2. For vested terminated members                            | 135,991        | 145,693        |
| 3. For present active members                               |                |                |
| a. Value of expected future benefit payments                | 35,313,581     | 37,072,708     |
| b. Value of future normal costs                             | 10,275,713     | 12,322,628     |
| c. Active member accrued liability: (a) - (b)               | 25,037,868     | 24,750,080     |
| 4. Total accrued liability                                  | 203,367,058    | 210,838,913    |
| B. Present Assets (Funding Value)                           | 175,728,005    | 181,941,875    |
| C. Unfunded Accrued Liability: (A.4) - (B)                  | 27,639,053     | 28,897,038     |
| D. Funding Ratio: (B) / (A.4)                               | 86.4%          | 86.3%          |

\* *Accrued Liability for retirees and beneficiaries includes all DROP balances and liability for current DROP members.*

## Development of Funding Value of Retirement System Assets July 1, 2018

| Year Ended June 30:                                       | 2017          | 2018          | 2019         | 2020         | 2021         | 2022        |
|---|---------------|---------------|--------------|--------------|--------------|-------------|
| A. Funding Value Beginning of Year                        | \$167,112,444 | \$170,118,328 |              |              |              |             |
| B. Market Value End of Year                               | 163,714,339   | 178,261,425   |              |              |              |             |
| C. Market Value Beginning of Year                         | 175,722,807   | 163,714,339   |              |              |              |             |
| D. Non-Investment Net Cash Flow                           | (7,603,428)   | (9,382,004)   |              |              |              |             |
| E. Investment Income                                      |               |               |              |              |              |             |
| E1. Market Total: B - C - D                               | (4,405,040)   | 23,929,090    |              |              |              |             |
| E2. Amount for Immediate Recognition (7.0%)               | 11,431,751    | 11,579,913    |              |              |              |             |
| E3. Amount for Phased-In Recognition: E1-E2               | (15,836,791)  | 12,349,177    |              |              |              |             |
| F. Phased-In Recognition of Investment Income             |               |               |              |              |              |             |
| F1. Current Year: 0.20 x E3                               | (3,167,358)   | 2,469,835     |              |              |              |             |
| F2. First Prior Year                                      | (1,344,916)   | (3,167,358)   | \$ 2,469,835 |              |              |             |
| F3. Second Prior Year                                     | 4,105,237     | (1,344,916)   | (3,167,358)  | \$ 2,469,835 |              |             |
| F4. Third Prior Year                                      | 2,089,716     | 4,105,237     | (1,344,916)  | (3,167,358)  | \$ 2,469,835 |             |
| F5. Fourth Prior Year                                     | (2,505,118)   | 2,089,716     | 4,105,239    | (1,344,914)  | (3,167,359)  | \$2,469,837 |
| F6. Total Recognized Investment Gain                      | (822,439)     | 4,152,514     | 2,062,800    | (2,042,437)  | (697,524)    | 2,469,837   |
| G. Preliminary Funding Value End of Year: A + D + E2 + F6 | 170,118,328   | 176,468,751   |              |              |              |             |
| H. Expected Contributions for Following Year              | 2,824,968     | 3,345,064     |              |              |              |             |
| I. Expected Disbursements for Following Year              | 8,910,578     | 9,992,106     |              |              |              |             |
| J. Expected Earnings for Following Year                   | 11,695,287    | 12,120,166    |              |              |              |             |
| K. Funding Value of Assets for Following Year             | 175,728,005   | 181,941,875   |              |              |              |             |



## Estimated Market Rates of Return

| Year<br>Ending<br>June 30 | Contributions    | Investment<br>Earnings | Benefit<br>Payments | Market Value<br>End of Year | Estimated<br>Market Rate<br>of Return |
|---------------------------|------------------|------------------------|---------------------|-----------------------------|---------------------------------------|
| 2008                      | \$1,141,477      | \$ (5,183,498)         | \$6,076,854         | \$146,281,709               | (3.37) %                              |
| 2009                      | 1,438,858        | (31,294,419)           | 6,112,778           | 110,313,370                 | (21.74)                               |
| 2010                      | 1,707,471        | 16,787,522             | 6,495,106           | 122,313,257                 | 15.56                                 |
| 2011                      | 2,814,198        | 34,279,782             | 10,483,799          | 148,923,438                 | 28.93                                 |
| 2012                      | 2,858,205        | (3,264,616)            | 8,841,703           | 139,675,324                 | (2.24)                                |
| 2013                      | 2,862,144        | 19,880,949             | 7,674,113           | 154,744,304                 | 14.48                                 |
| 2014                      | 3,743,857        | 29,676,159             | 9,746,166           | 178,418,154                 | 19.56                                 |
| 2015                      | 3,971,083        | 3,274,965              | 9,941,395           | 175,722,807                 | 1.87                                  |
| 2016                      | 3,499,733        | (4,993,699)            | 10,514,502          | 163,714,339                 | (2.90)                                |
| <b>2017</b>               | <b>3,525,391</b> | <b>23,401,866</b>      | <b>12,380,171</b>   | <b>178,261,425</b>          | <b>14.69</b>                          |

## Derivation of Actuarial Gain (Loss) for the Year Ending June 30, 2018

The actuarial gains or losses realized in the operation of the Retirement System provide an experience test. Gains and losses are expected to cancel each other over a period of years (in the absence of double-digit inflation) and sizable year to year fluctuations are common.

