**City of Wixom**
County of Oakland
State of Michigan

Comprehensive Financial Plan
For Pension and
Other Post-Employment Benefits
May 8, 2018

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# Comprehensive Financial Plan

This Comprehensive Financial Plan (the "Plan") is being prepared pursuant to Act 329, Public Acts of Michigan, 2012, as amended ("Act 329"). In accordance with Act 329, the City of Wixom (the "City") has chosen to issue bonds to finance a portion of the City's unfunded pension liability and unfunded post employment heath care liability, as further described in this Plan.

The City qualifies to issue such bonds as the City meets the minimum bond rating requirement of Act 329, has closed its defined benefit pension plan for all employees, has established a defined contribution plan for such employees not eligible to participate in the defined benefit plan, and has the legal capacity to issue bonds in the required amount. The City's outstanding limited tax general obligation bond rating of "Aa2" from Moody's Investors Service, Inc. was affirmed on March 30th, 2018 as part of Moody's Annual Comment on the City of Wixom. A copy of the annual comment is included in Appendix F herein. The City will have the rating reassigned as a part of the bond issuance process for the Limited Tax General Obligation Pension and Other Post Employment Benefit Obligation Bonds ("POBs", "OPEBs").

As noted above, the City has the legal debt capacity to issue the POBs and OPEBs, as computed below:

| LEGAL DEBT MARGIN - As of April 25, 2018 | | | |
|---|---|---|---|
| 2018 State Equalized Value (SEV) | | | $861,167,010 |
| Plus: 2018 Equivalent IFT Value | | | $6,224,635 |
| Total Valuation | | | $867,391,645 |
| Legal Debt Limit - 10% of SEV | | | **$86,739,165** |
| | | | |
| Total Bonded Debt Outstanding | | | $7,312,000 |
| Less: Revenue Bonds | | | (1,405,000) |
| Net Amount Subject to Legal Debt Limit | | | **$5,907,000** |
| | | | |
| **LEGAL DEBT MARGIN AVAILABLE** | | | **$80,832,165** |
| | **Pension Bonds** | **OPEB Bonds** | **Pension & OPEB Bonds** |
| Estimated Amount of Pension and OPEB Bonds | $17,105,000 | $6,790,000 | $23,895,000 |
| % of Legal Debt Margin Used By New Bonds | 21.16% | 8.40% | 29.56% |
| Est. Legal Debt Margin Available After New Bonds | $63,727,165 | $74,042,165 | $56,937,165 |

*Source: Oakland County Equalization Departments and Municipal Advisory Council of Michigan*

The City proposes to issue bonds in the amount of approximately $17,105,000 to fund its pension obligation and $6,790,000 to fund its Retiree Healthcare obligation for a total of $23,895,000, which is well within the City's legal debt capacity.

**Pension Plans**

The City of Wixom currently participates in the Municipal Employees' Retirement System of Michigan ("MERS"), an agent multiple-employer defined benefit pension plan that covers certain full-time employees of the City. As of the most recent actuarial report dated December 31, 2016, membership for the defined benefit plan ("The Defined Benefit Plan") was 95 total participants in 6 divisions consisting of:

- 54 retirees and beneficiaries currently receiving benefits
- 13 vested former employees; and
- 28 active employees

The City has established a defined contribution plan for such employees not eligible to participate in the defined benefit pension plan. The closure of the defined benefit pension plan occurred in phases as follows:

| Employee Group | Date Closed to New Hires |
|---|---|
| Non-Union | July 1, 2006 |
| Clerical Union | June 11, 2013 |
| Police Officers Union | December 18, 2013 |
| Police Sergeants Union | June 20, 2014 |
| DPW Union | August 13, 2014 |

<u>Defined Benefit Plan</u>

As of December 31, 2016, the most recent actuarial valuation date, the defined benefit plan as a whole, was 56.8% funded. As of December 31, 2015 and December 31, 2014 the defined benefit plan funded percentage as a whole was 57.7% and 62.2% respectively. The decrease in funding percentage is attributable to recognized losses since the prior valuations, along with changes in actuarial assumptions. As of December 31, 2016, the actuarial accrued liability for benefits for the Defined Benefit plan was $34,759,106 and the actuarial value of assets was $19,735,804, resulting in an unfunded liability of $15,023,302 for the Defined Benefit Plan.

The main actuarial assumptions used in determining the actuarial valuation of the City's Defined Benefit Plan as of December 31, 2016 included:

- Fixed amortization policies
- 7.75% assumed investment rate of return
- A 5 year smoothing of investment returns (versus previously used 10 year smoothing)
- 6.00% increase in final average compensation

The covered payroll (annual payroll for active employees covered by the plan) for the defined benefit plan was $2,061,173 and the ratio for the unfunded actuarial accrued liability to the covered payroll was 728.87%. Further detail on the City's historical pension funding is provided below.

| Historical Pension Funding (in 000's) | | | | | | |
|---|---|---|---|---|---|---|
| Actuarial Valuation Date | Actuarial Accrued Liability (AAL) | Actuarial Value of Assets | Unfunded AAL | Funded Ratio | Covered Payroll | UAAL as % of Covered Payroll |
| 12/31/2009 | $21,648,972 | $14,573,902 | $7,075,070 | 67.3% | $3,561,123 | 198.7% |
| 12/31/2010 | 22,994,104 | 15,626,617 | 7,367,487 | 68.0% | 3,509,348 | 209.9% |
| 12/31/2011 | 24,753,941 | 16,733,415 | 8,020,526 | 67.6% | 3,330,365 | 240.8% |
| 12/31/2012 | 26,569,541 | 17,554,959 | 9,014,582 | 66.1% | 2,909,364 | 309.8% |
| 12/31/2013 | 28,497,627 | 18,128,022 | 10,369,605 | 63.6% | 2,467,231 | 420.3% |
| 12/31/2014 | 30,216,085 | 18,786,626 | 11,429,459 | 62.2% | 2,394,251 | 477.4% |
| 12/31/2015 | 33,319,592 | 19,238,285 | 14,081,307 | 57.7% | 2,185,701 | 644.2% |
| 12/31/2016 | 34,759,106 | 19,735,804 | 15,023,302 | 56.8% | 2,061,173 | 728.9% |

Source: City of Wixom MERS Annual Actuarial Valuation Report December 31, 2016

As of December 31, 2016, the unfunded liability for benefits for the Defined Benefit Plan was $15,023,302 based on the actuarial value of assets and $16,435,929 based on the market value of assets. A comparison of the funded status on a market value of assets and actuarial value of assets is shown below:

| 12/31 Pension Funding | Actuarial Value of Assets | Market Value of Assets |
|---|---|---|
| Actuarial Accrued Liability (AAL) | $34,759,106 | $34,759,106 |
| Value of Assets | $19,735,804 | $18,323,177 |
| Unfunded Actuarial Liability (UAL) | $15,023,302 | $16,435,929 |
| Funded Ratio | 56.78% | 52.71% |
| Covered Payroll | $2,061,173 | $2,061,173 |
| UAL as % of Covered Payroll | 728.87% | 797.41% |

Source: City of Wixom Annual Actuarial Report December 31, 2016

Over the past eight years, the City's annual required contribution for its defined benefit pension plan increased from $735,707 in 2008 to $1,075,014 in 2016, as shown below. The City has met its annual required contribution each year:

| Defined Benefit Contributions | | | |
|---|---|---|---|
| Year Ended | Annual Required Contribution | Annual Contribution | Percentage of ARC Contributed |
| 12/31/2008 | $735,707 | $735,707 | 100.00% |
| 12/31/2009 | 743,557 | 743,557 | 100.00% |
| 12/31/2010 | 813,675 | 813,675 | 100.00% |
| 12/31/2011 | 823,294 | 823,294 | 100.00% |
| 12/31/2012 | 788,172 | 788,172 | 100.00% |
| 12/31/2013 | 761,731 | 761,731 | 100.00% |
| 12/31/2014 | 841,999 | 841,999 | 100.00% |
| 12/31/2015 | 972,966 | 972,966 | 100.00% |
| 12/31/2016 | 1,075,014 | 1,075,014 | 100.00% |

Defined Contribution Plan

The City's defined contribution plan covers full-time employees hired after the date of defined benefit plan closure. Options for contributions that are currently provided by the City are:

- 8% employer contribution and required 2% employee contribution

Under the City's defined contribution plan, employees are provided with portability of both employee and employer contributions including earnings on the employer and employee contributions by allowing the employee, upon termination of employment, to withdraw the entire amount of employee contribution, including earnings and a percentage of the employer contributions, on a vesting scale based on years of services as shown below:

| Defined Contribution Plan | |
|---|---|
| Service Years | % Vested |
| 0 - 4 Years | 0% |
| 4 Years | 25% |
| 5 Years | 50% |
| 6 Years | 75% |
| 7 Years | 100% |

During the year ended June 30, 2017, employees contributed $24,686.49 to the defined contribution plan. During the year, contributions totaling $98,745.04 were made by the City in accordance with contribution requirements established by City Council.

**Post-Employment Health Benefit Plans**

The City administers a defined benefit post-employment health plan to employees hired prior to the closure and discontinuance of accepting new hires into the plan. As of August 13, 2014, the defined benefit post-employment health benefit plan was closed to all new employees hired on or after the dates shown in the table below. The City has established a defined contribution Health Care Saving Program for such employees not eligible to participate in the defined benefit post-employment health plan. The closure of the defined benefit health plan occurred in phases as follows:

| Employee Group | Date Closed to New Hires |
|---|---|
| Non-Union | July 1, 2006 |
| Clerical Union | June 11, 2013 |
| Police Officers Union | December 18, 2013 |
| Police Sergeants Union | June 20, 2014 |
| DPW Union | August 13, 2014 |

Defined Benefit Plan

The City of Wixom Retiree Healthcare Plan (the "Plan") provides health insurance benefits to eligible retirees, their spouses, and dependents. To be eligible for retiree health care benefits, DPW Union employees must be age 55 with 18 years of service, Police Officers Union and Police/Union Sergeant Employees must be age 50 with 20 years of service, and Full Time Non-Union, Clerical Union, and Non-Union Library Employees must be age 55 with 15 years service. In the event the retiree pre-deceases the surviving spouse, they are eligible to receive benefits if they were the spouse of the retiree at least one year prior to the retiree's retirement or termination and not covered or eligible under another health care plan. For further details on benefits and retirement conditions, refer to Appendix C.

As of June 30, 2016, the date of the most recent actuarial valuation, the Plan had 24 retirees and survivors and 30 active plan members. The Plan had an accrued liability of $12,653,617. The actuarial value of the Plan assets was $6,273,095 resulting in an unfunded actuarial accrued liability of $6,380,522. The Plan was 49.58% funded.

The main actuarial assumptions used in determining the actuarial valuation as of June 30, 2016 included:

- Individual Entry-Age Actuarial cost method
- A 7% investment rate of return (net of expenses)
- A medical inflation rate gradually declining from 9% in year 1 to 4.00% in year 10 and beyond

A more detailed overview of assumptions can be found in the Actuarial Valuation Report contained in Appendix C.

The following tables show the City's contribution and funding progress of its post-employment health benefits plan over the past five years.

| Historical OPEB Funding | | | | |
|---|---|---|---|---|
| Actuarial Valuation Date | Actuarial Accrued Liability (AAL) | Actuarial Value of Assets | Unfunded AAL | Funded Ratio |
| 6/30/2011 | $7,495,267 | $3,419,519 | $4,075,748 | 45.6% |
| 6/30/2012 | 9,435,886 | 3,580,413 | 5,855,473 | 37.9% |
| 6/30/2014 | 10,380,016 | 5,509,798 | 4,870,218 | 53.1% |
| 6/30/2016 | 12,653,617 | 6,273,095 | 6,380,522 | 49.6% |

Source: City of Wixom Audited Comprehensive Annual Financial Report for Fiscal Year Ending June 30, 2017

| OPEB Contributions | | | | |
|---|---|---|---|---|
| Year Ended June 30 | Annual OPEB Cost | Annual Contribution | Percentage of OPEB Cost Contributed | Net Asset (Obligation) |
| 2012 | $652,942 | $230,304 | 35.3% | $578,037 |
| 2013 | 662,564 | 524,362 | 79.1% | 708,051 |
| 2014 | 666,440 | 1,059,189 | 158.9% | 315,302 |
| 2015 | 545,427 | 1,313,642 | 240.8% | (452,913) |
| 2016 | 558,715 | 925,989 | 165.7% | (589,434) |
| 2017 | 552,617 | 792,941 | 143.5% | (829,758) |

Source: City of Wixom Audited Comprehensive Annual Financial Reports

Defined Contribution Health Care Savings Plan

The City has taken steps to reduce its OPEB costs. Full-time employees hired after the closure date of the defined benefit retiree health plan, receive a defined contribution deposited into a Health Care Saving Plan administered by MERS. Options for contributions that are currently provided by the City are:

- 3% employer contribution and required 1% employee contribution

Under the City's defined contribution health care savings plan, employees are provided with portability of both employee and employer contributions including earnings on the employer and employee contributions by allowing the employee, upon termination of employment, to utilize the entire amount of employee contribution, including earnings and a percentage of the employer contributions, on a vesting scale based on years of services as shown below:

| Defined Contribution Plan - Health Care Savings | |
|---|---|
| Service Years | % Vested |
| 0 - 4 Years | 0% |
| 4 Years | 25% |
| 5 Years | 50% |
| 6 Years | 75% |
| 7 Years | 100% |

During the fiscal year ended June 30, 2017, employees contributed $12,763.08 to the defined contribution health care savings plan. Contributions totaling $38,288.67 were made by the City in accordance with contribution requirements established by City Council.

