



# Charter Township of Ypsilanti Police and Firefighter's Retirement System

January 1, 2019  
Actuarial Valuation Report

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At the request of the plan sponsor, this report summarizes the Charter Township of Ypsilanti Police and Firefighter's Retirement System as of January 1, 2019. The purpose of this report is to communicate the following results of the valuation:

- Funded Status;
- and Determine Recommended Contribution;

This report has been prepared in accordance with the applicable Federal and State laws. Consequently, it may not be appropriate for other purposes. Please contact Nyhart prior to disclosing this report to any other party or relying on its content for any purpose other than that explained above. Failure to do so may result in misrepresentation or misinterpretation of this report.

The results in this report were prepared using information provided to us by other parties. The census and asset information has been provided to us by the employer. We have reviewed the provided data for reasonableness when compared to prior information provided, but have not audited the data. Where relevant data may be missing, we have made assumptions we believe to be reasonable. We are not aware of any significant issues with and have relied on the data provided. Any errors in the data provided may result in a different result than those provided in this report. A summary of the data used in the valuation is included in this report.

The actuarial assumptions and methods were chosen by the Board. In our opinion, all actuarial assumptions and methods are individually reasonable and in combination represent our best estimate of anticipated experience of the plan. 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); and
- changes in plan provisions or applicable law.

We did not perform an analysis of the potential range of future measurements due to the limited scope of our engagement. This report has been prepared in accordance with generally accepted actuarial principles and practice.

Neither Nyhart nor any of its employees have any relationship with the plan or its sponsor which could impair or appear to impair the objectivity of this report. To the extent that this report or any attachment concerns tax matters, it is not intended to be used and cannot be used by a taxpayer for the purpose of avoiding penalties that may be imposed by law.

**Actuarial Certification**

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The undersigned are compliant with the continuing education requirements of the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States and are available for any questions.

Nyhart



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Nick H. Meggos, EA, FCA



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Scott Gavin, FSA, EA, MAAA

June 26, 2019

Date

## Executive Summary

The actuarial report provides the plan sponsor with several ways to measure the funded status of the pension plan. The following detail is included in the report:

- Recommended Contribution
- Asset Performance
- Plan Demographics

This report is filled with actuarial terminology. However, the ultimate objective of the valuation is to provide a rational method of funding the plan. It is necessary to fund the benefit promised by the employer in a manner that is logical and employer friendly, yet safeguards the participants' interest. The actuarially derived contribution, however, is not the true cost of the pension plan. The true cost is illustrated by the following formula:

$$\text{Ultimate Pension Cost} = \text{Benefits Paid} - \text{Investment Income} + \text{Plan Expenses}$$

While the plan's liability and normal cost determine the current contribution recommendations, the true cost is controlled only by the "defined" benefit and investment income generated by the underlying assets. The actuarial process only controls the timing of costs.

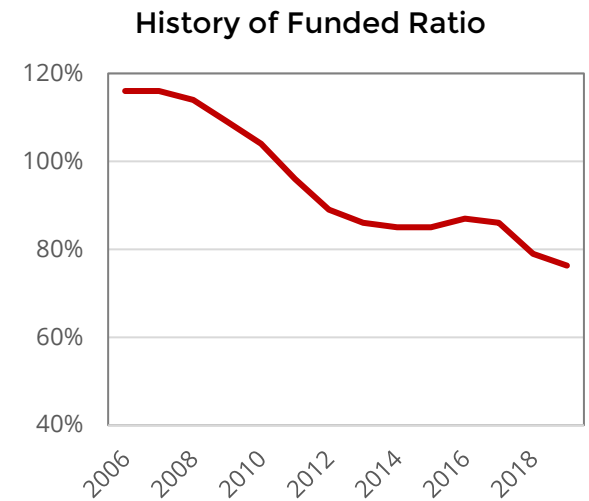
We suggest that a plan sponsor treat the actuarial report as you would treat a scorecard. It is simply a measure of progress toward the ultimate goal of paying all pension benefits when participants retire.

## Executive Summary

### Summary Results

The actuarial valuation's primary purpose is to produce a scorecard measure displaying the funding progress of the plan toward the ultimate goal of paying benefits at retirement. The accrued liability is based on an entry age level percentage of pay.

|   | January 1, 2018 | January 1, 2019 |
|---|-----------------|-----------------|
| <b>Funded Status Measures</b>                         |                 |                 |
| Accrued Liability                                     | \$36,152,816    | \$36,633,362    |
| Actuarial Value of Assets                             | 28,429,784      | \$27,953,456    |
| Unfunded Actuarial Accrued Liability (UAAL)           | \$7,723,032     | \$8,679,906     |
| Funded Percentage (AVA)                               | 78.64%          | 76.31%          |
| Funded Percentage (MVA)                               | 77.53%          | 70.41%          |
| <b>Cost Measures</b>                                  |                 |                 |
| Recommended Contribution for Next Fiscal Year         | \$998,711       | \$1,067,076     |
| Recommended Contribution (as a percentage of payroll) | 58.65%          | 56.10%          |
| <b>Asset Performance</b>                              |                 |                 |
| Market Value of Assets (MVA)                          | \$28,029,742    | \$25,793,581    |
| Actuarial Value of Assets (AVA)                       | \$28,429,784    | \$27,953,456    |
| Actuarial Value/Market Value                          | 101.43%         | 108.37%         |
| Market Value Rate of Return                           | 9.36%           | (2.93%)         |
| Actuarial Value Rate of Return                        | 7.13%           | 3.46%           |
| <b>Participant Information</b>                        |                 |                 |
| Active Participants                                   | 23              | 24              |
| Terminated Vested Participants                        | 0               | 0               |
| Retirees and Beneficiaries                            | 59              | 61              |
| DROP Participants                                     | 4               | 3               |
| Total   | 86              | 88              |
| Expected Payroll Current Fiscal Year                  | \$1,653,168     | \$1,846,796     |
| Expected Payroll Next Fiscal Year                     | \$1,702,763     | \$1,902,200     |



## **Executive Summary**

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### **Changes since Prior Valuation and Key Notes**

The healthy mortality table used to measure funding liability has been updated from RP-2006 Total Mortality with generational improvements projected beginning in 2006 based on the SOA Scale MP-17 to RP-2006 Total Mortality with generational improvements projected beginning in 2006 based on the SOA Scale MP-18. This change resulted in a slight decrease in the liabilities and normal cost.