|  |               |
|--|---------------|
| (1) UAL* at start of year  | \$ 27,639,053 |
| (2) Normal cost  | 1,309,488     |
| (3) Actual contributions   | 3,525,391     |
| (4) Interest accrual   | 1,857,177     |
| (5) Expected UAL before changes  | 27,280,327    |
| (6) Change due to actuarial assumptions/methods                                    | 0             |
| (7) Change from revised benefits   | 366,434       |
| (8) Expected UAL after changes   | 27,646,761    |
| (9) Actual UAL at end of year  | 28,897,038    |
| (10) Gain (loss): (8) - (9)  | (1,250,277)   |
| (11) Gain (loss) as a percent of actuarial<br>accrued liabilities at start of year | (0.6)%        |

\* *Unfunded accrued liability.*

## Reconciliation of Total Bonus Funds July 1, 2018

|  |              |
|--|--------------|
| A. Fund Balance Beginning of Year                      | \$ 3,822,519 |
| B. Distributions During Year                           | 861,266      |
| C. Unadjusted Fund Balance End of Year                 | 2,961,253    |
| D. Average Balance: $(A + C) \times .5$                | 3,391,886    |
| E. Estimated Market Rate of Return for Prior Plan Year | 14.69%       |
| F. Accrued Interest: $D \times E$                      | 498,268      |
| G. Fund Balance End of Year with Interest              | 3,459,521    |
| H. Rate of Return in Excess of 9%, Up to 1%            | 1.00%        |
| I. Market Value of Total Fund as of July 1, 2017       | 178,261,425  |
| J. Excess Earnings                                     | 1,782,614    |
| K. Excess Earnings Allocated to Bonus Funds            | 1,782,614    |
| L. Total Fund Balance End of Year: $G + K$             | 5,242,135    |

# Firefighters Bonus Fund

|   | <u>6/30/2016</u> | <u>6/30/2017</u> | <u>6/30/2018</u> |
|---|------------------|------------------|------------------|
| A. Fund Balance Beginning of Year                           | \$ 1,410,120     | \$ 1,276,103     | \$ 1,069,288     |
| B. Distributions During Year                                | 158,901          | 172,306          | 192,184          |
| C. Unadjusted Fund Balance End of Year                      | 1,251,219        | 1,103,797        | 877,104          |
| D. Average Balance: (A + C) x .5                            | 1,330,670        | 1,189,950        | 973,196          |
| E. Estimated Market Rate of Return for Prior Plan Year      | 1.87%            | (2.90)%          | 14.69%           |
| F. Accrued Interest: D x E                                  | 24,884           | (34,509)         | 142,962          |
| G. Fund Balance End of Year with Interest                   | 1,276,103        | 1,069,288        | 1,020,066        |
| H. Computed Excess Earnings Contribution                    | -                | -                | 494,317          |
| I. Pensions Paid in Prior Plan Year                         | 1,919,617        | 2,243,475        | 2,311,431        |
| J. Average Monthly Pensions in Prior Plan Year: I / 12      | 159,968          | 186,956          | 192,619          |
| K. Max. Fund Balance After Excess Earnings Contrib.: 10 x J | 1,599,681        | 1,869,563        | 1,926,193        |
| L. Maximum Excess Earnings Contribution*                    | -                | -                | 494,317          |
| M. Fund Balance End of Year: G + L                          | 1,276,103        | 1,069,288        | 1,514,383        |

\* The Excess Earnings Contribution in any year cannot cause the Bonus Fund to have a balance in excess of 10 times the total average monthly pension benefit payments paid in the previous year to retirees covered by the Bonus Fund (see Line K).

## Police Command Bonus Fund

|   | <u>6/30/2016</u> | <u>6/30/2017</u> | <u>6/30/2018</u> |
|---|------------------|------------------|------------------|
| A. Fund Balance Beginning of Year                           | \$ 1,247,470     | \$ 1,097,880     | \$812,777        |
| B. Distributions During Year                                | 171,316          | 256,991          | 259,188          |
| C. Unadjusted Fund Balance End of Year                      | 1,076,154        | 840,889          | 553,589          |
| D. Average Balance: (A + C) x .5                            | 1,161,812        | 969,385          | 683,183          |
| E. Estimated Market Rate of Return for Prior Plan Year      | 1.87%            | (2.90)%          | 14.69%           |
| F. Accrued Interest: D x E                                  | 21,726           | (28,112)         | 100,360          |
| G. Fund Balance End of Year with Interest                   | 1,097,880        | 812,777          | 653,949          |
| H. Computed Excess Earnings Contribution                    | -                | -                | 559,288          |
| I. Pensions Paid in Prior Plan Year                         | 2,248,278        | 2,170,735        | 2,741,902        |
| J. Average Monthly Pensions in Prior Plan Year: I / 12      | 187,357          | 180,895          | 228,492          |
| K. Max. Fund Balance After Excess Earnings Contrib.: 10 x J | 1,873,565        | 1,808,946        | 2,284,918        |
| L. Maximum Excess Earnings Contribution*                    | -                | -                | 559,288          |
| M. Fund Balance End of Year: G + L                          | 1,097,880        | 812,777          | 1,213,237        |

\* The Excess Earnings Contribution in any year cannot cause the Bonus Fund to have a balance in excess of 10 times the total average monthly pension benefit payments paid in the previous year to retirees covered by the Bonus Fund (see Line K).