**Cost Containment Measures**

Pension

- The City has switched to a defined contribution plans and closed all defined benefit pension plans for new employees, resulting in significant cost savings. The closure occurred in phases as follows:

| Employee Group | Date Closed to New Hires |
|---|---|
| Non-Union | July 1, 2006 |
| Clerical Union | June 11, 2013 |
| Police Officers Union | December 18, 2013 |
| Police Sergeants Union | June 20, 2014 |
| DPW Union | August 13, 2014 |

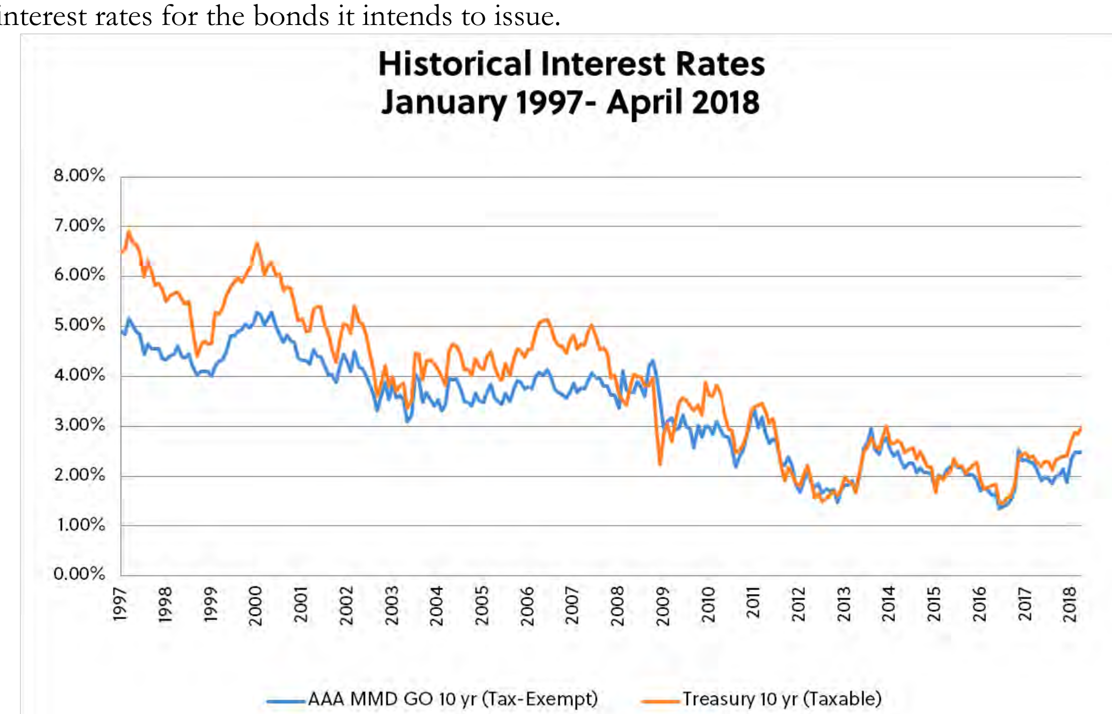
- In Fiscal Years 2010/11, 2011/12, 2012/13 and 2014/15 all City employees did not receive annual wage increases in order to avoid further staff and program reductions due to the economic downturn. In addition, the City suspended its practice of issuing annual merit based increases to Non-Union full-time employees from Fiscal Year 2007/2008 to the current Fiscal Year 2017/2018. This in turn reduces the year-to-year costs and ultimately decreases the future pension liability due to lower wage expectations at the time of retirement.
- The City published an updated Five-Year Financial and Strategic Plan in 2013 which explored cost reduction and cost containment opportunities.
    - As part of this plan, departments were reduced in size through attrition and work was outsourced/privatized, both of which decrease the future pension liability of the City.
    - More details on the Five-Year Financial and Strategic Plan are available here: http://www.wixomgov.org/home/showdocument?id=498

Post Employment Healthcare:

- The City has switched to a defined contribution health care savings plan and closed the defined benefit healthcare plan for new employees, resulting in significant cost savings.
- Retiree health care costs also decrease as a result of the staffing reductions discussed above.
- The City uses a high deductible health plan, in conjunction with a health reimbursement arrangement for retirees under the age of 65 to reduce costs.
- Health plan for retirees over age 65 (or Medicare eligible) was changed from a high cost traditional plan to a Premier Senior Health Plan that results in a significant cost reduction.
- After the enactment of PA 152 of 2012 the City implemented the 80%/20% rule, which provides that active full-time employees pay 20% of the Blue Cross PPO and Blue Care Network illustrative rates. The City continues to provide a HMO plan through Blue Care Network to offer a lower cost health plan alternative which saves both the City and employee on the 80%/20% cost share. High deductible health care plans were instituted to realize premium savings. Deductibles are then funded through the utilization of a health reimbursement arrangement, saving the City a considerable amount on annual health care costs.

**Bond Issuance Considerations**

The City intends to issue bonds as authorized by Act 329 to fully or partially fund the unfunded liability for its Defined Benefit Pension Plan and Retiree Healthcare Plans. Given the current interest rates, as shown on the graph below, the City anticipates receiving favorable interest rates for the bonds it intends to issue.



The City understands that the value of assets and liabilities may change depending on market conditions and actuarial experiences differing from projections. The City recognizes that such changes may result in additional required contributions to the plans. The City also recognizes that such changes could result in the Plan becoming overfunded.

The annual required contributions that the City makes for its Defined Benefit pension plan is comprised of two parts; the unfunded accrued liability and the normal cost component. The unfunded accrued liability is the portion of the pension liability that is not funded, while the normal cost is the cost of future benefits earned by employees in the current year. Under Act 329, only the unfunded accrued liability may be financed with a bond issuance.

The City is expecting to issue bonds to cover its unfunded actuarial accrued liabilites as of the most recently available actuarially determined UAL based either on the actuarial value of assets or the market value of assets, to be determined at the time of sale. Below is a breakdown of the sources and uses of funds for the bonds to be issued based on both the market value of assets and the actuarial value of assets. The bond proceeds are expected to fund 100% of the City's unfunded accrued liability for both the Defined Benefit Pension Plan and Retiree Healthcare Plan.

**Pension LTGO Bonds**

| Sources and Uses | | |
|---|---|---|
| | **12/31/2016 Actuarial Value of Assets** | **12/31/2016 Market Value of Assets** |
| **Sources** | | |
| Bond Par Amount | $15,690,000 | $17,105,000 |
| **Total Sources** | **$15,690,000** | **$17,105,000** |
| **Uses** | | |
| Pension Fund Deposit | $15,023,302 | $16,435,929 |
| Costs of Issuance (Including Underwriter's Discount) | $166,698 | $169,071 |
| Contingency (Buffer) | $500,000 | $500,000 |
| **Total Uses** | **$15,690,000** | **$17,105,000** |

*If the City issues bonds to fund the unfunded accrued liability based on the market value of assets, the City will use an updated market value of assets that is within 150 days of the bond closing. Additionally, the City anticipates the receipt of its December 31, 2017 actuarial report prior to the issuance of the bonds, and the bond size will be adjusted accordingly.

### OPEB LTGO Bonds

| Sources and Uses | |
|---|---|
| **Sources** | |
| Bond Par Amount | $6,790,000 |
| **Total Sources** | **$6,790,000** |
| **Uses** | |
| Pension Fund Deposit | $6,380,522 |
| Costs of Issuance (Including Underwriter's Discount) | $109,478 |
| Contingency (Buffer) | $300,000 |
| **Total Uses** | **$6,790,000** |

Provided below is a comparison of the annual unfunded accrued liability amortization payment for the full amount of the unfunded accrued liability, provided by CBIZ Retirement Plan Services for the Pension Plan and GRS for the Retiree Healthcare Plan, to the estimated bond payments plus remaining unfunded accrued liability amortization.

## Pension Bonds

### Analysis using the Actuarial Value of Assets

| | Without Bonding | With Bonding | | | |
|---|---|---|---|---|---|
| Year Ending 12/31 | UAAL Amortization Payment(a) | Estimated Bond Payments(c) | UAAL Amortization Payment(b) | Total Est. Bond Payments and UAAL Payment | Estimated Savings |
| 2018 | $1,200,000 | $168,638 | $700,000 | $868,638 | **$331,362** |
| 2019 | 1,200,000 | 925,984 | -- | 925,984 | **274,017** |
| 2020 | 1,200,000 | 928,213 | -- | 928,213 | **271,787** |
| 2021 | 1,300,000 | 1,027,676 | -- | 1,027,676 | **272,325** |
| 2022 | 1,300,000 | 1,029,377 | -- | 1,029,377 | **270,624** |
| 2023 | 1,400,000 | 1,132,802 | -- | 1,132,802 | **267,199** |
| 2024 | 1,400,000 | 1,128,161 | -- | 1,128,161 | **271,840** |
| 2025 | 1,500,000 | 1,230,231 | -- | 1,230,231 | **269,770** |
| 2026 | 1,600,000 | 1,326,751 | -- | 1,326,751 | **273,250** |
| 2027 | 1,600,000 | 1,329,487 | -- | 1,329,487 | **270,513** |
| 2028 | 1,700,000 | 1,427,862 | -- | 1,427,862 | **272,139** |
| 2029 | 1,700,000 | 1,431,291 | -- | 1,431,291 | **268,710** |
| 2030 | 1,800,000 | 1,529,292 | -- | 1,529,292 | **270,708** |
| 2031 | 1,900,000 | 1,629,448 | -- | 1,629,448 | **270,552** |
| 2032 | 1,900,000 | 1,628,787 | -- | 1,628,787 | **271,214** |
| 2033 | 1,500,000 | 1,229,135 | -- | 1,229,135 | **270,865** |
| 2034 | 1,500,000 | 1,231,878 | -- | 1,231,878 | **268,122** |
| 2035 | 1,600,000 | 1,330,794 | -- | 1,330,794 | **269,206** |
| 2036 | 1,400,000 | 1,129,500 | -- | 1,129,500 | **270,500** |
| 2037 | 1,400,000 | 1,130,249 | -- | 1,130,249 | **269,751** |
| 2038 | -- | -- | -- | -- | **--** |
| | **$30,100,000** | **$23,925,551** | **$700,000** | **$24,625,551** | **$5,474,449** |
| | | | | **Net PV Savings:** | **3,646,229** |
| | | | | Total Unfunded Liability: | $15,023,302 |
| | | | | Estimated Bond Amount: | $15,690,000 |
| | | | | All-In TIC: | 4.545% |

(a) Based on CBIZ letter dated November 3, 2017 - Assumes actuarial value of assets
(b) Assumes 7 months of UAL payments will be made prior to the bonds being sold
(c) Estimate based on Taxable interest rates as of April 23, 2018
*Schedules do not include ongoing normal cost

## Analysis using the Market Value of Assets

| | Without Bonding | With Bonding | | | |
|---|---|---|---|---|---|
| Year Ending 12/31 | UAAL Amortization Payment(a) | Estimated Bond Payments(c) | UAAL Amortization Payment(b) | Total Est. Bond Payments and UAAL Payment | Estimated Savings |
| 2018 | $1,300,000 | $183,488 | $758,333 | $941,821 | **$358,179** |
| 2019 | 1,300,000 | 995,241 | -- | 995,241 | **304,759** |
| 2020 | 1,400,000 | 1,095,587 | -- | 1,095,587 | **304,413** |
| 2021 | 1,400,000 | 1,093,137 | -- | 1,093,137 | **306,863** |
| 2022 | 1,500,000 | 1,192,706 | -- | 1,192,706 | **307,295** |
| 2023 | 1,500,000 | 1,193,979 | -- | 1,193,979 | **306,022** |
| 2024 | 1,600,000 | 1,296,857 | -- | 1,296,857 | **303,143** |
| 2025 | 1,600,000 | 1,301,139 | -- | 1,301,139 | **298,861** |
| 2026 | 1,700,000 | 1,396,660 | -- | 1,396,660 | **303,340** |
| 2027 | 1,800,000 | 1,496,319 | -- | 1,496,319 | **303,681** |
| 2028 | 1,800,000 | 1,496,486 | -- | 1,496,486 | **303,515** |
| 2029 | 1,900,000 | 1,596,441 | -- | 1,596,441 | **303,559** |
| 2030 | 2,000,000 | 1,693,585 | -- | 1,693,585 | **306,416** |
| 2031 | 2,000,000 | 1,694,810 | -- | 1,694,810 | **305,191** |
| 2032 | 2,100,000 | 1,799,769 | -- | 1,799,769 | **300,231** |
| 2033 | 1,600,000 | 1,295,485 | -- | 1,295,485 | **304,515** |
| 2034 | 1,700,000 | 1,398,565 | -- | 1,398,565 | **301,435** |
| 2035 | 1,700,000 | 1,392,741 | -- | 1,392,741 | **307,260** |
| 2036 | 1,500,000 | 1,193,835 | -- | 1,193,835 | **306,165** |
| 2037 | 1,500,000 | 1,196,735 | -- | 1,196,735 | **303,266** |
| 2038 | -- | -- | -- | -- | **--** |
| | **$32,900,000** | **$26,003,561** | **$758,333** | **$26,761,895** | **$6,138,105** |
| | | | | **Net PV Savings:** | **4,085,215** |
| | | | | Total Unfunded Liability: | $16,435,929 |
| | | | | Estimated Bond Amount: | $17,105,000 |
| | | | | All-In TIC: | 4.536% |

(a) Based on CBIZ letter dated November 3, 2017 - Assumes market value of assets
(b) Assumes 7 months of UAL payments will be made prior to the bonds being sold
(c) Estimate based on Taxable interest rates as of April 23, 2018
*Schedules do not include ongoing normal cost

The City has continued to fund its annual required contribution for the Post-Retirement Health Care Plan. The ARC has previously been budgeted within the General and Library Funds and continues to be included in the proposed FY2018-19 budget set for adoption on May 22, 2018. It has been the City's intent to fund the post-employment health care benefit as illustrated by the annual funding of the ARC. Issuance of bonds will accomplish the goal of funding the Post-Retirement Health Care Liability while realizing an overall savings.