The disabled mortality table used to measure funding liability has been updated from RP-2006 Disabled Retiree Mortality with generational improvements projected beginning in 2006 based on the SOA Scale MP-17 to RP-2006 Disabled Retiree Mortality with generational improvements projected beginning in 2006 based on the SOA Scale MP-18. This change resulted in a slight decrease in the liabilities and normal cost.

The prior valuation (and therefore any information in this report prior to December 31, 2018) was performed by a different actuary.

## Executive Summary

### Historical Valuation Summary

|                                      | 1/1/2016     | 1/1/2017     | 1/1/2018     | 1/1/2019     |
|--------------------------------------|--------------|--------------|--------------|--------------|
| <b>Funding</b>                       |              |              |              |              |
| Accrued Liability                    | \$31,803,061 | \$32,684,010 | \$36,152,816 | \$36,633,362 |
| Actuarial Value of Assets            | \$27,526,195 | \$28,170,351 | \$28,429,784 | \$27,953,456 |
| Unfunded Actuarial Accrued Liability | \$4,276,866  | \$4,513,659  | \$7,723,032  | \$8,679,906  |
| Funded Percentage                    | 86.55%       | 86.19%       | 78.64%       | 76.31%       |
| Normal Cost (NC)                     |              |              | \$439,577    | \$491,476    |
| Actual Contribution                  | \$763,874    | \$786,578    | June 2019    | June 2020    |
| Recommended Contribution             | \$763,874    | \$786,578    | \$998,711    | \$1,067,076  |
| Interest Rate                        | 7.25%        | 7.25%        | 6.50%        | 6.50%        |
| <b>Rate of Return</b>                |              |              |              |              |
| Actuarial Value of Assets            | 5.97%        | 7.08%        | 7.13%        | 3.46%        |
| Market Value of Assets               | 2.99%        | 5.81%        | 9.36%        | (2.93%)      |
| <b>Demographic Information</b>       |              |              |              |              |
| Active Participants                  | 24           | 25           | 23           | 24           |
| Terminated Vested Participants       | 0            | 0            | 0            | 0            |
| Retired Participants                 | 53           | 58           | 45           | 46           |
| Beneficiaries                        | *0           | *0           | 14           | 15           |
| Disabled Participants                | 0            | 0            | 0            | 0            |
| DROP Participants                    | 3            | 1            | 4            | 3            |
| Total Participants                   | 80           | 84           | 86           | 88           |
| Covered Payroll (prior year)         | \$1,709,517  | \$1,758,735  | \$1,605,017  | \$ 1,793,006 |
| Average Covered Pay                  | \$71,230     | \$70,349     | \$69,783     | \$74,709     |

\* The number of beneficiaries for years 2017 or earlier are included in the retired count.

## Executive Summary



## Identification of Risks

The results presented in this report are shown as single point values. However, these values are derived using assumptions about future markets and demographic behavior. If actual experience deviates from our assumptions, the actual results for the plan will consequently deviate from those presented in this report. Therefore, it is critical to understand the risks facing this pension plan. The following table shows the risks we believe are most relevant to the Charter Township of Ypsilanti Police and Firefighter's Retirement System. The risks are generally ordered with those we believe to have the most significance at the top. Also shown are possible methods by which a more detailed assessment of the risk can be performed.

| Type of Risk          | Method to Assess Risk                                      |
|-----------------------|--|
| Investment Return     | Scenario Testing; Asset Liability Study                    |
| Interest Rates        | Scenario Testing; Stochastic Modeling                      |
| Participant Longevity | Projections and Contribution Strategy                      |
| Early Retirement      | Scenario Testing; Review population and retirement rates   |
| Salary Growth         | Review salary history and future budgets; scenario testing |

## **Plan Maturity Measures - January 1, 2019**

Each pension plan has a distinct life-cycle. New plans promise future benefits to active employees and then accumulate assets to pre-fund those benefits. As the plan matures, benefits are paid and the pre-funded assets begin to decumulate until ultimately, the plan pays out all benefits. A plan's maturity has a dramatic influence on how risks should be viewed. The following maturity measures illustrate where the Charter Township of Ypsilanti Police and Firefighter's Retirement System falls in its life-cycle.

### **Duration of Liabilities: 11.2%**

Duration is the most common measure of plan maturity. It is defined as the sensitivity of the liabilities to a change in the interest rate assumption. The metric also approximates the weighted average length of time, in years, until benefits are expected to be paid. A plan with high duration is, by definition, more sensitive to changes in interest rates. A plan with low duration is more susceptible to risk if asset performance deviates from expectations as there would be less time to make up for market losses in adverse market environments while more favorable environments could result in trapped surplus from gains. Conversely, high duration plans can often take on more risk when investing, and low duration plans are less sensitive to interest rate fluctuations.