## Police Patrol Bonus Fund

|   | <u>6/30/2016</u> | <u>6/30/2017</u> | <u>6/30/2018</u> |
|---|------------------|------------------|------------------|
| A. Fund Balance Beginning of Year                           | \$412,598        | \$371,216        | \$252,162        |
| B. Distributions During Year                                | 48,643           | 109,882          | 125,952          |
| C. Unadjusted Fund Balance End of Year                      | 363,955          | 261,334          | 126,210          |
| D. Average Balance: (A + C) x .5                            | 388,277          | 316,275          | 189,186          |
| E. Estimated Market Rate of Return for Prior Plan Year      | 1.87%            | (2.90)%          | 14.69%           |
| F. Accrued Interest: D x E                                  | 7,261            | (9,172)          | 27,791           |
| G. Fund Balance End of Year with Interest                   | 371,216          | 252,162          | 154,001          |
| H. Computed Excess Earnings Contribution                    | -                | -                | 390,294          |
| I. Pensions Paid in Prior Plan Year                         | 964,535          | 1,089,065        | 1,576,034        |
| J. Average Monthly Pensions in Prior Plan Year: I / 12      | 80,378           | 90,755           | 131,336          |
| K. Max. Fund Balance After Excess Earnings Contrib.: 10 x J | 803,779          | 907,554          | 1,313,362        |
| L. Maximum Excess Earnings Contribution*                    | -                | -                | 390,294          |
| M. Fund Balance End of Year: G + L                          | 371,216          | 252,162          | 544,295          |

\* The Excess Earnings Contribution in any year cannot cause the Bonus Fund to have a balance in excess of 10 times the total average monthly pension benefit payments paid in the previous year to retirees covered by the Bonus Fund (see Line K).

## Pre-2001 Retiree Bonus Funds

|   | <u>6/30/2016</u> | <u>6/30/2017</u> | <u>6/30/2018</u> |
|---|------------------|------------------|------------------|
| A. Fund Balance Beginning of Year                                   | \$2,285,260      | \$2,030,425      | \$1,688,292      |
| B. Distributions During Year  | 294,813          | 287,418          | 283,942          |
| C. Unadjusted Fund Balance End of Year                              | 1,990,447        | 1,743,007        | 1,404,350        |
| D. Average Balance: (A + C) x .5                                    | 2,137,854        | 1,886,716        | 1,546,321        |
| E. Estimated Market Rate of Return from Prior Plan Year             | 1.87%            | (2.90)%          | 14.69%           |
| F. Accrued Interest: D x E  | 39,978           | (54,715)         | 227,155          |
| G. Fund Balance End of Year with Interest                           | 2,030,425        | 1,688,292        | 1,631,505        |
| H. Excess Earnings  | -                | -                | 338,715          |
| I. Total Fund Balance End of Year: G + H (Max. 15 x J.2.)*          | 2,030,425        | 1,688,292        | 1,970,220        |
| J. Maximum Disbursement for Following Fiscal Year                   |                  |                  |                  |
| 1. Total Annual Benefit Payments for Prior Year Pre-7/2001 Retirees | 3,449,014        | 3,407,304        | 3,362,739        |
| 2. Maximum Total Annual Distribution: (J.1. / 12)                   | 287,418          | 283,942          | 280,228          |

\* The maximum fund balance is 15 times the prior year's average monthly gross benefit distributions.

## Comments, Recommendation, and Conclusion

**Comment 1:** Contribution requirements increased from the prior year, from \$2,935,919 to \$3,178,635. Increases were primarily due to increased liabilities due to higher pay increases than expected, service purchases, more people retiring or entering the DROP than expected and fewer deaths than expected. Due to favorable investment performance the reserves set aside for supplemental/bonus payments increased more than expected.

**Comment 2:** The market value rate of investment return on System assets for the year ending June 30, 2017, 14.69%, was above the long term assumed level of 7.0%. However, under the asset valuation method, only a portion of investment gains and losses are recognized in any one year. As a result, the rate of return recognized in this valuation was lower than 14.69% and differences between the market value of assets and funding value of assets will be recognized in future years. If the Market Value of Assets were used (instead of funding value of assets), the estimated employer contribution would have been approximately \$3,030,000 (instead of \$3,178,635) and the funded status would have been about 87.2% (instead of 86.3%).

**Comment 3:** Based on projected benefit payments and assuming the long term discount rate of 7.0%, the bonus funds are expected to be depleted in about 6 years.

**Comment 4:** The following changes in the benefit provisions for Fire members were reflected in this valuation:

- A firefighter hired on or after July 1, 2011 may include in his/her AFC up to 41 and 2/3 days of twenty-four (24) hour unused sick days in lieu of a lump sum distribution. For those hired prior to July 1, 2011, compensatory time up to 240 hours may be included in AFC. For those hired on or after July 1, 2011, AFC may include up to 240 hours of sick time, compensatory time, or vacation time.
- Member contributions increased from 5% of salary to 7% of salary, effective July 1, 2017.