**OPEB Bonds**

19 Year Amortization

| | Without Bonding | With Bonding | | | |
|---|---|---|---|---|---|
| Year Ending 6/30 | UAAL Amortization Payment(a) | Estimated Bond Payments(c) | UAAL Amortization Payment(b) | Total Est. Bond Payments and UAAL Payment | Estimated Savings |
| 2019 | 638,455 | 546,233 | 53,205 | 599,438 | **39,017** |
| 2020 | 638,455 | 547,264 | -- | 547,264 | **91,191** |
| 2021 | 638,455 | 548,547 | -- | 548,547 | **89,909** |
| 2022 | 638,455 | 543,914 | -- | 543,914 | **94,542** |
| 2023 | 638,455 | 548,561 | -- | 548,561 | **89,895** |
| 2024 | 638,455 | 547,062 | -- | 547,062 | **91,393** |
| 2025 | 638,455 | 545,029 | -- | 545,029 | **93,426** |
| 2026 | 638,455 | 547,127 | -- | 547,127 | **91,329** |
| 2027 | 638,455 | 548,459 | -- | 548,459 | **89,997** |
| 2028 | 638,455 | 543,833 | -- | 543,833 | **94,623** |
| 2029 | 638,455 | 548,430 | -- | 548,430 | **90,026** |
| 2030 | 638,455 | 546,605 | -- | 546,605 | **91,850** |
| 2031 | 638,455 | 548,725 | -- | 548,725 | **89,730** |
| 2032 | 638,455 | 544,531 | -- | 544,531 | **93,924** |
| 2033 | 638,455 | 544,434 | -- | 544,434 | **94,021** |
| 2034 | 638,455 | 548,186 | -- | 548,186 | **90,270** |
| 2035 | 638,455 | 546,538 | -- | 546,538 | **91,918** |
| 2036 | 638,455 | 548,888 | -- | 548,888 | **89,568** |
| 2037 | – | – | -- | – | **–** |
| | **$11,492,190** | **$9,842,361** | | | **$1,596,624** |
| | | | | **Net PV Savings:** | **1,033,200** |
| | | | | Total Unfunded Liability: | $6,380,522 |
| | | | | Estimated Bond Amount: | $6,790,000 |
| | | | | All-In TIC: | 4.573% |

(a) Based on GRS Schedules dated April 4, 2018 - Assumes market value of assets
(b) Assumes 1 months of UAL payments will be made prior to the bonds being sold
(c) Estimate based on Taxable interest rates as of April 23, 2018
*Schedules do not include ongoing normal cost

27 Year Amortization

| | 7% Future Returns | | | | |
|---|---|---|---|---|---|
| | Without Bonding | With Bonding | | | |
| Year Ending 6/30 | UAAL Amortization Payment(a) | Estimated Bond Payments(c) | UAAL Amortization Payment(b) | Total Est. Bond Payments and UAAL Payment | Estimated Savings |
| 2018 | -- | -- | | | **--** |
| 2019 | 550,511 | 445,508 | 45,876 | 491,384 | **59,127** |
| 2020 | 550,511 | 442,711 | -- | 442,711 | **107,800** |
| 2021 | 550,511 | 442,798 | -- | 442,798 | **107,714** |
| 2022 | 550,511 | 442,390 | -- | 442,390 | **108,122** |
| 2023 | 550,511 | 441,499 | -- | 441,499 | **109,012** |
| 2024 | 550,511 | 445,090 | -- | 445,090 | **105,421** |
| 2025 | 550,511 | 443,214 | -- | 443,214 | **107,297** |
| 2026 | 550,511 | 440,870 | -- | 440,870 | **109,642** |
| 2027 | 550,511 | 443,232 | -- | 443,232 | **107,280** |
| 2028 | 550,511 | 444,992 | -- | 444,992 | **105,520** |
| 2029 | 550,511 | 441,130 | -- | 441,130 | **109,382** |
| 2030 | 550,511 | 441,734 | -- | 441,734 | **108,777** |
| 2031 | 550,511 | 441,677 | -- | 441,677 | **108,835** |
| 2032 | 550,511 | 440,937 | -- | 440,937 | **109,574** |
| 2033 | 550,511 | 444,618 | -- | 444,618 | **105,893** |
| 2034 | 550,511 | 442,476 | -- | 442,476 | **108,035** |
| 2035 | 550,511 | 445,299 | -- | 445,299 | **105,212** |
| 2036 | 550,511 | 442,389 | -- | 442,389 | **108,123** |
| 2037 | 550,511 | 443,966 | -- | 443,966 | **106,545** |
| 2038 | 550,511 | 444,799 | -- | 444,799 | **105,712** |
| 2039 | 550,511 | 444,882 | -- | 444,882 | **105,630** |
| 2040 | 550,511 | 444,276 | -- | 444,276 | **106,236** |
| 2041 | 550,511 | 442,981 | -- | 442,981 | **107,530** |
| 2042 | 550,511 | 445,998 | -- | 445,998 | **104,513** |
| 2043 | 550,511 | 443,097 | -- | 443,097 | **107,414** |
| 2044 | 550,511 | 444,508 | | 444,508 | **106,004** |
| | **$14,313,286** | **$11,527,066** | | | **$2,740,344** |
| | | | | **Net PV Savings:** | **1,517,514** |
| | | | | Total Unfunded Liability: | $6,380,522 |
| | | | | Estimated Bond Amount: | $6,790,000 |
| | | | | All-In TIC: | 4.648% |

(a) Based on GRS Schedules dated April 4, 2018 - Assumes market value of assets
(b) Assumes 1 months of UAL payments will be made prior to the bonds being sold
(c) Estimate based on Taxable interest rates as of April 23, 2018
*Schedules do not include ongoing normal cost

The above analysis are based on funding the unfunded liability based on a rate of return of 7.75% for the Pension System and 7.00% for the OPEB System. Appendix G includes comparative analysis at assumed rate of returns that are 1% and 2% lower than the assumed rate of returns for the above.

Based on the preceding analysis, the City has determined that it is financially beneficial to pursue the issuance of limited tax general obligation bonds to fund the Unfunded Liability for the City's Pension Plan and Retiree Healthcare Plan.

It is the City's intent to review the unfunded accrued liability for the pension system using both the actuarial value of assets, as well as the market value of assets within 150 days from the issuance. Depending on the differential in those figures, as well as interest rates and resulting estimated bond payments, the City anticipates using the higher figure in determining its bond amount for funding the pension system in order to provide a buffer to offset future fluctuations in actual Plan experience.

**Impact of Changes of Rate of Return on Investments**

The calculation determining the UAAL is based upon, among other assumptions, a 7.75% future annual investment rate of return for the Pension System and a 7.00% rate of return for the OPEB system. If actual investment returns achieved are lower than 7.75% and 7.00% respectively, it will result in a higher liability. Likewise, if the actual rate of return was higher than 7.75% and 7.00%, the result would be a lower liability.

The tables below summarize the City's UAAL under different rate of return assumptions. They also show how the funded ratio would change after applying bond proceeds to the unfunded liability using different rate of return assumptions.

**OPEB System**

| Assumed Future Annual Smoothed Rate of Investment Return | | | |
|---|---|---|---|
| **6/30/2016 Valuation Results** | **7.00%** | **6.00%** | **5.00%** |
| Accrued Liability | $12,653,617 | $14,544,424 | $16,872,471 |
| Valuation Assets | 6,273,095 | 6,273,095 | 6,273,095 |
| Unfunded Accrued Liability | $6,380,522 | $8,271,329 | $10,599,376 |
| Funded Ratio | 49.6% | 43.1% | 37.2% |
| Estimated Bond Proceeds | $6,380,522 | $6,380,522 | $6,380,522 |
| Adjusted Unfunded Accrued Liability Net of Estimated Bond Proceeds | -- | 1,890,807 | 4,218,854 |
| Adjusted Funded Ratio Net of Estimated Bond Proceeds | 100% | 87% | 75% |

**Pension System**

| Assumed Future Annual Smoothed Rate of Investment Return | | | |
|---|---|---|---|
| **12/31/2016 Valuation Results** | **7.75%** | **6.75%** | **5.75%** |
| Accrued Liability | $34,759,106 | $39,127,679 | $44,414,704 |
| Valuation Assets | 18,323,177 | 18,323,177 | 18,323,177 |
| Unfunded Accrued Liability | $16,435,929 | $20,804,502 | $26,091,527 |
| Funded Ratio Without Bonding | 52.7% | 46.8% | 41.3% |
| Estimated Bond Proceeds | $16,435,929 | $16,435,929 | $16,435,929 |
| Adjusted Unfunded Accrued Liability Net of Estimated Bond Proceeds | -- | 4,368,573 | 9,655,598 |
| Adjusted Funded Ratio Net of Estimated Bond Proceeds | 100% | 89% | 78% |

## Description of Action Required to Meet Obligations

The City allocates pension and retiree health care costs to the various divisions that receive the pension and OPEB benefits. Similarly, the annual debt service for the Pension and OPEB Obligation Bonds will be allocated proportionately to the funds receiving pension benefits. The City funds which are allocated pension and OPEB costs will be allocated proportionate amounts of annual debt service for the Bonds. Revenue sources for the funds that will be allocated portions of the annual bond payments include annual operating levies, state shared revenues, and other sources of annual revenue.

The City Manager and Finance Director complete an annual budget and present it to the Wixom City Council for approval. The annual debt service amounts for each fund within the budget will be included in the annual budget process to be presented and approved by the City Council annually. The pension obligation bonds will carry the City's limited tax general obligation full faith and credit pledge; therefore, the annual debt service will be legally required to be part of the City's total budget.

## Plan to Mitigate the Increase in Health Care Costs

The City employees and retirees currently receive a monthly health and wellness newsletter. Last year the City provided for employees to receive a health screening provided by a mobile unit from the local hospital. Those services included:

- Health Risk Assessment
- Blood Pressure
- Body Mass Index (BMI)
- 12-Lead Electrocardiogram (EKG)
- Ankle Brachial Index (ABI)
- Abdominal Aortic Ultrasound
- Carotid Arteries Ultrasound

The City is in the process of establishing a more comprehensive Wellness Program to further engage the employees in a healthy and active lifestyle. Some examples of items included would be: informational presentations, covering topics like fitness, nutrition and stress management; potlucks and contests featuring healthy food and fitness engagement, and challenges.

## Plan Compliance

As outlined in Act 329, the Plan contains the following elements:

- **An analysis of the current and future obligations with respect to each retirement program of the City**. The City has a defined benefit plan as well as a deferred compensation plan. Information regarding the defined benefit plan was obtained from MERS and CBIZ, which is contained within Appendix A and B, respectively.

- **An analysis of the current and future obligations with respect to the postemployment health care plan of the City.** The City has a defined benefit postemployment healthcare plan. Information regarding the defined benefit plan was obtained from GRS. Information with respect to the plan is contained within Appendix C and D.

- **Evidence that the issuance coupled with any other legally available funds, is sufficient to eliminate the unfunded pension liability.** The unfunded pension liability for the Defined Benefit plan provided by CBIZ Retirement Services is \$16,435,929 as of December 31, 2016. The unfunded liability for the Retiree Healthcare plan is \$6,380,522. The Sources and Uses of Funds provided by the City's financial advisor, PFM Financial Advisors LLC ("PFM"), demonstrate that the bond proceeds will cover these liabilities. The complete bond schedules prepared by PFM, along with the Sources and Uses, are provided under Appendix E.

- **A description of actions required to satisfy the debt service amortization schedule.** The pension and OPEB bonds are a limited tax general obligation of the City, paid from various City funds. A description of actions the City takes to allocate costs to its various funds, create the annual budget and obtain budget approval from the City Council is contained on pages 15.

- **Certification that the Comprehensive Financial Plan is complete and accurate.** A certification from the Finance Director attesting that the Plan is complete with information provided by reliable sources is provided on page 17.

Act 329 also requires the Plan be prepared and made publically available. Accordingly, the City has prepared this Plan, which has been approved by the City Council on May 9th, and has been made available for public review.

## Certification

The City has prepared this Comprehensive Financial Plan for Pension and Other Post-Employment Benefits as required under Act 329 for the issuance of Pension Obligation Bonds. In preparing this plan, information has been obtained from the Municipal Employees Retirement System and its actuaries, CBIZ Retirement Plan Services, GRS, and PFM Financial Advisors LLC. The City believes the information provided by these firms to be reliable.

I certify that this Comprehensive Financial Plan is complete and accurate to the best of my knowledge and belief.

By: Marilyn Stamper, Finance Director

Dated: 5/8/2018

# Appendix A: Municipal Employees Retirement System of Michigan Annual Actuarial Valuation Report December 31, 2016

**MUNICIPAL EMPLOYEES' RETIREMENT SYSTEM OF MICHIGAN**

ANNUAL ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

WIXOM, CITY OF (6316)

Spring, 2017

Wixom, City of

In care of:
Municipal Employees' Retirement System of Michigan
1134 Municipal Way
Lansing, Michigan 48917

This report presents the results of the Annual Actuarial Valuation, prepared as of December 31, 2016. The report includes the determination of liabilities and contribution rates resulting from the participation of Wixom, City of (6316) in the Municipal Employees' Retirement System of Michigan ("MERS"). MERS is a nonprofit organization, independent from the State, that has provided retirement plans for municipal employees for 70 years. Wixom, City of is responsible for the employer contributions needed to provide MERS benefits for its employees and former employees under the Michigan Constitution and the MERS Plan Document.

The purpose of the December 31, 2016 annual actuarial valuation is to:

- Measure funding progress
- Establish contribution requirements for the fiscal year beginning July 1, 2018
- Provide actuarial information in connection with applicable Governmental Accounting Standards Board (GASB) statements

This valuation report should not be relied upon for any other purpose. Reliance on information contained in this report by anyone for anything other than the intended purpose could be misleading.

The valuation uses financial data, plan provision data, and participant data as of December 31, 2016 furnished by MERS. In accordance with Actuarial Standards of Practice No. 23, the data was checked for internal and year to year consistency as well as general reasonableness, but was not otherwise audited. CBIZ Retirement Plan Services does not assume responsibility for the accuracy or completeness of the data used in this valuation.

The actuarial assumptions and methods are adopted by the MERS Retirement Board, and are reviewed every five years in an Experience Study. The most recent study was completed in 2015. Please refer to the division-specific assumptions described in table(s) in this report, and to the Appendix on the MERS website at:
www.mersofmich.com/Portals/0/Assets/Resources/AAV-Appendix/MERS-2016AnnualActuarialValuation-Appendix.pdf.

The actuarial assumptions used for this valuation produce results that we believe are reasonable.

To the best of our knowledge, this report is complete and accurate, was prepared in conformity with generally recognized actuarial principles and practices, with the Actuarial Standards of Practice issued by the Actuarial Standards Board, and is in compliance with Act No. 220 of the Public Acts of 1996, as amended, and the MERS Plan Document as revised. All of the undersigned are members of the American Academy of Actuaries (MAAA), and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. The Retirement Board of the Municipal Employees' Retirement System of Michigan confirms that the System provides for payment of the required employer contribution as described in Section 20m of Act No. 314 of 1965 (MCL 38.1140m).

This information is purely actuarial in nature. It is not intended to serve as a substitute for legal, accounting or investment advice.

**This report was prepared at the request of the Retirement Board and may be provided only in its entirety by the municipality to other interested parties (MERS customarily provides the full report on request to associated third parties such as the auditor for the municipality). CBIZ Retirement Plan Services is not responsible for the consequences of any unauthorized use.**

You should notify MERS if you disagree with anything contained in the report or are aware of any information that would affect the results of the report that have not been communicated to us. If you have reason to believe that the plan provisions are incorrectly described, that important plan provisions relevant to this valuation are not described, that conditions have changed since the calculations were made, that the information provided in this report is inaccurate or is in anyway incomplete, or if you need further information in order to make an informed decision on the subject matter in this report, please contact your Regional Manager at 1.800.767.MERS(6377).

Sincerely,

Cathy Nagy, MAAA, FSA
Jim Koss, MAAA, ASA
Curtis Powell, MAAA, EA

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## Executive Summary

### Actuarial Assumptions and Methods Adopted with the December 31, 2015 Valuations

The actuarial assumptions and methods are adopted by the MERS Retirement Board, and are reviewed every five years in an Experience Study. The Experience Study is a comprehensive, detailed analysis that reviews MERS' funding policy and compares actual experience with the current actuarial assumptions; the study recommends adjustments as necessary. The most recent study was completed in 2015 and changes to the assumptions and methods based on the 2015 Experience Study were first reflected in the December 31, 2015 valuations. The impact of these changes is being phased-in over a 5 year period. The phase-in allows the employer to spread the impact of the new assumptions over 5 fiscal years. This report continues to provide contributions both with and without the phase-in adjustments.

The assumptions and methods are described in the Appendix on the MERS website.