### **Demographic Distribution - Ratio of Actively Accruing Participants to All Participants: 27.3%**

A plan with a high ratio is more sensitive to fluctuations in salary (if a salary-based plan) and statutory changes. A plan with a low ratio is at higher risk from demographic experience. Such a plan should pay close attention to valuation assumptions as there will be less opportunity to realize future offsetting gains or losses when current experience deviates from assumptions. Plans with a low ratio also have limited opportunities to make alterations to plan design to affect future funded status.

### **Asset Leverage - Ratio of Payroll for Plan Participants to Market Value of Assets: 7.3%**

Younger plans typically have a large payroll base from which to draw in order to fund the plan while mature plans often have a large pool of assets dedicated to providing benefits to a population primarily consisting of members no longer on payroll. Plans with low asset leverage will find it more difficult to address underfunding, as the contributions needed to make up the deficit will represent a higher percentage of payroll than for a plan with high asset leverage.

### **Benefit Payment Percentage - Ratio of Annual Benefit Payments to Market Value of Assets: 8.9%**

As a plan enters its decumulation phase, a larger percentage of the pre-funded assets are paid out each year to retirees. A high percentage is not cause for alarm as long as the plan is nearly fully funded. However, such a plan is more sensitive to negative asset performance, especially if cash contributions are not an option to make up for losses.

## Assets and Liabilities

The basic building blocks of the actuarial report are contained in this section. These include:

- Actuarial Accrued Liabilities
- Asset Information
- Summary of Contributions

**Assets and Liabilities**

**Present Value of Future Benefits**

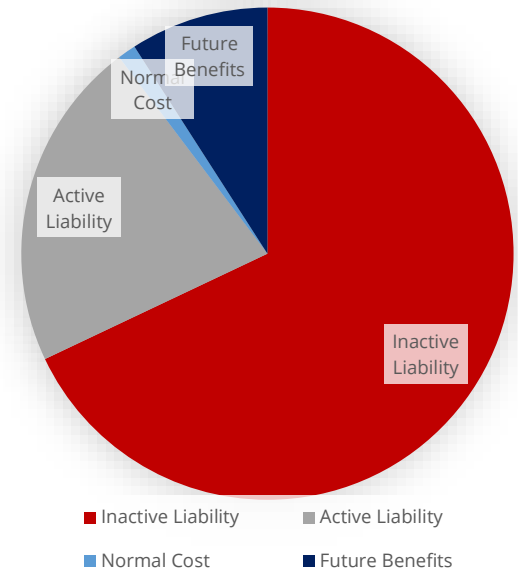
The Present Value of Future Benefits represents the future benefits payable to the existing participants.

**January 1, 2019**

**Present Value of Future Benefits**

|                                      |                  |
|--------------------------------------|------------------|
| Active participants                  |                  |
| Retirement                           | \$12,300,809     |
| Disability                           | 358,749          |
| Death                                | 222,877          |
| Termination                          | 171,787          |
| Refund of contributions              | 29,212           |
| Total active                         | \$13,083,434     |
| Inactive participants                |                  |
| Retired participants                 | \$26,004,790     |
| Beneficiaries                        | 1,748,156        |
| Disabled participants                | 0                |
| Terminated vested participants       | 0                |
| Total inactive                       | \$27,752,946     |
| Total                                | \$40,836,380     |
| <br>Present value of future payrolls | <br>\$16,940,769 |

**Breakdown of Present Value of Future Benefits**



## Assets and Liabilities

### Actuarial Accrued Liability

The Actuarial Accrued Liability measures the present value of benefits earned as of the valuation date, using a specified set of actuarial assumptions.

January 1, 2019

#### Funding Liabilities - Entry Age Normal as Percent of Pay

##### Active participants

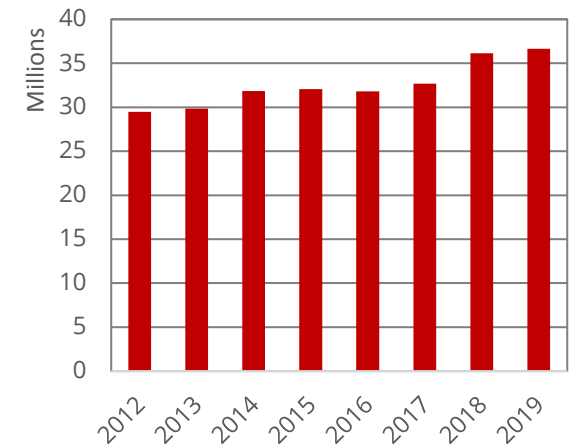
|                         |                    |
|-------------------------|--------------------|
| Retirement              | \$8,601,480        |
| Disability              | 156,198            |
| Death                   | 79,330             |
| Termination             | 66,953             |
| Refund of contributions | (23,545)           |
| <b>Total Active</b>     | <b>\$8,880,416</b> |

##### Inactive participants

|                                |                     |
|--------------------------------|---------------------|
| Retired participants           | \$26,004,790        |
| Beneficiaries                  | 1,748,156           |
| Disabled participants          | 0                   |
| Terminated vested participants | 0                   |
| <b>Total Inactive</b>          | <b>\$27,752,946</b> |
| <b>Total</b>                   | <b>\$36,633,362</b> |

|               |           |
|---------------|-----------|
| Normal Cost   | \$491,476 |
| Interest Rate | 6.50%     |

History of Liabilities



## Assets and Liabilities

### Asset Information

The amount of assets backing the pension promise is the most significant driver of volatility and future costs within a pension plan. The investment performance of the assets directly offsets the ultimate cost.