**Conclusion:** The City's contribution to the City of Dearborn Heights Police and Fire Retirement System for the fiscal year beginning July 1, 2018 has been computed to be \$3,178,635.

### 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 7.0% on the actuarial value of assets), it is expected that:

- 1) Employer normal cost amounts as a percentage of payroll will remain approximately level year to year;
- 2) The unfunded actuarial accrued liability will be fully amortized after 17 years; and
- 3) The funded status of the plan will increase gradually towards a 100% funded ratio.



# Comments, Recommendation, and Conclusion

## Limitations of Funded Status Measurements

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

- 1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations,
- 2) The measurement is inappropriate for assessing the need for or the amount of future employer contributions, and
- 3) The measurement would produce a different result if the market value of assets were used instead of the actuarial value of assets, unless the market value of assets is used in the measurement.

## **SECTION B**

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### **SUMMARY OF BENEFIT PROVISIONS AND VALUATION DATA**

# Summary of Benefit Provisions Evaluated or Considered as of June 30, 2018

## **Service Retirement**

### **Eligibility:**

*Police:* 25 years of service and age 50 (prior to age 50 with City approval). Effective July 1, 2009, 25 years of service.

*Police Command:* 25 years of service and age 50 (prior to age 50 with City approval). Effective July 1, 2009, 25 years of service.

*Fire:* 25 years of service and age 50 (prior to age 50 with City approval). Age 55 with 20 years of service.

### **Benefit Amount:**

*Police:* 2.8% of AFC for first 25 years of service, plus 5% of AFC at 25 years of service, plus 1% of AFC for years of service in excess of 25.

*Police Command:* 2.8% of AFC for first 25 years of service, plus 5% of AFC at 25 years of service, plus 1.5% of AFC for years of service in excess of 25 (but not more than 30) with a maximum benefit of 82.5% of AFC.

*Fire:* 2.8% of AFC for first 25 years of service, plus 5% of AFC at 25 years of service, plus 1.5% of AFC for years of service in excess of 25 (but not more than 30) with a maximum benefit of 82.5% of AFC.

## **Compulsory Retirement**

Age 65 or, if requested by the City, age 60.

## **Average Final Compensation (AFC)**

*Police:* The average of five years of highest compensation in the last 10 years of service. Effective July 1, 2004, the average of three years of highest compensation in the last 10 years of service. Effective July 1, 2009, the average of three years of highest compensation in all of the years of service.

*Police Command:* Effective July 1, 2005, the average of three years of highest compensation in the last 10 years of service. Effective July 1, 2009, the average of three years of highest compensation in all of the years of service.

*Fire:* The average of three years of highest compensation in the last 10 years of service. Effective July 1, 2011, the average of three years of highest compensation in all of the years of service.

*For Police and Police Command:* AFC may include up to 75 unused sick days in lieu of a lump sum distribution. Effective July 1, 2009, AFC may include up to 125 unused sick days, up to 240 hours of compensatory time, and up to 244 hours of vacation time in lieu of a lump sum distribution. For those hired on or after July 1, 2011, no sick time, compensatory time, or vacation time may be included in AFC.

*For Fire:* AFC may include up to 41 and 2/3 days of twenty-four (24) hour unused sick days in lieu of a lump sum distribution. For those hired prior to July 1, 2011, compensatory time up to 240 hours may be included in AFC. For those hired on or after July 1, 2011, AFC may include up to 240 hours of sick time, compensatory time, or vacation time.

# Summary of Benefit Provisions Evaluated or Considered as of June 30, 2018

## ***Normal Form of Payment***

Accrued Normal Retirement Benefit payable for life, with 60% continuing to the eligible spouse upon death of participant. Alternatively, member may elect an actuarially equivalent 100% or 50% survivor benefit.

## ***Vesting***

### ***Eligibility:***

Termination of employment with 10 or more years of credited service.

### ***Annual Benefit:***

Accrued Normal Retirement benefit at date of termination payable upon application on or after the date the member would have been eligible to retire had employment continued.

## ***Duty Disability Retirement***

### ***Eligibility:***

No minimum service requirement.

### ***Annual Benefit:***

Prior to age 55, benefit is 50% of AFC.

On or after attainment of age 55, Accrued Normal Retirement Benefit is payable based on years of service including credit for the period of receipt of a disability pension.

## ***Non-Duty Disability Retirement***

### ***Eligibility:***

5 years of service.

### ***Annual Benefit:***

Accrued Normal Retirement Benefit if disability occurs after age 55. Otherwise, 1% of AFC times years of service prior to age 55, increasing to 2% of AFC times years of service at disability date upon attainment of age 55.

## ***Pre-Retirement Duty Death Benefit***

### ***Eligibility:***

No minimum service requirement.

### ***Annual Benefit:***

An amount equal to that paid under the provisions of the Workers' Compensation Act payable to the spouse, children and/or dependents. This benefit continues during the lifetime of these recipients until the remarriage of the spouse, the attainment of age 18 of a child (or marriage, if earlier), or for as long as the Board determines the need exists in the case of other dependents.

# Summary of Benefit Provisions Evaluated or Considered as of June 30, 2018

## ***Pre-Retirement Non-Duty Death Benefit***

A member with 25 or more years of service may name a beneficiary to receive the 100% survivor benefit which would have been payable had the member retired the day before death.