As part of the recent Experience Study, the following changes are first reflected in the December 31, 2016 annual valuation:

- The asset smoothing was changed from 10 to 5 years. The gain (loss) recognized each year will be 20% of the current year's gain (loss) plus 20% of the gain (loss) from each of the 4 preceding years. The cumulative difference between the market value and valuation assets as of December 31, 2015 will be recognized over 4 years.
- Annual changes in Unfunded Accrued Liability (UAL) will be amortized over fixed periods, creating "layers" of UAL. This will require removing and creating "layers" of UAL on an annual basis.
    - Once the amortization period drops below 15 years (10 years for closed divisions), any future liability and asset gains or losses will be spread over a 15-year fixed period for open divisions and a 10-year fixed period for closed divisions — creating "layers" of UAL on an annual basis.
    - This transparent method allows tracking of what changed your UAL, and sets a fixed period in time in which that UAL change will be fully funded.

MERS created a dedicated resource page on their website for additional information on these topics (http://www.mersofmich.com/Employer/Work-Scenarios/Unfunded-Liability).

## Funded Ratio and Required Employer Contributions

The MERS Defined Benefit Plan is an agent multiple-employer plan, meaning that assets are pooled for investment purposes but separate accounts are maintained for each individual employer. Each municipality is responsible for their own plan liabilities; MERS does not borrow from one municipality's account to pay for another.

The funded ratio of a plan is the percentage of the dollar value of the accrued benefits that is covered by the actuarial value of assets.

**Your Funded Ratio:**

| | 12/31/2016 | 12/31/2015 |
|---|---|---|
| **Funded Ratio** | 57% | 58% |

Michigan Law requires that pension plans be pre-funded, meaning money is set aside now to pay for future benefits. Pension plans are usually funded by employer and employee contributions, and investment income.

How quickly a plan attains the 100% funding goal depends on many factors such as:

- The current funded ratio
- The future experience of the plan
- The amortization period

It is more important to look at the trend in the funded ratio over a period of time than at a particular point in time.

**Your Required Employer Contributions:**

Your computed employer contributions are shown in the following table. Employee contributions, if any, are in addition to the computed employer contributions. Changes to the assumptions and methods based on the 2015 Experience Study were first reflected in the December 31, 2015 valuations. The impact of these changes is being phased-in over a 5 year period. The phase-in allows the employer to spread the impact of the new assumptions over 5 fiscal years. This valuation reflects the second year of the phase-in.

Your minimum required contribution is the amount in the “Phase-in” columns. By default, MERS will invoice you the phased-in contribution amount, but strongly encourages you to contribute more than the minimum required contribution. If for 2017 your municipality is making employer contributions based on rates without the phase-in applied, contact MERS to ensure this rate is used again for 2018 and not the defaulted phase-in rates.

| | Percentage of Payroll | | | | Monthly $ Based on Projected Payroll | | | |
|---|---|---|---|---|---|---|---|---|
| | Phase-in | No Phase-in | Phase-in | No Phase-in | Phase-in | No Phase-in | Phase-in | No Phase-in |
| Valuation Date: | 12/31/2016 | 12/31/2016 | 12/31/2015 | 12/31/2015 | 12/31/2016 | 12/31/2016 | 12/31/2015 | 12/31/2015 |
| Fiscal Year Beginning: | July 1, 2018 | July 1, 2018 | July 1, 2017 | July 1, 2017 | July 1, 2018 | July 1, 2018 | July 1, 2017 | July 1, 2017 |
| **Division** | | | | | | | | |
| 01 - Clerical Union | - | - | - | - | $ 5,594 | $ 6,314 | $ 4,733 | $ 5,693 |
| 02 - Pol/Union Sgts | - | - | - | - | 40,658 | 43,199 | 36,644 | 40,032 |
| 07 - Library Dir. | - | - | - | - | 433 | 454 | 325 | 353 |
| 10 - DPW Union | - | - | - | - | 15,602 | 16,640 | 14,961 | 16,345 |
| 12 - Dpt Hds Dpty | - | - | - | - | 43,420 | 47,098 | 33,132 | 38,036 |
| 20 - Pol Ofcrs Union | - | - | - | - | 24,964 | 26,962 | 21,797 | 24,461 |
| **Municipality Total** | | | | | **$ 130,671** | **$ 140,667** | **$ 111,592** | **$ 124,920** |

Employee contribution rates reflected in the valuations are shown below:

| | Employee Contribution Rate | |
|---|---|---|
| Valuation Date: | 12/31/2016 | 12/31/2015 |
| **Division** | | |
| 01 - Clerical Union | 3.20% | 3.20% |
| 02 - Pol/Union Sgts | 6.26% | 6.26% |
| 07 - Library Dir. | 0.00% | 0.00% |
| 10 - DPW Union | 2.00% | 2.00% |
| 12 - Dpt Hds Dpty | 2.00% | 2.00% |
| 20 - Pol Ofcrs Union | 4.26% | 4.26% |

The employer may contribute more than the minimum required contributions, as these additional contributions will earn investment income and may result in lower future contribution requirements.

**MERS strongly encourages employers to contribute more than the minimum contribution shown above.**

Assuming that experience of the plan meets actuarial assumptions:

- To accelerate to a 100% funding ratio in 10 years, estimated monthly employer contributions for the entire employer would be $ 172,000, instead of $ 140,667.

If you are interested in making additional contributions, please contact MERS and they can assist you with evaluating your options.

**How and Why Do These Numbers Change?**

In a defined benefit plan contributions vary from one annual actuarial valuation to the next as a result of the following:

- Changes in benefit provisions (see Table 2)
- Changes in actuarial assumptions and methods (see the Appendix)
- Experience of the plan (investment experience and demographic experience); this is the difference between actual experience of the plan and the actuarial assumptions. For example:
  - Lower actual investment returns would result in higher required employer contributions, and vice-versa.
  - Smaller than assumed pay increases would lower required employer contributions.
  - Reductions in the number of active employees would lower required contribution dollars, but would usually increase the contribution rate expressed as a percentage of (the now lower) payroll.
  - Retirements at earlier ages than assumed would usually increase required employer contributions.
  - More non-vested terminations of employment than assumed would decrease required contributions.
  - More disabilities or survivor (death) benefits than assumed would increase required contributions.
  - Longer lifetimes after retirement than assumed would increase required employer contributions.

Actuarial valuations do not affect the ultimate cost of the plan; the benefit payments (current and future) determine the cost of the plan. Actuarial valuations only affect the timing of the contributions into the plan. Because assumptions are for the long term, plan experience will not match the actuarial assumptions in any given year (except by coincidence). Each annual actuarial valuation will adjust the required employer contributions up or down based on the prior year's actual experience.

## Comments on Asset Smoothing

The actuarial value of assets, used to determine both your funded ratio and your required employer contribution, is based on a smoothed value of assets (10-year smoothing prior to 2016; 5-year smoothing beginning in 2016). A smoothing method reduces the volatility of the valuation results, which affects your required employer contribution and funded ratio. The smoothed actuarial rate of return for 2016 was 5.14%.

As of December 31, 2016 the actuarial value of assets is 108% of market value. This means that meeting the actuarial assumption in the next few years will require average annual market returns that exceed the 7.75% investment return assumption.

If the December 31, 2016 valuation results were based on market value on that date instead of smoothed funding value: i) the funded percent of your entire municipality would be 53% (instead of 57%); and ii) your total employer contribution requirement for the fiscal year starting July 1, 2018 would be $ 1,855,752 (instead of $ 1,688,004).

The asset smoothing method is a powerful tool for reducing the volatility of your required employer contributions. **However, if the current 8% difference between the smoothed value and the market value of assets is not made up, the result would be gradual increases in your employer contribution requirement over the next few years (to around the levels described above).**

## Risk Characteristics of Defined Benefit Plans

It is important to understand that Defined Benefit retirement plans, the plan sponsor, and the plan participants are exposed to certain risks. While risks cannot be eliminated entirely, they can be managed through various strategies. Below are a few examples of risk (this is not an all-inclusive list):

- Economic - investment return, wage inflation, etc.
- Demographic - longevity, disability, retirement, etc.
- Plan Sponsor and Employees - contribution volatility, attract/retain employees, etc.

The MERS Retirement Board adopts certain assumptions and methods to manage the economic and demographic risks, and the contribution volatility risks. For example, the investment risk is the largest economic risk and is managed by having a balanced portfolio and a clearly defined investment strategy. Demographic risks are managed by preparing special studies called experience studies on a regular basis to determine if the assumptions used are reasonable compared to the experience. Risk may be managed through a plan design that provides benefits that are sustainable in the long run. An Experience Study is completed every five years to review the assumptions and methods. The next Experience Study will be completed in 2020.

## Alternate Scenarios to Estimate the Potential Volatility of Results ("What If Scenarios")

The calculations in this report are based on assumptions about long-term economic and demographic behavior. These assumptions will never materialize in a given year, except by coincidence. Therefore the results will vary from one year to the next. The volatility of the results depends upon the characteristics of the plan. For example:

- Open divisions that have substantial assets compared to their active employee payroll will have more volatile employer contribution rates due to investment return fluctuations.
- Open divisions that have substantial accrued liability compared to their active employee payroll will have more volatile employer contribution rates due to demographic experience fluctuations.
- Small divisions will have more volatile contribution patterns than larger divisions because statistical fluctuations are relatively larger among small populations.
- Shorter amortization periods result in more volatile contribution patterns.

The analysis in this section is intended to review the potential volatility of the actuarial valuation results. It is important to note that calculations in this report are mathematical estimates based upon assumptions regarding future events, which may or may not materialize. Actuarial calculations can and do vary from one valuation to the next, sometimes significantly depending on the group's size.

Many assumptions are important in determining the required employer contributions. In the table below, we show the impact of varying one actuarial assumption: the future annual rate of investment return. Lower investment returns would result in higher required employer contributions, and vice-versa.

The relative impact of each investment return scenario below will vary from year to year, as the participant demographics change. The impact of each scenario should be analyzed for a given year, not from year to year. The results in the table are based on the December 31, 2016 valuation, and are for the municipality in total, not by division. These results do not reflect a 5-year phase in of the impact of the new actuarial assumptions.

| | **Assumed Future Annual Smoothed Rate of Investment Return** | | | |
|---|---|---|---|---|
| | **Lower Future Annual Returns** | | **Valuation Assumption** | **Higher Returns** |
| **12/31/2016 Valuation Results** | **5.75%** | **6.75%** | **7.75%** | **8.75%** |
| Accrued Liability | $ 44,414,704 | $ 39,127,679 | $ 34,759,106 | $ 31,116,393 |
| Valuation Assets | $ 19,735,804 | $ 19,735,804 | $ 19,735,804 | $ 19,735,804 |
| Unfunded Accrued Liability | $ 24,678,900 | $ 19,391,875 | $ 15,023,302 | $ 11,380,589 |
| **Funded Ratio** | 44% | 50% | 57% | 63% |
| Monthly Normal Cost | $ 36,404 | $ 26,350 | $ 18,903 | $ 13,400 |
| Monthly Amortization Payment | $ 189,218 | $ 155,512 | $ 121,764 | $ 95,762 |
| **Total Employer Contribution[1]** | $ 225,622 | $ 181,862 | $ 140,667 | $ 109,162 |

[1] If assets exceed accrued liabilities for a division, the division's amortization payment is negative and is used to reduce the division's employer contribution requirement. If the overfunding credit is larger than the normal cost, the division's full credit is included in the municipality's amortization payment above but the division's total contribution requirement is zero. This can cause the displayed normal cost and amortization payment to not add up to the displayed total employer contribution.

**Projection Scenarios**

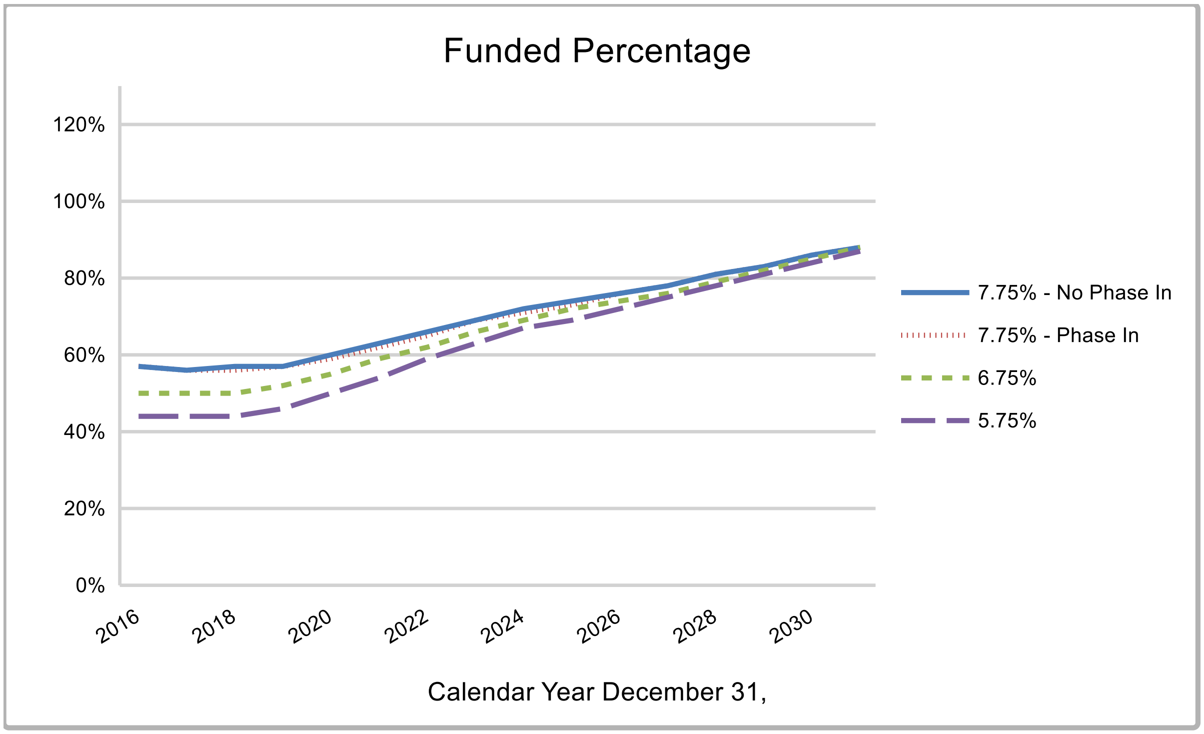
The next two pages show projections of the plan's funded ratio and computed employer contributions under the actuarial assumptions used in the valuation and alternate assumed long-term investment return scenarios.  All four projections take into account the past investment losses that will continue to affect the smoothed rate of return in the short term.  Under the 7.75% scenarios, two sets of projections are shown:

- Based on the phase-in over 5 fiscal years (beginning in 2017) of the increased contribution requirements associated with the new actuarial assumptions.  This projects your minimum required contribution.
- Based on no phase-in of the increased contribution requirements.