January 1, 2019

#### Market Value Reconciliation

|   |               |
|---|---------------|
| Market value of assets, beginning of prior year       | \$28,029,742  |
| Contributions   |               |
| Employer contributions                                | 786,578       |
| Employee contributions                                | 102,184       |
| Total   | \$888,762     |
| Investment income                                     | \$(800,839)   |
| Administrative Expenses                               | \$(18,731)    |
| Benefit payments                                      | \$(2,305,353) |
| Market value of assets, beginning of current year     | \$25,793,581  |
| Return on Market Value                                | (2.93%)       |
| Market value of assets available for pension benefits | \$25,793,581  |

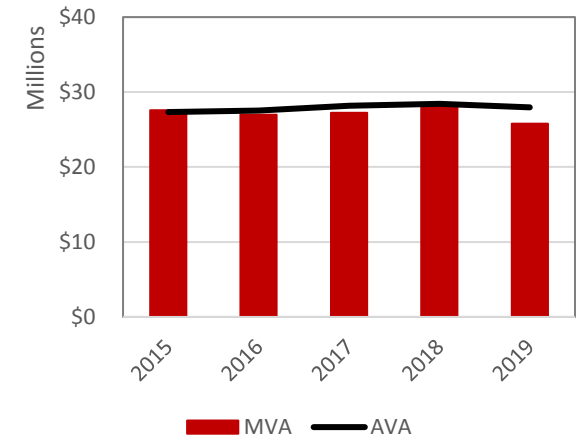
#### Actuarial Value of Assets

|                                    |              |
|------------------------------------|--------------|
| Value at beginning of current year | \$27,953,456 |
|------------------------------------|--------------|

#### Assets Reserves

|                           |              |
|---------------------------|--------------|
| Reserves for              |              |
| Employees' contributions  | \$1,124,329  |
| Employer contributions    | (3,083,694)  |
| Retired benefit payments  | 27,752,946   |
| Total reserves at market  | \$25,793,581 |
| Funding value adjustment  | \$2,159,875  |
| Actuarial value of assets | \$27,953,456 |

History of Assets



Monitoring the pension plan's investment performance is crucial to eliminating surprises.

## Assets and Liabilities

### Asset Information (continued)

Plan Assets are used to develop funded percentages and contribution requirements.

January 1, 2019

|   |                    |
|---|--------------------|
| 1. Expected Investment Income   |                    |
| (a) Market value of assets, beginning of prior year   | \$28,029,742       |
| (b) Employee Contributions  | 102,184            |
| (c) Employer Contributions  | 786,578            |
| (d) Refund of Member Contributions  | 0                  |
| (e) Benefit payments  | 2,305,353          |
| (f) Administrative Expenses   | 18,731             |
| (g) Expected Investment Income – end of year $[6.5\% \times (a) + 6.5\% \times (1/2) \times \{(b)+(c)-(d)-(e)-(f)\}]$ | <u>\$1,775,285</u> |
| 2. Market value of Investment Income, beginning of current year   | \$(800,839)        |
| 3. Gain/Loss on market value (2)-(1g)   | \$(2,576,124)      |
| 4. Phased-In Recognition of Investment Income   |                    |
| (a) Current Year Phase in of gain/(loss) $((2,576,124) \times .8)$  | \$(2,060,899)      |
| (b) First Prior Year $(489,964 \times .6)$  | 293,978            |
| (c) Second Prior Year $((418,519) \times .4)$   | (167,408)          |
| (d) Third Prior Year $((1,127,731) \times .2)$  | <u>(225,546)</u>   |
| (e) Total   | \$(2,159,875)      |
| 5. Expected market value of assets, beginning of current year $[(1a)+(1b)+(1c)-(1d)-(1e)-(1f)+(1g)]$                  | \$28,369,705       |
| 6. Final market value of assets $[(1a)+(1b)+(1c)-(1d)-(1e)-(1f)+(2)]$   | \$25,793,581       |
| 7. Final actuarial value of assets 6-(4e)   | \$27,953,456       |

**Assets and Liabilities**

**Reserve Allocation**

In financing the Actuarial Accrued Liabilities, the Valuation Assets were distributed as follows:

| Reserves for             | Active and<br>Deferred Vested<br>Members | Retired Members     | Contingency<br>Reserve | Total               |
|--------------------------|--|---------------------|------------------------|---------------------|
| Employees' Contributions | \$1,124,329                              |                     |                        | \$1,124,329         |
| Employer Contributions   | (923,819)                                |                     |                        | (923,819)           |
| Retired Benefit Payments |  | \$27,752,946        |                        | 27,752,946          |
| <b>Total</b>             | <b>\$200,510</b>                         | <b>\$27,752,946</b> | <b>None</b>            | <b>\$27,953,456</b> |

The Unfunded Actuarial Accrued Liabilities were distributed as follows:

| Reserves for                                  | Active and<br>Deferred Vested<br>Members | Retired Members | Total              |
|---|--|-----------------|--------------------|
| Computed Actuarial Accrued Liabilities        | \$8,880,416                              | \$27,752,946    | \$36,633,362       |
| Applied Assets                                | 200,510                                  | 27,752,946      | 27,953,456         |
| <b>Unfunded Actuarial Accrued Liabilities</b> | <b>\$8,679,906</b>                       | <b>\$0</b>      | <b>\$8,679,906</b> |



## Funding Results

The basic building blocks of the actuarial report are contained in this section. These include:

- Reconciliation of Gain/Loss
- Recommended Contribution

## Funding Results

### Reconciliation of Gain/Loss

January 1, 2019

#### Liability (Gain)/Loss

|  |                   |
|--|-------------------|
| 1. Actuarial liability, beginning of prior year            | \$36,152,816      |
| 2. Normal cost for prior year                              | 439,577           |
| 3. Benefit payments  | (2,305,353)       |
| 4. Expected Interest                                       | 2,303,582         |
| 5. Change in Assumptions (Mortality Update)                | (78,337)          |
| 6. Change in Plan Provisions                               | 0                 |
| 7. Expected actuarial liability, beginning of current year | <u>36,512,285</u> |
| 8. Actual actuarial liability                              | 36,633,362        |
| 9. Liability (Gain)/Loss, (8) – (7)                        | <u>\$121,077</u>  |

#### Asset Gain/(Loss)

|   |                     |
|---|---------------------|
| 10. Actuarial value of assets, beginning of prior year            | \$28,429,784        |
| 11. Contributions   | 888,762             |
| 12. Benefit payments  | (2,305,353)         |
| 13. Expected Investment return                                    | 1,775,285           |
| 14. Expected actuarial value of assets, beginning of current year | <u>\$28,788,478</u> |
| 15. Actual actuarial value of assets, beginning of current year   | 27,953,456          |
| 16. Asset (Gain)/Loss, (14) – (15)                                | <u>\$835,022</u>    |

#### Total (Gain)/ Loss, (9) + (16)

\$956,099

## Funding Results

### Reconciliation of Unfunded Actuarial Accrued Liability (UAAL)

|   | January 1, 2019 |
|---|-----------------|
| 1. UAAL beginning of prior year             | \$7,723,032     |
| 2. Normal Cost for prior year               | 439,577         |
| 3. Administrative Expenses                  | \$18,731        |
| 4. Employer Contributions                   | (786,578)       |
| 5. Non-Employer Contributions               | (102,184)       |
| 6. Interest                                 | 509,566         |
| 7. Expected UAAL, beginning of current year | \$7,802,144     |
| 8. Changes due to:                          |                 |
| (a) Amendments                              | 0               |
| (b) Assumptions                             | 0               |
| (1) Mortality Update                        | (78,337)        |
| (c) Funding Methods                         | 0               |
| (d) (Gain)/Loss                             | 956,099         |
| (e) Total                                   | \$877,762       |
| 9. UAAL beginning of current year           | \$8,679,906     |

## Funding Results

### Development of Recommended Contribution

The recommended contribution is the annual amount necessary to fund the plan according to funding policies and/or applicable laws.

#### Normal Cost

|  |           |
|--|-----------|
| 1. Normal Cost   |           |
| (a) Total Normal Cost  | \$491,476 |
| (b) Expected participant contributions discounted to January 1 | (108,830) |
| (c) Expected Administrative Expenses discounted to January 1   | 18,411    |
| (d) Net normal cost as of January 1, 2019                      | \$401,057 |
| As a percentage of expected 2019 payroll (w/o DROP)            | 21.72%    |
| (e) Net normal cost as of July 1, 2020                         | \$440,789 |

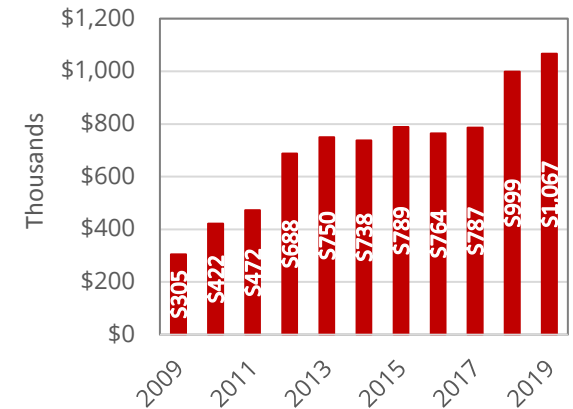
#### Amortization of Unrecognized Actuarial Accrued Liability (UAAL)

|   |              |
|---|--------------|
| 1. Calculation of UAAL  |              |
| (a) Entry Age Normal Accrued Liability                            | \$36,633,362 |
| (b) Actuarial Value of Assets                                     | 27,953,456   |
| (c) UAAL as of January 1, 2019                                    | \$8,679,906  |
| 2. Anticipated 7/1/2019 UAAL Contribution discounted to January 1 | 530,221      |
| 3. Remaining UAAL to Amortize                                     | 8,149,685    |
| 4. Amortization Period  | 19           |
| 5. UAAL Amortization as of January 1, 2019                        | \$569,835    |
| 6. UAAL Amortization as of July 1, 2020                           | \$626,287    |

#### 2020 Contribution

|  |             |
|--|-------------|
| 1. Net Normal Cost                                   | \$440,789   |
| 2. UAAL Amortization                                 | 626,287     |
| 3. Total Contribution Payable on July 1, 2020        | \$1,067,076 |
| As a percentage of expected 2020 payroll (w/o DROP)  | 56.10%      |
| As a percentage of expected 2020 payroll (with DROP) | 48.83%      |

History of Recommended Contributions



## Funding Results

### Michigan PA 202 Reporting Requirements

January 1, 2019

| <b>Funding Assumptions</b>            | <b>Plan Assumptions</b>                         | <b>State Treasury Uniform Assumptions</b> |
|---------------------------------------|---|---|
| <b>Funded Ratio</b>                   |   |   |
| Interest Rate                         | 6.50%   | 6.50%                                     |
| Mortality                             | RP-2006 Total Mortality<br>with SOA Scale MP-18 | No change                                 |
| Accrued Liability                     | \$36,633,362                                    | \$36,633,362                              |
| Market Value of Assets                | \$25,793,581                                    | \$25,793,581                              |
| Unfunded Accrued Liability, MVA Basis | \$10,839,781                                    | \$10,839,781                              |
| <b>Funded Percentage (MVA)</b>        | <b>70.41%</b>                                   | <b>70.41%</b>                             |
| Underfunded Status                    | Not Underfunded                                 | Not Underfunded                           |
| Actuarially Determined Contribution   | \$1,067,076                                     | \$1,067,076                               |