If a member dies with at least 15 years of service and has not elected an option, the surviving spouse receives the benefit the member would have received had the member retired the day before death, elected the 100% option and nominated the spouse as beneficiary.

If a member with less than 15 years of service dies, salary deductions with interest (not to exceed 2% per annum) will be paid to the designated beneficiary, if any, or to the estate.

## ***Annuity Withdrawal***

Fire, Police and Police Command may, at retirement, elect to receive a partial or total refund of the member's total contributions (without interest). If such refund is elected, the member's retirement allowance is reduced actuarially using factors based upon the GA83 Male Mortality Table and interest equal to the PBGC interest rate in effect on July 1, or on last preceding the retirement date.

## ***Workers' Compensation Offset***

Any benefits payable from the retirement system may be reduced for benefits paid under the Workers' Compensation Act.

## ***Member Contributions***

Police – 5% of salary.

Police Command – 3% of salary.

Fire – 5% of salary, effective August 1, 2007.

Fire – 7% of salary, effective July 1, 2017.

## ***Deferred Retirement Option Plan (DROP)***

***Eligibility*** – Effective January 11, 2007 for Police Officers and August 21, 2007 for Firefighters: Eligible for Normal Retirement or 25 years of service.

***Benefit*** – 100% of the member's accrued benefit at the date of DROP is deposited into an account that receives 5% compound interest annually while the member remains an active member. No member contributions are made while in the DROP and no additional retirement benefits are earned.

Employer contributions will include payroll of DROP participants and are not credited to members' accounts. Members may remain in the DROP for a maximum of 60 months (Effective July 1, 2009, 84 months for Police and Police Command) at which time they begin receiving the benefit accrued to the date of DROP into the program and elect an option of distribution of the DROP account (full lump sum, partial lump sum, rollover, lifetime annuity, leave funds in system).

After an employee attains thirty years of service, the allowed DROP participation period will be reduced by one month for every month beyond 30 years of service.

## Police and Fire Active Members as of July 1, 2017 by Attained Age and Years of Service

| Attained Age  | Years of Service on Valuation Date |          |           |           |          |          | Totals    |                     |
|---------------|------------------------------------|----------|-----------|-----------|----------|----------|-----------|---------------------|
|               | 0-4                                | 5-9      | 10-14     | 15-19     | 20-24    | 25-29    | No.       | Valuation Payroll   |
| 20-24         | 3                                  |          |           |           |          |          | 3         | \$ 142,677          |
| 25-29         | 13                                 |          |           |           |          |          | 13        | 737,265             |
| 30-34         | 22                                 | 3        | 2         | 1         |          |          | 28        | 1,672,492           |
| 35-39         | 8                                  | 4        | 8         | 3         |          |          | 23        | 1,840,324           |
| 40-44         | 3                                  |          | 2         | 7         | 5        |          | 17        | 1,517,511           |
| 45-49         | 2                                  |          | 1         | 1         | 2        |          | 6         | 538,174             |
| 50-54         |                                    |          |           | 1         | 1        |          | 2         | 200,029             |
| 55-59         |                                    |          |           | 1         |          |          | 1         | 101,505             |
| <b>Totals</b> | <b>51</b>                          | <b>7</b> | <b>13</b> | <b>14</b> | <b>8</b> | <b>0</b> | <b>93</b> | <b>\$ 6,749,977</b> |

While not used in the financial computations, the following group averages are computed and shown because of their general interest. The amounts shown above do not include DROP members.

Age: 35.8 years  
 Service: 8.3 years  
 Annual Pay: \$72,580

## Police and Fire Active Members Three-Year Summary

|                        | As of July 1st of the Indicated Year |              |              |
|------------------------|--------------------------------------|--------------|--------------|
|                        | 2017                                 | 2016         | 2015         |
| Active Members         | 93                                   | 90           | 87           |
| Valuation Payroll      | \$ 6,749,977                         | \$ 6,231,722 | \$ 6,125,062 |
| Average Compensation   | \$ 72,580                            | \$ 69,241    | \$ 70,403    |
| Average Age (yrs.)     | 35.8                                 | 35.9         | 37.1         |
| Average Service (yrs.) | 8.3                                  | 8.8          | 10.2         |

**Police and Fire  
Inactive Members as of July 1, 2017  
Tabulated by Attained Age**

| <b>Attained Age</b> | <b>No.</b> | <b>Estimated Deferred Allowance</b> |
|---------------------|------------|-------------------------------------|
| 35                  | 1          | \$28,930                            |
| <b>Totals</b>       | <b>1</b>   | <b>\$28,930</b>                     |



## Police and Fire DROP Members as of July 1, 2017 Tabulated by Attained Age

| Attained<br>Age | Totals    |                    |
|-----------------|-----------|--------------------|
|                 | No.       | DROP<br>Payment    |
| 44              | 1         | \$ 80,987          |
| 46              | 2         | 160,559            |
| 47              | 2         | 179,491            |
| 48              | 6         | 538,904            |
| 49              | 1         | 72,034             |
| 50              | 4         | 343,784            |
| 51              | 4         | 327,453            |
| 52              | 2         | 146,728            |
| 53              | 1         | 78,676             |
| 54              | 3         | 221,094            |
| 55              | 2         | 189,528            |
| 56              | 1         | 86,185             |
| <b>Totals</b>   | <b>29</b> | <b>\$2,425,423</b> |