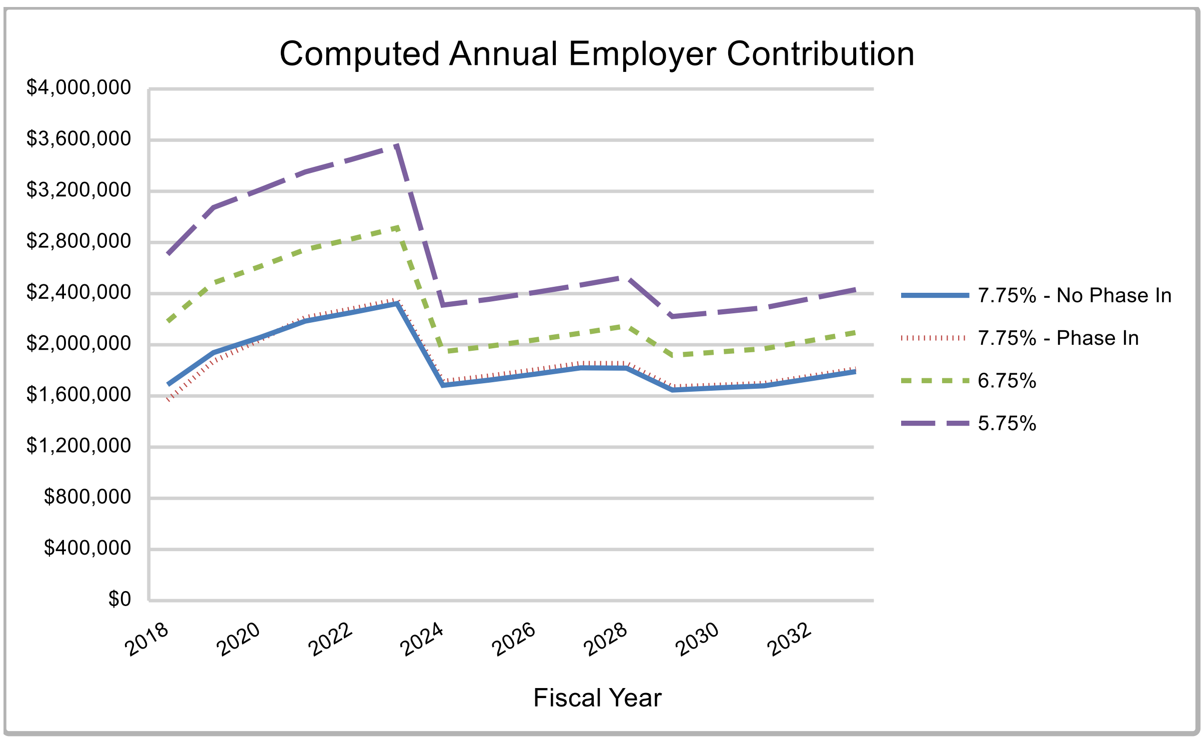
The 7.75% scenarios provide an estimate of computed employer contributions based on current actuarial assumptions, and a projected 7.75% market return.  The other two scenarios may be useful if the municipality chooses to budget more conservatively, and make contributions in addition to the minimum requirements.  The 6.75% and 5.75% projections provide an indication of the potential required employer contribution if MERS were to realize investment returns of 6.75% and 5.75% over the long-term.

The projections are shown both in tabular and graphical form in total for the employer.  The tables show projections for six years.  The graphs show projections for fifteen years.

| Valuation Year Ending 12/31 | Fiscal Year Beginning 7/1 | Actuarial Accrued Liability | Valuation Assets | Funded Percentage | Computed Annual Employer Contribution |
|---|---|---|---|---|---|
| **7.75% Assumed Interest Discount Rate and Future Annual Market Rate of Return** | | | | | |
| **WITH 5-YEAR PHASE-IN** | | | | | |
| 2016 | 2018 | $ 34,759,106 | $ 19,735,804 | 57% | $ 1,568,052 |
| 2017 | 2019 | 35,900,000 | 20,300,000 | 56% | 1,870,000 |
| 2018 | 2020 | 37,000,000 | 20,900,000 | 56% | 2,040,000 |
| 2019 | 2021 | 38,100,000 | 21,600,000 | 57% | 2,210,000 |
| 2020 | 2022 | 39,100,000 | 23,200,000 | 59% | 2,280,000 |
| 2021 | 2023 | 40,000,000 | 24,900,000 | 62% | 2,350,000 |
| **NO 5-YEAR PHASE-IN** | | | | | |
| 2016 | 2018 | $ 34,759,106 | $ 19,735,804 | 57% | $ 1,688,004 |
| 2017 | 2019 | 35,900,000 | 20,300,000 | 56% | 1,940,000 |
| 2018 | 2020 | 37,000,000 | 21,000,000 | 57% | 2,060,000 |
| 2019 | 2021 | 38,100,000 | 21,800,000 | 57% | 2,190,000 |
| 2020 | 2022 | 39,100,000 | 23,400,000 | 60% | 2,250,000 |
| 2021 | 2023 | 40,000,000 | 25,100,000 | 63% | 2,320,000 |
| **6.75% Assumed Interest Discount Rate and Future Annual Market Rate of Return** | | | | | |
| **NO 5-YEAR PHASE-IN** | | | | | |
| 2016 | 2018 | $ 39,127,679 | $ 19,735,804 | 50% | $ 2,182,344 |
| 2017 | 2019 | 40,300,000 | 20,100,000 | 50% | 2,480,000 |
| 2018 | 2020 | 41,500,000 | 20,800,000 | 50% | 2,610,000 |
| 2019 | 2021 | 42,600,000 | 22,000,000 | 52% | 2,740,000 |
| 2020 | 2022 | 43,600,000 | 23,900,000 | 55% | 2,830,000 |
| 2021 | 2023 | 44,500,000 | 26,000,000 | 59% | 2,910,000 |
| **5.75% Assumed Interest Discount Rate and Future Annual Market Rate of Return** | | | | | |
| **NO 5-YEAR PHASE-IN** | | | | | |
| 2016 | 2018 | $ 44,414,704 | $ 19,735,804 | 44% | $ 2,707,464 |
| 2017 | 2019 | 45,700,000 | 19,900,000 | 44% | 3,070,000 |
| 2018 | 2020 | 46,900,000 | 20,700,000 | 44% | 3,210,000 |
| 2019 | 2021 | 48,000,000 | 22,200,000 | 46% | 3,350,000 |
| 2020 | 2022 | 49,000,000 | 24,600,000 | 50% | 3,450,000 |
| 2021 | 2023 | 49,900,000 | 27,100,000 | 54% | 3,550,000 |



Funded Percentage
120%
100%
80%
60%
40%
20%
0%
2016
2018
2020
2022
2024
2026
2028
2030
Calendar Year December 31,
7.75% - No Phase In
7.75% - Phase In
6.75%
5.75%

Computed Annual Employer Contribution
$4,000,000
$3,600,000
$3,200,000
$2,800,000
$2,400,000
$2,000,000
$1,600,000
$1,200,000
$800,000
$400,000
$0
2018
2020
2022
2024
2026
2028
2030
2032
Fiscal Year
7.75% - No Phase In
7.75% - Phase In
6.75%
5.75%

# Employer Contribution Details For the Fiscal Year Beginning July 1, 2018

## Table 1

| Division | Employer Contributions[1] Normal Cost | Employer Contributions[1] Payment of the Unfunded Accrued Liability[4] | Employer Contributions[1] Computed Employer Contribut. No Phase-In | Computed Employer Contribut. With Phase-In | Blended ER Rate No Phase-In[5] | Blended ER Rate With Phase-In[5] | Employee Contribut. Rate | Employee Contribut. Conversion Factor[2] |
|---|---|---|---|---|---|---|---|---|
| **Percentage of Payroll** | | | | | | | | |
| 01 - Clerical Union | - | - | - | - | | | 3.20% | |
| 02 - Pol/Union Sgts | - | - | - | - | | | 6.26% | |
| 07 - Library Dir. | - | - | - | - | | | 0.00% | |
| 10 - DPW Union | - | - | - | - | | | 2.00% | |
| 12 - Dpt Hds Dpty | - | - | - | - | | | 2.00% | |
| 20 - Pol Ofcrs Union | - | - | - | - | | | 4.26% | |
| **Estimated Monthly Contribution[3]** | | | | | | | | |
| 01 - Clerical Union | $ 2,227 | $ 4,087 | $ 6,314 | $ 5,594 | | | | |
| 02 - Pol/Union Sgts | 4,473 | 38,726 | 43,199 | 40,658 | | | | |
| 07 - Library Dir. | 0 | 454 | 454 | 433 | | | | |
| 10 - DPW Union | 3,347 | 13,293 | 16,640 | 15,602 | | | | |
| 12 - Dpt Hds Dpty | 3,016 | 44,082 | 47,098 | 43,420 | | | | |
| 20 - Pol Ofcrs Union | 5,840 | 21,122 | 26,962 | 24,964 | | | | |
| **Total Municipality** | **$ 18,903** | **$ 121,764** | **$ 140,667** | **$ 130,671** | | | | |
| **Estimated Annual Contribution[3]** | **$ 226,836** | **$ 1,461,168** | **$ 1,688,004** | **$ 1,568,052** | | | | |

1 The above employer contribution requirements are in addition to the employee contributions, if any.

2 If employee contributions are increased/decreased by 1.00% of pay, the employer contribution requirement will decrease/increase by the Employee Contribution Conversion Factor. The conversion factor is usually under 1%, because employee contributions may be refunded at termination of employment, and not used to fund retirement pensions. Employer contributions will all be used to fund pensions.

3 For divisions that are open to new hires, estimated contributions are based on projected fiscal year payroll. Actual contributions will be based on actual reported monthly pays, and will be different from the above amounts. For divisions that will have no new hires (ie closed divisions), invoices will be based on the above dollar amounts which are based on projected fiscal year payroll. See description of Open Divisions and Closed Divisions in the Appendix.

4 If projected assets exceed projected liabilities as of the beginning of the July 1, 2018 fiscal year, the negative unfunded accrued liability is treated as overfunding credit and is used to reduce the contribution. This amortization is used to reduce the employer contribution rate. Note that if the overfunding credit is larger than the normal cost, the full credit is shown above but the total contribution requirement is zero. This will cause the displayed normal cost and unfunded accrued liability contributions to not add across.

[5] For linked divisions, the employer will be invoiced the Computed Employer Contribution with Phase-in rate shown above for each linked division (a contribution rate for the open division; a contribution dollar for the closed-but-linked division), unless the employer elects to contribute the Blended Employer Contribution rate shown above, by contacting MERS at 800-767-2308.

**Please see the Comments on Asset Smoothing in the Executive Summary of this report.**

## Benefit Provisions

### Table 2

#### 01 - Clerical Union: Closed to new hires

| | 2016 Valuation | 2015 Valuation |
|---|---|---|
| **Benefit Multiplier:** | 2.50% Multiplier (80% max) | 2.50% Multiplier (80% max) |
| **Normal Retirement Age:** | 60 | 60 |
| **Vesting:** | 10 years | 10 years |
| **Early Retirement (Unreduced):** | 55/15 | 55/15 |
| **Early Retirement (Reduced):** | 50/25 | 50/25 |
| **Final Average Compensation:** | 3 years | 3 years |
| **COLA for Future Retirees:** | 2.50% (Non-Compound) | 2.50% (Non-Compound) |
| **Employee Contributions:** | 3.20% | 3.20% |
| **RS50% Percentage:** | 50% | 50% |
| **DC Plan for New Hires:** | 6/1/2013 | 6/1/2013 |
| **Act 88:** | Yes (Adopted 11/24/1970) | Yes (Adopted 11/24/1970) |

#### 02 - Pol/Union Sgts: Closed to new hires

| | 2016 Valuation | 2015 Valuation |
|---|---|---|
| **Benefit Multiplier:** | 2.50% Multiplier (80% max) | 2.50% Multiplier (80% max) |
| **Normal Retirement Age:** | 60 | 60 |
| **Vesting:** | 10 years | 10 years |
| **Early Retirement (Unreduced):** | 50/25 | 50/25 |
| **Early Retirement (Reduced):** | 55/15 | 55/15 |
| **Final Average Compensation:** | 3 years | 3 years |
| **COLA for Future Retirees:** | 2.50% (Non-Compound) | 2.50% (Non-Compound) |
| **Employee Contributions:** | 6.26% | 6.26% |
| **RS50% Percentage:** | 50% | 50% |
| **DC Plan for New Hires:** | 10/1/2014 | 10/1/2014 |
| **Act 88:** | Yes (Adopted 11/24/1970) | Yes (Adopted 11/24/1970) |

#### 07 - Library Dir.: Closed to new hires

| | 2016 Valuation | 2015 Valuation |
|---|---|---|
| **Benefit Multiplier:** | Svc x (1.20% times FAC<$4,200, plus 1.70% times FAC>$4,200) | Svc x (1.20% times FAC<$4,200, plus 1.70% times FAC>$4,200) |
| **Normal Retirement Age:** | 60 | 60 |
| **Vesting:** | 10 years | 10 years |
| **Early Retirement (Unreduced):** | 55/25 | 55/25 |
| **Early Retirement (Reduced):** | 50/25<br>55/15 | 50/25<br>55/15 |
| **Final Average Compensation:** | 3 years | 3 years |
| **Employee Contributions:** | 0% | 0% |
| **Act 88:** | Yes (Adopted 11/24/1970) | Yes (Adopted 11/24/1970) |

**Table 2** (continued)

## 10 - DPW Union: Closed to new hires

| | 2016 Valuation | 2015 Valuation |
|---|---|---|
| **Benefit Multiplier:** | 2.50% Multiplier (80% max) | 2.50% Multiplier (80% max) |
| **Normal Retirement Age:** | 60 | 60 |
| **Vesting:** | 10 years | 10 years |
| **Early Retirement (Unreduced):** | 55/20 | 55/20 |
| **Early Retirement (Reduced):** | 50/25<br>55/15 | 50/25<br>55/15 |
| **Final Average Compensation:** | 3 years | 3 years |
| **COLA for Future Retirees:** | 2.50% (Non-Compound) | 2.50% (Non-Compound) |
| **Employee Contributions:** | 2% | 2% |
| **RS50% Percentage:** | 50% | 50% |
| **DC Plan for New Hires:** | 10/1/2014 | 10/1/2014 |
| **Act 88:** | Yes (Adopted 11/24/1970) | Yes (Adopted 11/24/1970) |