## Data, Assumptions, and Plan Provisions

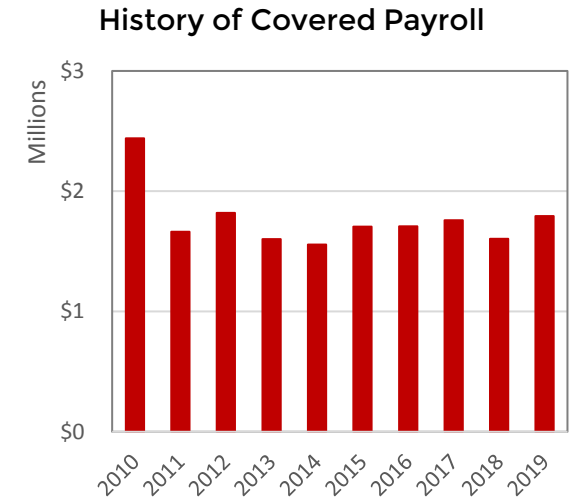
- Demographic Information
- Plan Provisions
- Assumptions and Methods

## Data, Assumptions, and Plan Provisions

### Demographic Information

The foundation of a reliable actuarial report is the participant information provided by the plan sponsor. Monitoring trends in demographic information is crucial for long-term pension planning.

|  | January 1, 2018 | January 1, 2019 |
|--|-----------------|-----------------|
| <b>Participant Counts</b>                        |                 |                 |
| Active Participants                              | 23              | 24              |
| Retired Participants                             | 45              | 46              |
| Beneficiaries                                    | 14              | 15              |
| Disabled Participants                            | 0               | 0               |
| Terminated Vested Participants                   | 0               | 0               |
| DROP Participants                                | 4               | 3               |
| Total Participants                               | 86              | 88              |
| <b>Active Participant Demographics (Ongoing)</b> |                 |                 |
| Average Age                                      | 41.2            | 41.7            |
| Average Service                                  | 11.1            | 11.5            |
| Average Compensation                             | \$69,783        | \$74,709        |
| Total Covered Payroll (prior year)               | \$1,605,017     | \$1,793,006     |
| Total Payroll (prior year)                       | \$1,605,017     | \$1,793,006     |



**Demographic Information (continued)**

|   | <b>January 1, 2018</b> | <b>January 1, 2019</b> |
|---|------------------------|------------------------|
| <b>Retiree Statistics</b>                       |                        |                        |
| Average Age                                     | 67.8                   | 68.6                   |
| Average Monthly Benefit                         | \$3,592                | \$3,604                |
| <b>Beneficiary Statistics</b>                   |                        |                        |
| Average Age                                     | 74.7                   | 74.1                   |
| Average Monthly Benefit                         | \$1,141                | \$1,120                |
| <b>Disabled Participant Statistics</b>          |                        |                        |
| Average Age                                     | N/A                    | N/A                    |
| Average Monthly Benefit                         | N/A                    | N/A                    |
| <b>Terminated Vested Participant Statistics</b> |                        |                        |
| Average Age                                     | N/A                    | N/A                    |
| Average Monthly Benefit                         | N/A                    | N/A                    |
| <b>DROP Participant Statistics</b>              |                        |                        |
| Average Age                                     | 54.9                   | 55.4                   |
| Average Monthly Benefit                         | \$5,628                | \$5,824                |

Monitoring the average age of the population is important due to the relationship of actuarial cost to age. Generally speaking, an older population generates a higher actuarial cost.

Changes in the ratio of active to retired participants can be a significant driver of costs in a volatile asset market.



**Data, Assumptions, and Plan Provisions**

**Participant Reconciliation**

|                          | <b>Active</b> | <b>Terminated Vested</b> | <b>Disabled</b> | <b>Retired</b> | <b>Beneficiaries</b> | <b>Totals</b> |
|--------------------------|---------------|--------------------------|-----------------|----------------|----------------------|---------------|
| <b>Prior Year</b>        | 23            | 0                        | 0               | 49             | 14                   | 86            |
| <b>Active</b>            |               |                          |                 |                |                      |               |
| To Retired               |               |                          |                 |                |                      |               |
| To Terminated Vested     |               |                          |                 |                |                      |               |
| <b>Terminated Vested</b> |               |                          |                 |                |                      |               |
| To Retired               |               |                          |                 |                |                      |               |
| <b>Retired</b>           |               |                          |                 |                |                      |               |
| To Survivor              |               |                          |                 |                |                      |               |
| To Death                 |               |                          |                 |                |                      |               |
| <b>Survivor</b>          |               |                          |                 |                |                      |               |
| To Death                 |               |                          |                 |                |                      |               |
| <b>Additions</b>         | 1             |                          |                 |                | 1                    | 2             |
| <b>Departures</b>        |               |                          |                 |                |                      |               |
| <b>Current Year</b>      | 24            | 0                        | 0               | 49             | 15                   | 88            |

**Data, Assumptions, and Plan Provisions**

**Active Participant Schedule**

Active participant information grouped based on age and service.