Average Age at DROP: 47.3 years  
Average Age as of 2017: 50.7 years

# Police and Fire

## Retirees and Beneficiaries as of July 1, 2017

### Tabulated by Attained Age

| Attained<br>Age | Totals     |                      |
|-----------------|------------|----------------------|
|                 | No.        | Annual<br>Allowances |
| 43              | 2          | \$ 81,725            |
| 44              | 2          | 27,108               |
| 46              | 2          | 146,937              |
| 47              | 1          | 65,476               |
| 48              | 5          | 264,231              |
| 49              | 6          | 300,730              |
| 50              | 3          | 207,573              |
| 51              | 9          | 603,102              |
| 52              | 6          | 473,740              |
| 53              | 5          | 307,573              |
| 54              | 9          | 563,208              |
| 55              | 5          | 246,653              |
| 56              | 8          | 511,462              |
| 57              | 3          | 185,439              |
| 58              | 9          | 612,589              |
| 59              | 3          | 106,171              |
| 60              | 1          | 6,024                |
| 61              | 7          | 514,372              |
| 62              | 5          | 221,255              |
| 63              | 11         | 509,695              |
| 64              | 5          | 167,523              |
| 65              | 6          | 278,221              |
| 66              | 5          | 226,786              |
| 67              | 6          | 280,106              |
| 68              | 10         | 404,829              |
| 69              | 8          | 254,541              |
| 70              | 6          | 174,251              |
| 71              | 2          | 71,900               |
| 72              | 4          | 106,068              |
| 73              | 11         | 306,728              |
| 74              | 6          | 189,644              |
| 75              | 13         | 406,988              |
| 76              | 5          | 130,810              |
| 77              | 9          | 237,649              |
| 78              | 7          | 191,934              |
| 79              | 7          | 187,727              |
| 80 and over     | 22         | 421,338              |
| <b>Totals</b>   | <b>234</b> | <b>\$9,992,106</b>   |

Average Age at Retirement: 47.8 years

Average Age as of 2017: 66.2 years

## SECTION C

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### ASSUMPTIONS AND METHODS

## Actuarial Assumptions

**The rate of investment return (net of expenses)** used was 7.0% per year, compounded annually. This assumption is used to discount the value of future payments.

**The rates of salary increase** used are in accordance with the following table.

This assumption is used to project a member's current salary over his or her future working lifetime.

| <b>Sample Ages</b> | <b>Base (Economic)</b> | <b>Merit and Longevity</b> | <b>Annual Rate of Salary Increase</b> |
|--------------------|------------------------|----------------------------|---------------------------------------|
| 20                 | 3.50 %                 | 1.00 %                     | 4.50 %                                |
| 25                 | 3.50                   | 1.00                       | 4.50                                  |
| 30                 | 3.50                   | 1.00                       | 4.50                                  |
| 35                 | 3.50                   | 0.75                       | 4.25                                  |
| 40                 | 3.50                   | 0.50                       | 4.00                                  |
| 45                 | 3.50                   | 0.25                       | 3.75                                  |
| 50                 | 3.50                   | 0.00                       | 3.50                                  |
| 55                 | 3.50                   | 0.00                       | 3.50                                  |
| 60                 | 3.50                   | 0.00                       | 3.50                                  |

## Actuarial Assumptions

**The mortality table used** was the RP-2014 Blue Collar Healthy Annuitant Mortality Table for males and females, with 2-dimensional, fully generational improvements using the MP-2014 Mortality Improvement Scale (projected from 2014).

| Sample<br>Ages | Retirements in 2018                                |          |                                   |       |
|----------------|--|----------|-----------------------------------|-------|
|                | Actuarial Present Value of<br>\$1 Monthly for Life |          | Future Life<br>Expectancy (Years) |       |
|                | Men  | Women    | Men                               | Women |
| 40             | \$162.54   | \$165.61 | 44.71                             | 48.14 |
| 45             | 157.78   | 161.64   | 39.59                             | 42.94 |
| 50             | 151.73   | 156.56   | 34.61                             | 37.87 |
| 55             | 144.18   | 150.17   | 29.81                             | 32.94 |
| 60             | 135.00   | 142.05   | 25.23                             | 28.17 |
| 65             | 123.78   | 131.79   | 20.88                             | 23.56 |
| 70             | 110.56   | 119.19   | 16.83                             | 19.19 |
| 75             | 95.35  | 104.42   | 13.12                             | 15.16 |
| 80             | 78.75  | 88.01    | 9.84                              | 11.56 |

The mortality assumption is used to measure the probabilities of members dying before retirement and the probabilities of each pension payment being made after retirement.

**The rates of retirement** are used to measure the probability of eligible members retiring during a given year and are shown below.