## 12 - Dpt Hds Dpty: Closed to new hires

| | 2016 Valuation | 2015 Valuation |
|---|---|---|
| **Benefit Multiplier:** | 2.50% Multiplier (80% max) | 2.50% Multiplier (80% max) |
| **Normal Retirement Age:** | 60 | 60 |
| **Vesting:** | 10 years | 10 years |
| **Early Retirement (Unreduced):** | 55/15 | 55/15 |
| **Early Retirement (Reduced):** | 50/25 | 50/25 |
| **Final Average Compensation:** | 3 years | 3 years |
| **COLA for Future Retirees:** | 2.50% (Non-Compound) | 2.50% (Non-Compound) |
| **Employee Contributions:** | 2% | 2% |
| **RS50% Percentage:** | 50% | 50% |
| **DC Plan for New Hires:** | 7/1/2006 | 7/1/2006 |
| **Act 88:** | Yes (Adopted 11/24/1970) | Yes (Adopted 11/24/1970) |

## 20 - Pol Ofcrs Union: Closed to new hires

| | 2016 Valuation | 2015 Valuation |
|---|---|---|
| **Benefit Multiplier:** | 2.50% Multiplier (80% max) | 2.50% Multiplier (80% max) |
| **Normal Retirement Age:** | 60 | 60 |
| **Vesting:** | 10 years | 10 years |
| **Early Retirement (Unreduced):** | 50/25 | 50/25 |
| **Early Retirement (Reduced):** | 55/15 | 55/15 |
| **Final Average Compensation:** | 3 years | 3 years |
| **COLA for Future Retirees:** | 2.50% (Non-Compound) | 2.50% (Non-Compound) |
| **Employee Contributions:** | 4.26% | 4.26% |
| **RS50% Percentage:** | 50% | 50% |
| **DC Plan for New Hires:** | 12/1/2013 | 12/1/2013 |
| **Act 88:** | Yes (Adopted 11/24/1970) | Yes (Adopted 11/24/1970) |

## Participant Summary

### Table 3

| Division | 2016 Valuation Number | 2016 Valuation Annual Payroll[1] | 2015 Valuation Number | 2015 Valuation Annual Payroll[1] | 2016 Valuation Average Age | 2016 Valuation Average Benefit Service[2] | 2016 Valuation Average Eligibility Service[2] |
|---|---|---|---|---|---|---|---|
| 01 - Clerical Union | | | | | | | |
| Active Employees | 5 | $ 227,958 | 5 | $ 225,077 | 47.6 | 17.2 | 17.2 |
| Vested Former Employees | 3 | 32,781 | 3 | 32,781 | 50.6 | 10.4 | 16.9 |
| Retirees and Beneficiaries | 9 | 157,746 | 9 | 154,671 | 67.5 | | |
| 02 - Pol/Union Sgts | | | | | | | |
| Active Employees | 6 | $ 569,762 | 6 | $ 554,870 | 48.7 | 21.6 | 21.6 |
| Vested Former Employees | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 |
| Retirees and Beneficiaries | 7 | 449,674 | 7 | 440,732 | 62.5 | | |
| 07 - Library Dir. | | | | | | | |
| Active Employees | 0 | $ 0 | 0 | $ 0 | 0.0 | 0.0 | 0.0 |
| Vested Former Employees | 1 | 3,868 | 1 | 3,868 | 53.2 | 6.5 | 8.4 |
| Retirees and Beneficiaries | 0 | 0 | 0 | 0 | 0.0 | | |
| 10 - DPW Union | | | | | | | |
| Active Employees | 5 | $ 304,592 | 6 | $ 375,782 | 46.0 | 16.1 | 16.1 |
| Vested Former Employees | 2 | 20,444 | 3 | 22,844 | 52.6 | 8.6 | 18.0 |
| Retirees and Beneficiaries | 9 | 207,733 | 7 | 164,181 | 67.9 | | |
| 12 - Dpt Hds Dpty | | | | | | | |
| Active Employees | 4 | $ 306,702 | 4 | $ 283,972 | 52.3 | 19.0 | 19.0 |
| Vested Former Employees | 6 | 79,245 | 7 | 82,090 | 51.3 | 9.7 | 15.1 |
| Retirees and Beneficiaries | 22 | 624,979 | 21 | 609,237 | 67.6 | | |
| 20 - Pol Ofcrs Union | | | | | | | |
| Active Employees | 8 | $ 652,159 | 10 | $ 746,000 | 47.7 | 19.2 | 19.2 |
| Vested Former Employees | 1 | 6,378 | 1 | 6,378 | 58.2 | 5.1 | 10.1 |
| Retirees and Beneficiaries | 7 | 313,771 | 5 | 254,872 | 62.5 | | |
| **Total Municipality** | | | | | | | |
| **Active Employees** | **28** | **$ 2,061,173** | **31** | **$ 2,185,701** | **48.3** | **18.8** | **18.8** |
| **Vested Former Employees** | **13** | **142,716** | **15** | **147,961** | **52.0** | **9.1** | **15.1** |
| **Retirees and Beneficiaries** | **54** | **1,753,903** | **49** | **1,623,693** | **66.3** | | |
| **Total Participants** | **95** | | **95** | | | | |

1 Annual payroll for active employees; annual deferred benefits payable for vested former employees; annual benefits being paid for retirees and beneficiaries.

2 Description can be found under Miscellaneous and Technical Assumptions in the Appendix.

## Reported Assets (Market Value)

### Table 4

| Division | 2016 Valuation | | 2015 Valuation | |
|---|---|---|---|---|
| | Employer and Retiree[1] | Employee[2] | Employer and Retiree[1] | Employee[2] |
| 01 - Clerical Union | $ 2,159,830 | $ 209,543 | $ 2,018,151 | $ 200,544 |
| 02 - Pol/Union Sgts | 3,365,443 | 508,629 | 3,087,876 | 468,975 |
| 07 - Library Dir. | 0 | 0 | 0 | 0 |
| 10 - DPW Union | 1,744,772 | 59,258 | 1,588,979 | 64,906 |
| 12 - Dpt Hds Dpty | 5,742,284 | 156,108 | 5,447,364 | 151,846 |
| 20 - Pol Ofcrs Union | 3,791,613 | 585,697 | 3,297,857 | 617,830 |
| **Municipality Total** | **$ 16,803,942** | **$ 1,519,235** | **$ 15,440,227** | **$ 1,504,101** |
| **Combined Reserves** | **$ 18,323,177** | | **$ 16,944,328** | |

[1] Reserve for Employer Contributions and Benefit Payments

[2] Reserve for Employee Contributions

The December 31, 2016 valuation assets are equal to 1.077095 times the reported market value of assets (compared to 1.135382 as of December 31, 2015). The derivation of valuation assets is described, and detailed calculations of valuation assets are shown, in the Appendix.

## Flow of Valuation Assets

### Table 5

| Year Ended 12/31 | Employer Contributions Required | Employer Contributions Additional | Employee Contributions | Investment Income | Benefit Payments | Employee Contribution Refunds | Net Transfers | Valuation Asset Balance |
|---|---|---|---|---|---|---|---|---|
| 2006 | $ 640,442 | | $ 108,852 | $ 850,765 | $ (534,949) | $ (5,411) | $ 148,654 | $ 11,646,321 |
| 2007 | 691,981 | | 114,502 | 945,430 | (568,135) | 0 | 0 | 12,830,099 |
| 2008 | 735,707 | | 124,539 | 650,302 | (630,326) | 0 | 0 | 13,710,321 |
| 2009 | 743,557 | | 120,630 | 758,102 | (743,755) | (14,953) | 0 | 14,573,902 |
| 2010 | 813,675 | | 120,007 | 900,750 | (781,717) | 0 | 0 | 15,626,617 |
| 2011 | 823,294 | $ 0 | 116,289 | 907,427 | (832,592) | (9,191) | 101,571 | 16,733,415 |
| 2012 | 788,172 | 0 | 113,538 | 844,606 | (1,001,542) | 0 | 76,770 | 17,554,959 |
| 2013 | 761,731 | 0 | 94,959 | 1,021,969 | (1,305,597) | 0 | 1 | 18,128,022 |
| 2014 | 841,999 | 0 | 89,306 | 1,040,202 | (1,410,527) | (12,873) | 110,497 | 18,786,626 |
| 2015 | 972,966 | 0 | 92,058 | 930,058 | (1,543,423) | 0 | 0 | 19,238,285 |
| 2016 | 1,075,014 | 0 | 88,127 | 992,719 | (1,658,341) | 0 | 0 | 19,735,804 |

Notes:

Transfers in and out are usually related to the transfer of participants between municipalities, and to employer and employee payments for service credit purchases (if any) that the governing body has approved.

Additional employer contributions, if any, are shown separately starting in 2011. Prior to 2011, additional contributions are combined with the required employer contributions.

In the actuarial valuation additional employer contributions are combined with required contributions and used to reduce computed future required employer contributions.

The investment income column reflects the recognized investment income based on the smoothed value of assets. It does not reflect the market value investment return in any given year.

# Actuarial Accrued Liabilities and Valuation Assets
# As of December 31, 2016

## Table 6

| Division | Actuarial Accrued Liability | Valuation Assets[1] | Percent Funded | Unfunded (Overfunded) Accrued Liabilities |
|---|---|---|---|---|
| 01 - Clerical Union | | | | |
| Active Employees | $ 1,123,175 | $ 540,854 | 48.2% | $ 582,321 |
| Vested Former Employees | 183,079 | 183,079 | 100.0% | 0 |
| Retirees And Beneficiaries | 1,817,844 | 1,817,844 | 100.0% | 0 |
| Pending Refunds | 10,263 | 10,263 | 100.0% | 0 |
| Total | **$ 3,134,361** | **$ 2,552,040** | **81.4%** | **$ 582,321** |
| 02 - Pol/Union Sgts | | | | |
| Active Employees | $ 4,093,704 | $ 508,629 | 12.4% | $ 3,585,075 |
| Vested Former Employees | 0 | 0 | 0.0% | 0 |
| Retirees And Beneficiaries | 5,955,118 | 3,664,115 | 61.5% | 2,291,003 |
| Pending Refunds | 0 | 0 | 0.0% | 0 |
| Total | **$ 10,048,822** | **$ 4,172,744** | **41.5%** | **$ 5,876,078** |
| 07 - Library Dir. | | | | |
| Active Employees | $ 0 | $ 0 | 0.0% | $ 0 |
| Vested Former Employees | 24,429 | 0 | 0.0% | 24,429 |
| Retirees And Beneficiaries | 0 | 0 | 0.0% | 0 |
| Pending Refunds | 0 | 0 | 0.0% | 0 |
| Total | **$ 24,429** | **$ 0** | **0.0%** | **$ 24,429** |
| 10 - DPW Union | | | | |
| Active Employees | $ 1,416,829 | $ 58,815 | 4.2% | $ 1,358,014 |
| Vested Former Employees | 143,993 | 443 | 0.3% | 143,550 |
| Retirees And Beneficiaries | 2,410,571 | 1,883,854 | 78.1% | 526,717 |
| Pending Refunds | 0 | 0 | 0.0% | 0 |
| Total | **$ 3,971,393** | **$ 1,943,112** | **48.9%** | **$ 2,028,281** |
| 12 - Dpt Hds Dpty | | | | |
| Active Employees | $ 1,671,160 | $ 86,795 | 5.2% | $ 1,584,365 |
| Vested Former Employees | 652,601 | 63,949 | 9.8% | 588,652 |
| Retirees And Beneficiaries | 7,472,435 | 6,197,021 | 82.9% | 1,275,414 |
| Pending Refunds | 5,364 | 5,364 | 100.0% | 0 |
| Total | **$ 9,801,560** | **$ 6,353,129** | **64.8%** | **$ 3,448,431** |
| 20 - Pol Ofcrs Union | | | | |
| Active Employees | $ 3,894,593 | $ 830,831 | 21.3% | $ 3,063,762 |
| Vested Former Employees | 75,317 | 75,317 | 100.0% | 0 |
| Retirees And Beneficiaries | 3,808,039 | 3,808,039 | 100.0% | 0 |
| Pending Refunds | 592 | 592 | 100.0% | 0 |
| Total | **$ 7,778,541** | **$ 4,714,779** | **60.6%** | **$ 3,063,762** |

**Table 6** (continued)

| Division | | Actuarial Accrued Liability | | Valuation Assets[1] | Percent Funded | | Unfunded (Overfunded) Accrued Liabilities |
|---|---|---|---|---|---|---|---|
| **Total Municipality** | | | | | | | |
| **Active Employees** | $ | **12,199,461** | $ | **2,025,924** | **16.6%** | $ | **10,173,537** |
| **Vested Former Employees** | | **1,079,419** | | **322,788** | **29.9%** | | **756,631** |
| **Retirees and Beneficiaries** | | **21,464,007** | | **17,370,873** | **80.9%** | | **4,093,134** |
| **Pending Refunds** | | **16,219** | | **16,219** | **100.0%** | | **0** |
| **Total Participants** | $ | **34,759,106** | $ | **19,735,804** | **56.8%** | $ | **15,023,302** |

[1] Includes both employer and employee assets.

**Please see the Comments on Asset Smoothing in the Executive Summary of this report.**

See Section 46 of the Plan Document for MERS Fiscal Responsibility policy, on the MERS website at: https://employerportal.mersofmich.com/SharePointFormsService/Default.aspx?Publication=MERSPlanDocument.pdf.

## Actuarial Accrued Liabilities - Comparative Schedule

### Table 7

| Valuation Date December 31 | Actuarial Accrued Liability | Valuation Assets | Percent Funded | Unfunded (Overfunded) Accrued Liabilities |
|---|---|---|---|---|
| 2002 | $ 11,413,929 | $ 7,651,891 | 67% | $ 3,762,038 |
| 2003 | 12,011,466 | 8,492,255 | 71% | 3,519,211 |
| 2004 | 13,862,724 | 9,336,883 | 67% | 4,525,841 |
| 2005 | 16,236,119 | 10,437,968 | 64% | 5,798,151 |
| 2006 | 17,409,921 | 11,646,321 | 67% | 5,763,600 |
| 2007 | 18,919,842 | 12,830,099 | 68% | 6,089,743 |
| 2008 | 21,239,805 | 13,710,321 | 65% | 7,529,484 |
| 2009 | 21,648,972 | 14,573,902 | 67% | 7,075,070 |
| 2010 | 22,994,104 | 15,626,617 | 68% | 7,367,487 |
| 2011 | 24,753,941 | 16,733,415 | 68% | 8,020,526 |
| 2012 | 26,569,541 | 17,554,959 | 66% | 9,014,582 |
| 2013 | 28,497,627 | 18,128,022 | 64% | 10,369,605 |
| 2014 | 30,216,085 | 18,786,626 | 62% | 11,429,459 |
| 2015 | 33,319,592 | 19,238,285 | 58% | 14,081,307 |
| 2016 | 34,759,106 | 19,735,804 | 57% | 15,023,302 |

Notes: Actuarial assumptions were revised for the 2004, 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.