| Age Group    | Years of Service |        |          |          |          |          |          |          |         | Total |
|--------------|------------------|--------|----------|----------|----------|----------|----------|----------|---------|-------|
|              | 0 to 4           | 5 to 9 | 10 to 14 | 15 to 19 | 20 to 24 | 25 to 29 | 30 to 34 | 35 to 39 | 40 & Up |       |
| Under 25     |                  |        |          |          |          |          |          |          |         |       |
| 25 to 29     | 3                |        |          |          |          |          |          |          |         | 3     |
| 30 to 34     | 6                |        |          |          |          |          |          |          |         | 6     |
| 35 to 39     |                  | 1      |          | 1        |          |          |          |          |         | 2     |
| 40 to 44     | 1                |        |          | 2        |          |          |          |          |         | 3     |
| 45 to 49     |                  |        |          | 2        | 2        |          |          |          |         | 4     |
| 50 to 54     |                  | 1      |          |          | 1        | 1        |          |          |         | 3     |
| 55 to 59     |                  | 1      |          |          | 1        | 1        |          |          |         | 3     |
| 60 to 64     |                  |        |          |          |          |          |          |          |         |       |
| 65 to 69     |                  |        |          |          |          |          |          |          |         |       |
| 70 & up      |                  |        |          |          |          |          |          |          |         |       |
| <b>Total</b> | 10               | 3      |          | 5        | 4        | 2        |          |          |         | 24    |

## **Data, Assumptions, and Plan Provisions**

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### **Plan Status**

Act 345 of the Public Acts of 1937 and most recently amended for Township of Ypsilanti 8/8/2018.

### **Eligibility for Participation**

Any full time permanent firefighters and police officers employed by the Township. The Plan is open to new hires for Police and Fire.

### **Accrual of Benefits**

A participant shall accumulate a benefit payable at normal retirement date based on credited service as of the date of determination and the accrual rate associated with their classification.

### **Benefits**

#### **Normal Retirement**

Eligibility 25 or more years of service or age 60 regardless of service

Benefit

*Employees hired before 1/1/2014:*

3.00% of Final Average Compensation times credited service (up to 25 years) plus 1% times Final Average Compensation times credited service in excess of 25 years.

*Employees hired on or after 1/1/2014:*

2.35% of Final Average Compensation times credited service (up to 25 years) plus 1% times Final Average Compensation times credited service in excess of 25 years.

#### **Death after Retirement Survivor's Pension**

Eligibility Payable to surviving spouse of retired member receiving a single life annuity effective July 1, 1975 or later

Benefit 60% of the single life annuity the late retiree was receiving

## **Data, Assumptions, and Plan Provisions**

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### **Death before Retirement In Line of Duty**

|             |   |
|-------------|---|
| Eligibility | Expiration of workers' compensation to the survivors of a member who died in the line of duty |
| Benefit     | Same amount paid by workers' compensation   |

### **Death before Retirement Not In Line of Duty**

|             |   |
|-------------|---|
| Eligibility | 20 years of service   |
| Benefit     | Married participant: spouse will receive single life annuity actuarially reduced in accordance with Option I elected. |

### **Termination Benefit**

|             |   |
|-------------|---|
| Eligibility | 10 years of service   |
| Benefit     | Accrued retirement benefit payable at participant's normal retirement date. If the participant terminates prior to the service requirement, a refund of the accumulated contributions with interest will be issued. |

### **Disability Benefit In Line of Duty**

|             |  |
|-------------|--|
| Eligibility | Immediately upon total and permanent disability  |
| Benefit     | 50% of Final Average Compensation up to age 55, then Normal Retirement Benefit with service credited from date of disability to age 55 |

### **Disability Benefit Not In Line of Duty**

|             |  |
|-------------|--|
| Eligibility | 5 years of service and deemed to be totally and permanently disabled |
| Benefit     | 1.5% times Final Average Compensation times credited service         |

As of January 1, 2016 – At what would have been 25 years of service for the retiree, the pension will be recalculated based on the multiplier rate that was in effect at the time of medical retirement.

**Data, Assumptions, and Plan Provisions**

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**Deferred Retirement Option Plan (DROP)**

| Eligibility         | Employees hired before 1/1/2014 may participate in the DROP once eligible for retirement.   |                     |                        |               |      |           |      |           |      |               |      |
|---------------------|---|---------------------|------------------------|---------------|------|-----------|------|-----------|------|---------------|------|
| Benefit             | The participant's accrued benefit at the date of entering the DROP, accumulated with interest each year based on the Funded Ratio received within the most recent Annual Pension Valuation.   |                     |                        |               |      |           |      |           |      |               |      |
|                     | <table><thead><tr><th><u>Funded Ratio</u></th><th><u>Interest Earned</u></th></tr></thead><tbody><tr><td>95% and above</td><td>5.0%</td></tr><tr><td>85% - 94%</td><td>4.0%</td></tr><tr><td>75% - 84%</td><td>3.0%</td></tr><tr><td>74% and below</td><td>2.0%</td></tr></tbody></table> | <u>Funded Ratio</u> | <u>Interest Earned</u> | 95% and above | 5.0% | 85% - 94% | 4.0% | 75% - 84% | 3.0% | 74% and below | 2.0% |
| <u>Funded Ratio</u> | <u>Interest Earned</u>  |                     |                        |               |      |           |      |           |      |               |      |
| 95% and above       | 5.0%  |                     |                        |               |      |           |      |           |      |               |      |
| 85% - 94%           | 4.0%  |                     |                        |               |      |           |      |           |      |               |      |
| 75% - 84%           | 3.0%  |                     |                        |               |      |           |      |           |      |               |      |
| 74% and below       | 2.0%  |                     |                        |               |      |           |      |           |      |               |      |

The maximum period for participation in the DROP is 5 years.

**Compensation**

Compensation includes base rate of pay, overtime pay, longevity pay, holiday pay, sick leave payments, and unused vacation.

**Final Average Compensation (FAC)**

Final Average Compensation shall be calculated on the three (3) years of highest annual Compensation received by an employee during the ten (10) years of service immediately preceding retirement.