In the first year that an individual is eligible to participate in the DROP, 90% of such members were assumed to elect the DROP and 10% are assumed to retire (not elect the DROP). Following DROP election and participation, members are assumed to retire from active employment and commence benefits with the following probabilities:

| Retirement<br>Eligibility | Police and<br>Police Command | Fire |
|---------------------------|------------------------------|------|
| 1st year eligible         | 15 %                         | 10 % |
| 2nd year eligible         | 10                           | 5    |
| 3rd year eligible         | 10                           | 5    |
| 4th year eligible         | 10                           | 5    |
| 5th year eligible         | 50                           | 100  |
| 6th year eligible         | 75                           | 100  |
| 7th year eligible         | 100                          | 100  |

## Actuarial Assumptions

**Rates of separation from active membership** are used to measure the probabilities of members remaining in employment. These rates do not apply to members eligible to retire and do not include separation on account of death or disability.

| Sample<br>Ages | Percent of Active Members<br>Separating within the Next Year |        |
|----------------|--|--------|
|                | Male   | Female |
| 20             | 14.9 %   | 24.9 % |
| 25             | 9.9  | 14.9   |
| 30             | 6.9  | 9.9    |
| 35             | 4.9  | 6.9    |
| 40             | 2.8  | 4.9    |
| 45             | 1.6  | 2.8    |
| 50             | 0.4  | 1.6    |
| 55             | 0.0  | 0.4    |
| 60             | 0.0  | 0.0    |
| 65             | 0.0  | 0.0    |

**Sample rates of becoming disabled** are as follows:

| Sample<br>Ages | Percent of Active Members<br>Becoming Disabled within the Next Year |        |
|----------------|---|--------|
|                | Male  | Female |
| 25             | 0.17 %  | 0.12 % |
| 30             | 0.22  | 0.21   |
| 35             | 0.30  | 0.31   |
| 40             | 0.44  | 0.46   |
| 45             | 0.66  | 0.68   |
| 50             | 1.09  | 1.11   |
| 55             | 1.88  | 1.80   |
| 60             | 2.72  | 1.90   |

## Actuarial Cost Method

An actuarial cost method is a procedure for allocating the actuarial present value of pension plan benefits to time periods. The method used for this valuation is known as the individual entry-age actuarial cost method and has the following characteristics.

- (i) The annual normal costs for each individual active member, payable from the date of employment to the date of retirement, are sufficient to accumulate to the value of the member's pension at time of retirement.
- (ii) Each annual normal cost is a constant percentage of the member's year by year projected compensation.

The entry-age actuarial cost method allocates the actuarial present value of each member's projected benefits on a level basis over the member's compensation between the entry age of the member and the assumed exit ages.

The portion of the actuarial present value allocated to the valuation year is called the normal cost. The portion of the actuarial present value not provided for by the actuarial present value of future normal costs is called the actuarial accrued liability. Deducting accrued assets from the actuarial accrued liability determines the unfunded actuarial accrued liability.

## Asset Valuation Method

**Valuation Assets** used for funding purposes are derived as follows: prior year valuation assets are increased by contribution and expected investment income and reduced by refunds, benefit payments and expenses. To this amount is added 20% of the difference between expected and actual investment income for each of the previous five years.

## Miscellaneous and Technical Assumptions

|                                    |  |
|------------------------------------|--|
| <b>Marriage Assumption:</b>        | 90% of participants are assumed to be married for purposes of death benefits. In each case the male was assumed to be 3 years older than the female.   |
| <b>Pay Increase Timing:</b>        | Beginning of year.   |
| <b>Decrement Timing:</b>           | Decrements of all types are assumed to occur beginning of year.  |
| <b>Eligibility Testing:</b>        | Eligibility for benefits is determined based upon the age of nearest birthday and service nearest whole year on the date the decrement is assumed to occur.  |
| <b>Benefit Service:</b>            | Exact fractional service is used to determine the amount of the benefit payable.   |
| <b>Decrement Relativity:</b>       | Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.  |
| <b>Service Credit Accruals:</b>    | It is assumed that members accrue one year of service credit per year.   |
| <b>Active Member Group Size:</b>   | The number of active members was assumed to remain constant.   |
| <b>Incidence of Contributions:</b> | 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.                          |
| <b>Normal Form of Benefit:</b>     | The assumed normal form of benefit is the straight life form.  |
| <b>Adjustments:</b>                | Age and Service Retirement Present Values were adjusted by 10% for all groups to account for the additional amount included in the AFC due to unused sick time, uniform allowance, compensatory time and vacation time for all groups. |