## Division 01 - Clerical Union

### Table 8-01: Actuarial Accrued Liabilities - Comparative Schedule

| Valuation Date December 31 | Actuarial Accrued Liability | Valuation Assets | Percent Funded | Unfunded (Overfunded) Accrued Liabilities |
|---|---|---|---|---|
| 2006 | $ 1,723,488 | $ 1,415,987 | 82% | $ 307,501 |
| 2007 | 1,816,828 | 1,580,548 | 87% | 236,280 |
| 2008 | 2,042,680 | 1,718,949 | 84% | 323,731 |
| 2009 | 2,096,767 | 1,883,216 | 90% | 213,551 |
| 2010 | 2,377,746 | 2,041,732 | 86% | 336,014 |
| 2011 | 2,566,670 | 2,162,851 | 84% | 403,819 |
| 2012 | 2,690,656 | 2,189,306 | 81% | 501,350 |
| 2013 | 2,793,885 | 2,161,893 | 77% | 631,992 |
| 2014 | 2,482,649 | 2,221,928 | 90% | 260,721 |
| 2015 | 3,026,289 | 2,519,066 | 83% | 507,223 |
| 2016 | 3,134,361 | 2,552,040 | 81% | 582,321 |

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.

### Table 9-01: Computed Employer Contributions - Comparative Schedule

| Valuation Date | Active Employees | | Computed Employer | Employee Contribution |
|---|---|---|---|---|
| December 31 | Number | Annual Payroll | Contribution[1] | Rate[2] |
| 2006 | 11 | $ 418,788 | 15.87% | 3.20% |
| 2007 | 10 | 397,507 | 14.87% | 3.20% |
| 2008 | 10 | 422,278 | 16.17% | 3.20% |
| 2009 | 10 | 420,203 | 15.26% | 3.20% |
| 2010 | 9 | 378,434 | 17.95% | 3.20% |
| 2011 | 8 | 335,568 | 20.24% | 3.20% |
| 2012 | 6 | 254,651 | 24.46% | 3.20% |
| 2013 | 5 | 211,647 | $ 5,492 | 3.20% |
| 2014 | 5 | 216,488 | $ 3,375 | 3.20% |
| 2015 | 5 | 225,077 | $ 5,693 | 3.20% |
| 2016 | 5 | 227,958 | $ 6,314 | 3.20% |

1 For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

2 For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

**Note:** The contributions shown in Table 9 for the 12/31/2015 through 12/31/2019 valuations do **not** reflect the phase-in of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above. The contribution requirements including the 5-year phase-in are shown on page 7.

See the Benefit Provision History on page 38 for past benefit provision changes.

## Division 02 - Pol/Union Sgts

### Table 8-02: Actuarial Accrued Liabilities - Comparative Schedule

| Valuation Date December 31 | Actuarial Accrued Liability | Valuation Assets | Percent Funded | Unfunded (Overfunded) Accrued Liabilities |
|---|---|---|---|---|
| 2006 | $ 4,637,086 | $ 2,471,388 | 53% | $ 2,165,698 |
| 2007 | 4,836,325 | 2,652,242 | 55% | 2,184,083 |
| 2008 | 5,258,691 | 2,748,668 | 52% | 2,510,023 |
| 2009 | 5,798,372 | 2,971,746 | 51% | 2,826,626 |
| 2010 | 5,938,022 | 3,147,381 | 53% | 2,790,641 |
| 2011 | 6,223,333 | 3,314,070 | 53% | 2,909,263 |
| 2012 | 6,763,811 | 3,389,104 | 50% | 3,374,707 |
| 2013 | 7,244,749 | 3,274,310 | 45% | 3,970,439 |
| 2014 | 8,868,980 | 4,006,137 | 45% | 4,862,843 |
| 2015 | 9,653,426 | 4,038,385 | 42% | 5,615,041 |
| 2016 | 10,048,822 | 4,172,744 | 42% | 5,876,078 |

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.

### Table 9-02: Computed Employer Contributions - Comparative Schedule

| Valuation Date December 31 | Active Employees | | Computed Employer Contribution[1] | Employee Contribution Rate[2] |
|---|---|---|---|---|
| | Number | Annual Payroll | | |
| 2006 | 5 | $ 394,253 | 35.07% | 6.26% |
| 2007 | 5 | 412,920 | 34.34% | 6.26% |
| 2008 | 4 | 353,979 | 47.12% | 6.26% |
| 2009 | 6 | 532,246 | 36.87% | 6.26% |
| 2010 | 6 | 505,060 | 38.75% | 6.26% |
| 2011 | 6 | 495,286 | 42.08% | 6.26% |
| 2012 | 4 | 314,789 | 76.19% | 6.26% |
| 2013 | 3 | 254,252 | 106.48% | 6.26% |
| 2014 | 6 | 511,790 | $ 32,414 | 6.26% |
| 2015 | 6 | 554,870 | $ 40,032 | 6.26% |
| 2016 | 6 | 569,762 | $ 43,199 | 6.26% |

1 For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

2 For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

**Note:** The contributions shown in Table 9 for the 12/31/2015 through 12/31/2019 valuations do **not** reflect the phase-in of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above. The contribution requirements including the 5-year phase-in are shown on page 7.

See the Benefit Provision History on page 38 for past benefit provision changes.

## Division 07 - Library Dir.

### Table 8-07: Actuarial Accrued Liabilities - Comparative Schedule

| Valuation Date December 31 | Actuarial Accrued Liability | Valuation Assets | Percent Funded | Unfunded (Overfunded) Accrued Liabilities |
|---|---|---|---|---|
| 2006 | $ 0 | $ 49,719 | 0% | $ (49,719) |
| 2007 | 0 | 53,610 | 0% | (53,610) |
| 2008 | 0 | 55,862 | 0% | (55,862) |
| 2009 | 0 | 58,647 | 0% | (58,647) |
| 2010 | 0 | 61,980 | 0% | (61,980) |
| 2011 | 0 | 65,238 | 0% | (65,238) |
| 2012 | 0 | 68,517 | 0% | (68,517) |
| 2015 | 22,608 | 0 | 0% | 22,608 |
| 2016 | 24,429 | 0 | 0% | 24,429 |

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.

### Table 9-07: Computed Employer Contributions - Comparative Schedule

| Valuation Date | Active Employees | | Computed Employer | Employee Contribution |
|---|---|---|---|---|
| December 31 | Number | Annual Payroll | Contribution[1] | Rate[2] |
| 2006 | 0 | $ 0 | $ 0 | 0.00% |
| 2007 | 0 | 0 | $ 0 | 0.00% |
| 2008 | 0 | 0 | $ 0 | 0.00% |
| 2009 | 0 | 0 | $ 0 | 0.00% |
| 2010 | 0 | 0 | $ 0 | 0.00% |
| 2011 | 0 | 0 | $ 0 | 0.00% |
| 2012 | 0 | 0 | $ 0 | 0.00% |
| 2013 | 0 | 0 | $ 0 | 0.00% |
| 2015 | 0 | 0 | $ 353 | 0.00% |
| 2016 | 0 | 0 | $ 454 | 0.00% |

1 For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

2 For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

**Note:** The contributions shown in Table 9 for the 12/31/2015 through 12/31/2019 valuations do **not** reflect the phase-in of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above. The contribution requirements including the 5-year phase-in are shown on page 7.

See the Benefit Provision History on page 38 for past benefit provision changes.

## Division 10 - DPW Union

### Table 8-10: Actuarial Accrued Liabilities - Comparative Schedule

| Valuation Date December 31 | Actuarial Accrued Liability | Valuation Assets | Percent Funded | Unfunded (Overfunded) Accrued Liabilities |
|---|---|---|---|---|
| 2006 | $ 1,987,797 | $ 1,134,985 | 57% | $ 852,812 |
| 2007 | 2,156,097 | 1,224,595 | 57% | 931,502 |
| 2008 | 2,357,104 | 1,295,535 | 55% | 1,061,569 |
| 2009 | 2,357,779 | 1,370,747 | 58% | 987,032 |
| 2010 | 2,482,670 | 1,454,746 | 59% | 1,027,924 |
| 2011 | 2,715,346 | 1,542,582 | 57% | 1,172,764 |
| 2012 | 2,799,305 | 1,620,938 | 58% | 1,178,367 |
| 2013 | 2,952,255 | 1,723,763 | 58% | 1,228,492 |
| 2014 | 3,471,058 | 1,812,684 | 52% | 1,658,374 |
| 2015 | 3,877,282 | 1,877,791 | 48% | 1,999,491 |
| 2016 | 3,971,393 | 1,943,112 | 49% | 2,028,281 |

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.

### Table 9-10: Computed Employer Contributions - Comparative Schedule

| Valuation Date December 31 | Active Employees | | Computed Employer Contribution[1] | Employee Contribution Rate[2] |
|---|---|---|---|---|
| | Number | Annual Payroll | | |
| 2006 | 8 | $ 376,917 | 23.53% | 1.00% |
| 2007 | 9 | 446,514 | 21.83% | 2.00% |
| 2008 | 9 | 488,033 | 23.02% | 2.00% |
| 2009 | 9 | 482,745 | 22.86% | 2.00% |
| 2010 | 9 | 473,531 | 23.91% | 2.00% |
| 2011 | 9 | 483,743 | 25.87% | 2.00% |
| 2012 | 9 | 466,460 | 27.86% | 2.00% |
| 2013 | 8 | 415,787 | 30.56% | 2.00% |
| 2014 | 7 | 423,868 | $ 13,810 | 2.00% |
| 2015 | 6 | 375,782 | $ 16,345 | 2.00% |
| 2016 | 5 | 304,592 | $ 16,640 | 2.00% |

1 For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

2 For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

**Note:** The contributions shown in Table 9 for the 12/31/2015 through 12/31/2019 valuations do **not** reflect the phase-in of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above. The contribution requirements including the 5-year phase-in are shown on page 7.

See the Benefit Provision History on page 38 for past benefit provision changes.

## Division 12 - Dpt Hds Dpty

### Table 8-12: Actuarial Accrued Liabilities - Comparative Schedule

| Valuation Date December 31 | Actuarial Accrued Liability | Valuation Assets | Percent Funded | Unfunded (Overfunded) Accrued Liabilities |
|---|---|---|---|---|
| 2006 | $ 5,155,540 | $ 4,061,021 | 79% | $ 1,094,519 |
| 2007 | 5,596,049 | 4,519,793 | 81% | 1,076,256 |
| 2008 | 6,454,571 | 4,871,591 | 75% | 1,582,980 |
| 2009 | 6,562,666 | 5,185,593 | 79% | 1,377,073 |
| 2010 | 6,912,879 | 5,551,960 | 80% | 1,360,919 |
| 2011 | 7,448,571 | 5,898,998 | 79% | 1,549,573 |
| 2012 | 7,997,888 | 6,172,027 | 77% | 1,825,861 |
| 2013 | 8,645,064 | 6,493,769 | 75% | 2,151,295 |
| 2014 | 9,026,255 | 6,609,341 | 73% | 2,416,914 |
| 2015 | 9,554,774 | 6,357,242 | 67% | 3,197,532 |
| 2016 | 9,801,560 | 6,353,129 | 65% | 3,448,431 |

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.

### Table 9-12: Computed Employer Contributions - Comparative Schedule

| Valuation Date December 31 | Active Employees Number | Active Employees Annual Payroll | Computed Employer Contribution[1] | Employee Contribution Rate[2] |
|---|---|---|---|---|
| 2006 | 20 | $ 1,154,713 | $ 18,735 | 2.00% |
| 2007 | 20 | 1,198,413 | $ 17,615 | 2.00% |
| 2008 | 19 | 1,178,028 | $ 21,576 | 2.00% |
| 2009 | 19 | 1,161,717 | $ 19,690 | 2.00% |
| 2010 | 19 | 1,152,806 | $ 19,788 | 2.00% |
| 2011 | 17 | 1,039,098 | $ 20,658 | 2.00% |
| 2012 | 15 | 851,134 | $ 21,325 | 2.00% |
| 2013 | 10 | 549,329 | $ 22,789 | 2.00% |
| 2014 | 7 | 395,286 | $ 25,806 | 2.00% |
| 2015 | 4 | 283,972 | $ 38,036 | 2.00% |
| 2016 | 4 | 306,702 | $ 47,098 | 2.00% |

1 For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

2 For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

**Note:** The contributions shown in Table 9 for the 12/31/2015 through 12/31/2019 valuations do **not** reflect the phase-in of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above. The contribution requirements including the 5-year phase-in are shown on page 7.

See the Benefit Provision History on page 38 for past benefit provision changes.

## Division 20 - Pol Ofcrs Union

### Table 8-20: Actuarial Accrued Liabilities - Comparative Schedule

| Valuation Date December 31 | Actuarial Accrued Liability | Valuation Assets | Percent Funded | Unfunded (Overfunded) Accrued Liabilities |
|---|---|---|---|---|
| 2006 | $ 3,906,010 | $ 2,513,221 | 64% | $ 1,392,789 |
| 2007 | 4,514,543 | 2,799,311 | 62% | 1,715,232 |
| 2008 | 5,126,759 | 3,019,716 | 59% | 2,107,043 |
| 2009 | 4,833,388 | 3,103,953 | 64% | 1,729,435 |
| 2010 | 5,282,787 | 3,368,818 | 64% | 1,913,969 |
| 2011 | 5,800,021 | 3,749,676 | 65% | 2,050,345 |
| 2012 | 6,317,881 | 4,115,067 | 65% | 2,202,814 |
| 2013 | 6,861,674 | 4,474,287 | 65% | 2,387,387 |
| 2014 | 6,367,143 | 4,136,536 | 65% | 2,230,607 |
| 2015 | 7,185,213 | 4,445,801 | 62% | 2,739,412 |
| 2016 | 7,778,541 | 4,714,779 | 61% | 3,063,762 |

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012 and 2015 actuarial valuations.

### Table 9-20: Computed Employer Contributions - Comparative Schedule

| Valuation Date | Active Employees | | Computed Employer | Employee Contribution |
|---|---|---|---|---|
| December 31 | Number | Annual Payroll | Contribution[1] | Rate[2] |
| 2006 | 16 | $ 1,013,172 | 16.59% | 4.26% |
| 2007 | 16 | 1,016,931 | 18.57% | 4.26% |
| 2008 | 16 | 1,093,940 | 20.92% | 4.26% |
| 2009 | 14 | 964,212 | 20.43% | 4.26% |
| 2010 | 14 | 999,517 | 21.53% | 4.26% |
| 2011 | 14 | 976,670 | 23.17% | 4.26% |
| 2012 | 14 | 1,022,330 | 24.67% | 4.26% |
| 2013 | 14 | 1,036,216 | $ 22,383 | 4.26% |
| 2014 | 11 | 846,819 | $ 19,952 | 4.26% |
| 2015 | 10 | 746,000 | $ 24,461 | 4.26% |
| 2016 | 8 | 652,159 | $ 26,962 | 4.26% |

1 For open divisions, a percent of pay contribution is shown. For closed divisions, a monthly dollar contribution is shown.

2 For each valuation year, the computed employer contribution is based on the employee rate. If the employee rate changes during the applicable fiscal year, the computed employer contribution will be adjusted.