Members shall have the option of having up to fourteen (14) unused vacation days paid out to them and applied and used toward the FAC.

**Credited Service**

For Vesting and Benefit Accrual  
All years and completed months of continuous service with the Township of Ypsilanti.

**Employee Contributions**

6% of Compensation

**Payment Forms**

Normal Form

Single Participants: Single Life Annuity

Married Participants: Joint and 60% Survivor Annuity

**Plan Provisions Not Included**

We are not aware of any plan provisions not included in the valuation

**Adjustments Made for Subsequent Events**

We are not aware of any event following the measurement date and prior to the date of this report that would materially impact the results of this report.

**Data, Assumptions, and Plan Provisions**

Except where otherwise indicated, the following assumptions were selected by the plan sponsor with the concurrence of the actuary. Prescribed assumptions are based on the requirements of the relevant law, the Internal Revenue Code, and applicable regulation. The actuary was not able to evaluate the prescribed assumptions for reasonableness for the purpose of the measurement.

|  |   |
|--|---|
| <b>Valuation Date</b>                                    | January 1, 2019   |
| <b>Participant and Asset Information Collected as of</b> | January 1, 2019   |
| <b>Cost Method</b>                                       | Individual Entry Age Cost Method – Level percent of pay   |
| <b>Amortization Method</b>                               | 19 year closed level percent of payroll (3.00%) amortization of Unfunded Actuarial Accrued Liability  |
| <b>Asset Valuation Method</b>                            | Smoothed Value of Assets. Gains or losses on the Market Value of Assets are recognized over five years.   |
| <b>Interest Rates (CO)</b>                               | 6.50% net of investment expenses<br>The interest rate is the long-term rate of return on assets. This assumption is supported by the investment mix of the plan assets and long-term capital market return assumptions.   |
| <b>Annual Pay Increases (FE)</b>                         | Pay increases follow the schedule below:<br>The annual pay increase reflects a general salary inflation assumption of 3.00% and a merit increase up to 3.50%. These assumptions are based on the latest experience study. |

| <u>Age</u> | <u>Base Rate</u> | <u>Merit Rate</u> |
|------------|------------------|-------------------|
| 20         | 3.00%            | 3.50%             |
| 25         | 3.00%            | 3.50%             |
| 30         | 3.00%            | 3.10%             |
| 35         | 3.00%            | 1.60%             |
| 40         | 3.00%            | 0.70%             |
| 45         | 3.00%            | 0.70%             |
| 50         | 3.00%            | 0.70%             |
| 55         | 3.00%            | 0.60%             |
| 60         | 3.00%            | 0.50%             |

**Data, Assumptions, and Plan Provisions**

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**Mortality Rates (FE)**

Healthy

RP-2006 Total Mortality with generational improvements projected beginning in 2006 based on the SOA Scale MP-18.

Disabled

RP-2006 Total Disabled Mortality with generational improvements projected beginning in 2006 based on the SOA Scale MP-18.

As the plan is not large enough to have credible experience, mortality assumptions are set to reflect general population trends.

**Marital Status and Ages (FE)**

90% of Participants assumed to be married with wives assumed to be the same age as their husbands.

**Retirement Rates (FE)**

Rates are based on years of service and date of hire.  
100% of participants are assumed to retire at age 60 regardless of service.

Rates for participants hired before 1/1/2014.

| <u>Service</u> | <u>Rate</u> |
|----------------|-------------|
| 25-28 years    | 50%         |
| 29 years       | 60%         |
| 30+ years      | 100%        |

Rates for participants hired on or after 1/1/2014.

| <u>Service</u> | <u>Rate</u> |
|----------------|-------------|
| 25 years       | 60%         |
| 26-27 years    | 50%         |
| 28 years       | 70%         |
| 29 years       | 80%         |
| 30+ years      | 100%        |



**Data, Assumptions, and Plan Provisions**

**Disability Rates (FE)**

Rates are based on age and are assumed to be 0% during a participant's first 5 years of service. Sample rates after the first 5 years of service are below.

| <u>Age</u> | <u>Males</u> | <u>Females</u> |
|------------|--------------|----------------|
| 20         | 0.07%        | 0.03%          |
| 25         | 0.09%        | 0.05%          |
| 30         | 0.10%        | 0.07%          |
| 35         | 0.14%        | 0.13%          |
| 40         | 0.21%        | 0.19%          |
| 45         | 0.32%        | 0.28%          |
| 50         | 0.52%        | 0.45%          |
| 55         | 0.92%        | 0.76%          |
| 60         | 1.53%        | 1.10%          |

**Withdrawal Rates (FE)**

Rates are based on age and service. Sample rates are below.

| <u>Age</u> | <u>Service</u> | <u>Rate</u> |
|------------|----------------|-------------|
| ALL        | 0              | 10.0%       |
| ALL        | 1              | 7.0%        |
| ALL        | 2              | 5.0%        |
| ALL        | 3              | 4.0%        |
| ALL        | 4              | 3.5%        |
| 25         | 5+             | 3.5%        |
| 30         | 5+             | 2.9%        |
| 35         | 5+             | 1.5%        |
| 40         | 5+             | 0.6%        |
| 45+        | 5+             | 0.5%        |

Retirement rates, Disability rates, and Withdrawal rates are based on the most recent experience study from 2017.

**Duty-Related Deaths and Disabilities (FE)**

70% of pre-retirement deaths and disabilities are assumed to be duty-related

*FE indicates an assumption representing an estimate of future experience*

*MD indicates an assumption representing observations of estimates inherent in market data*

*CO indicates an assumption representing a combination of an estimate of future experience and observations of market data*