## **SECTION D**

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### **FINANCIAL REPORTING**

## Schedule of Funding Progress

| Actuarial<br>Valuation<br>Date<br>July 1, | Actuarial<br>Value of<br>Assets<br>(1) | Actuarial<br>Accrued<br>Liability<br>(AAL)<br>(2) | Unfunded<br>AAL<br>(UAAL)<br>(2 - 1) | Funded<br>Ratio<br>(Percent)<br>(1)/(2) | Covered<br>Payroll<br>(3) | UAAL as a<br>Percentage of<br>Covered<br>Payroll |
|---|--|---|--------------------------------------|---|---------------------------|--|
| 1998                                      | \$ 70,723,406                          | \$ 71,783,620                                     | \$ 1,060,214                         | 98.52                                   | \$ 7,923,628              | 13.38 %  |
| 1999                                      | 78,903,103                             | 76,216,724  | (2,686,379)                          | 103.52                                  | 8,500,123                 | (31.60)  |
| 2000                                      | 86,178,705                             | 79,968,280  | (6,210,425)                          | 107.77                                  | 8,706,539                 | (71.33)  |
| 2001                                      | 91,879,860                             | 84,734,677  | (7,145,183)                          | 108.43                                  | 9,112,748                 | (78.41)  |
| 2002                                      | 98,858,861                             | 90,946,241  | (7,912,620)                          | 108.70                                  | 9,651,854                 | (81.98)  |
| 2003                                      | 92,930,343                             | 91,993,127  | (937,216)                            | 101.02                                  | 9,650,586                 | (9.71)   |
| 2004                                      | 98,965,335                             | 94,151,970  | (4,813,365)                          | 105.11                                  | 9,406,277                 | (51.17)  |
| 2005                                      | 113,426,227                            | 103,382,549                                       | (10,043,678)                         | 109.72                                  | 9,693,623                 | (103.61)   |
| 2006                                      | 122,582,685                            | 108,484,408                                       | (14,098,277)                         | 113.00                                  | 9,818,415                 | (143.59)   |
| 2007                                      | 131,679,408                            | 114,822,112                                       | (16,857,296)                         | 114.68                                  | 10,421,556                | (161.75)   |
| 2008                                      | 139,106,447                            | 120,395,854                                       | (18,710,593)                         | 115.54                                  | 10,344,194                | (180.88)   |
| 2009                                      | 143,886,459                            | 130,566,593                                       | (13,319,866)                         | 110.20                                  | 10,401,824                | (128.05)   |
| 2010                                      | 137,586,060                            | 136,780,310                                       | (805,750)                            | 100.59                                  | 10,512,186                | (7.66)   |
| 2011                                      | 139,124,010                            | 153,317,413                                       | 14,193,403                           | 90.74                                   | 8,126,002                 | 174.67   |
| 2012                                      | 140,277,195                            | 165,132,570                                       | 24,855,375                           | 84.95                                   | 6,378,919                 | 389.65   |
| 2013                                      | 141,640,217                            | 170,563,168                                       | 28,922,951                           | 83.04                                   | 5,668,970                 | 510.20   |
| 2014                                      | 147,161,177                            | 178,027,424                                       | 30,866,247                           | 82.66                                   | 6,016,818                 | 513.00   |
| 2015                                      | 161,610,610                            | 184,191,055                                       | 22,580,445                           | 87.74                                   | 5,645,905                 | 399.94   |
| 2016                                      | 173,126,280                            | 196,234,325                                       | 23,108,045                           | 88.22                                   | 6,125,062                 | 377.27   |
| 2017                                      | 175,728,005                            | 203,367,058                                       | 27,639,053                           | 86.41                                   | 6,231,722                 | 443.52   |
| <b>2018</b>                               | <b>181,941,875</b>                     | <b>210,838,913</b>                                | <b>28,897,038</b>                    | <b>86.29</b>                            | <b>6,749,977</b>          | <b>428.11</b>                                    |

**This information is presented in draft form for review by the System's auditor. Please let us know if there are any items that the auditor changes so that we may maintain consistency with the System's financial statements.**

## Schedule of Employer Contributions

| <b>Fiscal Year<br/>Beginning<br/>July 1,</b> | <b>Computed<br/>Dollar<br/>Contribution</b> | <b>Actual<br/>Annual<br/>Contribution</b> |
|--|---|---|
| 2007   | \$ 192,943                                  | \$ 192,943                                |
| 2008   | 348,426                                     | 348,426                                   |
| 2009   | 653,785                                     | 653,785                                   |
| 2010   | 1,754,731                                   | 1,754,731                                 |
| 2011   | 2,025,227                                   | 2,025,227                                 |
| 2012   | 2,368,862                                   | 2,368,862                                 |
| 2013   | 2,585,170                                   | 2,585,170                                 |
| 2014   | 2,822,883                                   | 2,822,883                                 |
| 2015   | 2,343,614                                   | 2,343,614                                 |
| 2016   | 2,511,017                                   | 2,511,017                                 |
| 2017   | 2,935,919                                   | N/A                                       |
| 2018   | 3,178,635                                   | N/A                                       |

This information is presented in draft form for review by the City's auditor. Please let us know if there are any items the auditor changes so that we may maintain consistency with the City's financial statements.

## Summary of Actuarial Methods and Assumptions

|                                  |  |
|----------------------------------|--|
| Valuation Date                   | July 1, 2018   |
| Actuarial Cost Method            | Individual Entry Age                                   |
| Amortization Method              | Level Percent of Pay, 17 years, Closed                 |
| Asset Valuation Method           | Market value with 5-year smoothing of gains and losses |
| Principal Actuarial Assumptions: |  |
| Net Investment Return            | 7.0%   |
| Projected Salary Increases       | 3.5% to 4.5%   |
| Payroll Growth                   | 3.5%   |
| Cost-of-Living Adjustments       | Provided through Bonus Fund                            |

April 13, 2018


Mr. John J. Riley, II  
City Treasurer  
City of Dearborn Heights  
6045 Fenton Street  
Dearborn Heights, MI 48127

Dear Mr. Riley:

Enclosed are 20 copies of the July 1, 2018 actuarial valuation report. We look forward to meeting with you and the Retirement Board to discuss the valuation report.

If you have any questions, please call me.

Sincerely,



Mark Buis, FSA, EA, FCA, MAAA

MB:dj  
Enclosures