**Note:** The contributions shown in Table 9 for the 12/31/2015 through 12/31/2019 valuations do **not** reflect the phase-in of the increased contribution requirements associated with the new actuarial assumptions. The full contribution without phase-in is shown in Table 9 above. The contribution requirements including the 5-year phase-in are shown on page 7.

See the Benefit Provision History on page 38 for past benefit provision changes.

## Division 01 - Clerical Union

### Table 10-01: Layered Amortization Schedule

| Type of UAL | Date Established | Original Balance | Original Amortization Period** | Amounts for Fiscal Year Beginning 7/1/2018: Outstanding UAL Balance* | Amortization Period** | Amortization Payment |
|---|---|---|---|---|---|---|
| Initial | 12/31/2015 | $ 507,223 | 19 | $ 535,517 | 17 | $ 43,500 |
| Gain/Loss | 12/31/2016 | 60,971 | 17 | 68,195 | 17 | 5,544 |
| **Total** | | | | **$ 603,712** | | **$ 49,044** |

* This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

** Please see the Appendix on the MERS website for a description of the amortization policy.

The unfunded accrued liability as of December 31, 2016 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2016 valuation to take into account the expected future contributions that are based on past valuations. The projected unfunded accrued liability is amortized over the appropriate period.

## Division 02 - Pol/Union Sgts

### Table 10-02: Layered Amortization Schedule

| Type of UAL | Date Established | Original Balance | Original Amortization Period** | Amounts for Fiscal Year Beginning 7/1/2018: Outstanding UAL Balance* | Amortization Period** | Amortization Payment |
|---|---|---|---|---|---|---|
| Initial | 12/31/2015 | $ 5,615,041 | 20 | $ 5,839,951 | 18 | $ 455,580 |
| Gain/Loss | 12/31/2016 | 104,593 | 18 | 116,985 | 18 | 9,132 |
| **Total** | | | | **$ 5,956,936** | | **$ 464,712** |

* This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

** Please see the Appendix on the MERS website for a description of the amortization policy.

The unfunded accrued liability as of December 31, 2016 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2016 valuation to take into account the expected future contributions that are based on past valuations. The projected unfunded accrued liability is amortized over the appropriate period.

## Division 07 - Library Dir.

### Table 10-07: Layered Amortization Schedule

| Type of UAL | Date Established | Original Balance | Original Amortization Period** | Amounts for Fiscal Year Beginning 7/1/2018: Outstanding UAL Balance* | Amortization Period** | Amortization Payment |
|---|---|---|---|---|---|---|
| Initial | 12/31/2015 | $ 22,608 | 4 | $ 12,253 | 3 | $ 4,404 |
| Gain/Loss | 12/31/2016 | 7,642 | 10 | 8,547 | 10 | 1,044 |
| **Total** | | | | **$ 20,800** | | **$ 5,448** |

* This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

** Please see the Appendix on the MERS website for a description of the amortization policy.

The unfunded accrued liability as of December 31, 2016 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2016 valuation to take into account the expected future contributions that are based on past valuations. The projected unfunded accrued liability is amortized over the appropriate period.

## Division 10 - DPW Union

### Table 10-10: Layered Amortization Schedule

| | | | | Amounts for Fiscal Year Beginning 7/1/2018 | | |
|---|---|---|---|---|---|---|
| Type of UAL | Date Established | Original Balance | Original Amortiza-tion Period** | Outstanding UAL Balance* | Amortiza-tion Period** | Amortization Payment |
| Initial | 12/31/2015 | $ 1,999,491 | 20 | $ 2,075,720 | 18 | $ 161,928 |
| Gain/Loss | 12/31/2016 | (27,664) | 18 | (30,942) | 18 | (2,412) |
| **Total** | | | | **$ 2,044,778** | | **$ 159,516** |

* This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

** Please see the Appendix on the MERS website for a description of the amortization policy.

The unfunded accrued liability as of December 31, 2016 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2016 valuation to take into account the expected future contributions that are based on past valuations. The projected unfunded accrued liability is amortized over the appropriate period.

## Division 12 - Dpt Hds Dpty

### Table 10-12: Layered Amortization Schedule

| Type of UAL | Date Established | | Original Balance | Original Amortization Period** | Amounts for Fiscal Year Beginning 7/1/2018 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Outstanding UAL Balance* | Amortization Period** | | Amortization Payment |
| Initial | 12/31/2015 | $ | 3,197,532 | 9 | $ | 2,972,246 | 7 | $ | 492,204 |
| Gain/Loss | 12/31/2016 | | 268,866 | 10 | | 300,720 | 10 | | 36,780 |
| **Total** | | | | | **$** | **3,272,966** | | **$** | **528,984** |

* This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

** Please see the Appendix on the MERS website for a description of the amortization policy.

The unfunded accrued liability as of December 31, 2016 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2016 valuation to take into account the expected future contributions that are based on past valuations. The projected unfunded accrued liability is amortized over the appropriate period.

## Division 20 - Pol Ofcrs Union

### Table 10-20: Layered Amortization Schedule

| Type of UAL | Date Established | Original Balance | | Original Amortization Period** | Amounts for Fiscal Year Beginning 7/1/2018 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Outstanding UAL Balance* | | Amortization Period** | Amortization Payment | |
| Initial | 12/31/2015 | $ | 2,739,412 | 19 | $ | 2,809,891 | 17 | $ | 228,216 |
| Gain/Loss | 12/31/2016 | | 277,973 | 17 | | 310,906 | 17 | | 25,248 |
| **Total** | | | | | **$** | **3,120,797** | | **$** | **253,464** |

* This is the remaining balance as of the valuation date, projected to the beginning of the fiscal year shown above.

** Please see the Appendix on the MERS website for a description of the amortization policy.

The unfunded accrued liability as of December 31, 2016 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2016 valuation to take into account the expected future contributions that are based on past valuations. The projected unfunded accrued liability is amortized over the appropriate period.

## GASB 68 Information

The following information has been prepared to provide some of the information necessary to complete GASB Statement No. 68 disclosures. Statement 68 is effective for fiscal years beginning after June 15, 2014. Additional resources, including an Implementation Guide, are available at www.mersofmich.com.

| | | |
|---|---|---|
| Actuarial Valuation Date: | | 12/31/2016 |
| Measurement Date of Total Pension Liability (TPL): | | 12/31/2016 |

At 12/31/2016, the following employees were covered by the benefit terms:

| | |
|---|---|
| Inactive employees or beneficiaries currently receiving benefits: | 54 |
| Inactive employees entitled to but not yet receiving benefits: | 13 |
| Active employees: | 28 |
| | 95 |

| | | |
|---|---|---|
| Total Pension Liability as of 12/31/2015 measurement date: | $ | 32,364,360 |
| Total Pension Liability as of 12/31/2016 measurement date: | $ | 33,786,802 |
| Service Cost for the year ending on the 12/31/2016 measurement date: | $ | 313,203 |

Change in the Total Pension Liability due to:

| | | |
|---|---|---|
| - Benefit changes[1]: | $ | 0 |
| - Differences between expected and actual experience[2]: | $ | 232,237 |
| - Changes in assumptions[2]: | $ | 0 |

[1] A change in liability due to benefit changes is immediately recognized when calculating pension expense for the year.

[2] Changes in liability due to differences between actual and expected experience, and changes in assumptions, are recognized in pension expense over the average remaining service lives of all employees.

| | | |
|---|---|---|
| Average expected remaining service lives of all employees (active and inactive): | | 2 |
| Covered employee payroll: (Needed for Required Supplementary Information) | $ | 2,061,173 |

Sensitivity of the Net Pension Liability to changes in the discount rate:

| | 1% Decrease (7.00%) | Current Discount Rate (8.00%) | 1% Increase (9.00%) |
|---|---|---|---|
| Change in Net Pension Liability as of 12/31/2016: | $ 4,171,071 | - | $ (3,485,614) |

Note: The current discount rate shown for GASB 68 purposes is higher than the MERS assumed rate of return. This is because for GASB 68 purposes, the discount rate must be gross of administrative expenses, whereas for funding purposes it is net of administrative expenses.

## Benefit Provision History

The following benefit provision history is provided by MERS. Any corrections to this history or discrepancies between this information and information displayed elsewhere in the valuation report should be reported to MERS. All provisions are listed by date of adoption.

### 01 - Clerical Union

| | |
|---|---|
| 12/1/2016 | Service Credit Purchase Estimates - Yes |
| 6/1/2013 | DC Adoption Date 06-01-2013 |
| 1/1/2006 | E2 2.5% COLA for future retirees (05/01/2005) |
| 1/1/2003 | Flexible E 6% COLA Adopted (01/01/2003) |
| 1/1/2001 | Member Contribution Rate 3.20% |
| 1/1/2001 | Benefit RS 50 (50% Post-Ret. Spouse Benefits) |
| 1/1/2001 | Benefit B-4 (80% max) |
| 7/1/1995 | Member Contribution Rate 2.00% |
| 7/1/1995 | Benefit B-3 (80% max) |
| 7/1/1995 | Benefit F55 (With 15 Years of Service) |
| 6/30/1995 | Member Contribution Rate 0.00% |
| 7/1/1988 | Member Contribution Rate 1.00% |
| 7/1/1988 | Benefit FAC-3 (3 Year Final Average Compensation) |
| 7/1/1987 | Benefit F55 (With 25 Years of Service) |
| 7/1/1982 | Member Contribution Rate 2.00% |
| 7/1/1980 | Member Contribution Rate 0.00% |
| 11/24/1970 | Covered by Act 88 |
| 7/1/1968 | Fiscal Month - July |
| 7/1/1968 | Benefit FAC-5 (5 Year Final Average Compensation) |
| 7/1/1968 | 10 Year Vesting |
| 7/1/1968 | Benefit C-1 (Old) |
| 7/1/1968 | Member Contribution Rate 3.00% Under $4,200.00 - Then 5.00% |

### 02 - Pol/Union Sgts

| | |
|---|---|
| 12/1/2016 | Service Credit Purchase Estimates - Yes |
| 10/1/2014 | Option B Yes |
| 10/1/2014 | DC Adoption Date 10-01-2014 |
| 1/1/2005 | Benefit F50 (With 25 Years of Service) |
| 1/1/2005 | Member Contribution Rate 6.26% |
| 1/1/2003 | Flexible E 6% COLA Adopted (01/01/2003) |
| 1/1/2001 | E2 2.5% COLA for future retirees (05/01/1995) |
| 1/1/2000 | E2 2.4% COLA for future retirees (05/01/1995) |
| 7/1/1999 | Benefit RS 50 (50% Post-Ret. Spouse Benefits) |
| 1/1/1996 | E2 2.5% COLA for future retirees (05/01/1995) |
| 5/1/1995 | Benefit B-4 (80% max) |
| 5/1/1995 | Member Contribution Rate 3.70% |
| 7/1/1993 | Benefit FAC-3 (3 Year Final Average Compensation) |
| 7/1/1992 | Benefit B-3 (80% max) |
| 7/1/1992 | Member Contribution Rate 2.00% |
| 7/1/1989 | Benefit B-2 |

## 02 - Pol/Union Sgts

| | |
|---|---|
| 7/1/1989 | Member Contribution Rate 0.00% |
| 7/1/1988 | Member Contribution Rate 1.00% |
| 7/1/1982 | Benefit C-2/Base B-1 |
| 7/1/1982 | Benefit F55 (With 25 Years of Service) |
| 7/1/1982 | Member Contribution Rate 2.00% |
| 11/24/1970 | Covered by Act 88 |
| 7/1/1968 | Fiscal Month - July |
| 7/1/1968 | Benefit FAC-5 (5 Year Final Average Compensation) |
| 7/1/1968 | 10 Year Vesting |
| 7/1/1968 | Benefit C-1 (Old) |
| 7/1/1968 | Member Contribution Rate 3.00% Under $4,200.00 - Then 5.00% |

## 07 - Library Dir.

| | |
|---|---|
| 12/1/2016 | Service Credit Purchase Estimates - Yes |
| 7/1/1988 | Benefit FAC-3 (3 Year Final Average Compensation) |
| 7/1/1987 | Benefit F55 (With 25 Years of Service) |
| 7/1/1980 | Member Contribution Rate 0.00% |
| 11/24/1970 | Covered by Act 88 |
| 7/1/1968 | Fiscal Month - July |
| 7/1/1968 | Benefit FAC-5 (5 Year Final Average Compensation) |
| 7/1/1968 | 10 Year Vesting |
| 7/1/1968 | Benefit C-1 (Old) |

## 10 - DPW Union

| | |
|---|---|
| 12/1/2016 | Service Credit Purchase Estimates - Yes |
| 10/1/2014 | Option B Yes |
| 10/1/2014 | DC Adoption Date 10-01-2014 |
| 7/1/2007 | Member Contribution Rate 2.00% |
| 7/1/2005 | Benefit RS 50 (50% Post-Ret. Spouse Benefits) |
| 7/1/2005 | Benefit F55 (With 20 Years of Service) |
| 7/1/2005 | Member Contribution Rate 1.00% |
| 1/1/2003 | Flexible E 6% COLA Adopted (01/01/2003) |
| 1/1/2001 | E2 2.5% COLA for future retirees (01/01/1996) |
| 8/10/2000 | Temporary 24 Years & Out (08/10/2000 - 11/03/2000) |
| 1/1/2000 | E2 2% COLA for future retirees (01/01/1996) |
| 1/1/1999 | E2 2.3% COLA for future retirees (01/01/1996) |
| 1/1/1996 | Benefit B-4 (80% max) |
| 1/1/1996 | E2 2.5% COLA for future retirees (01/01/1996) |
| 7/1/1992 | Benefit B-3 (80% max) |
| 7/1/1988 | Benefit FAC-3 (3 Year Final Average Compensation) |
| 7/1/1985 | Benefit F55 (With 25 Years of Service) |
| 7/1/1979 | Benefit FAC-5 (5 Year Final Average Compensation) |
| 7/1/1979 | 10 Year Vesting |
| 7/1/1979 | Benefit C-1 (Old) |
| 7/1/1979 | Member Contribution Rate 0.00% |

## 10 - DPW Union

| | |
|---|---|
| 11/24/1970 | Covered by Act 88 |
| 7/1/1968 | Fiscal Month - July |

## 12 - Dpt Hds Dpty

| | |
|---|---|
| 12/1/2016 | Service Credit Purchase Estimates - Yes |
| 7/1/2006 | DC Adoption Date 07-01-2006 |
| 12/1/2005 | Benefit RS 50 (50% Post-Ret. Spouse Benefits) |
| 1/1/2003 | Flexible E 6% COLA Adopted (01/01/2003) |
| 1/1/2001 | E2 2.5% COLA for future retirees (05/01/1995) |
| 1/1/2000 | E2 2.4% COLA for future retirees (05/01/1995) |
| 1/1/1996 | E2 2.5% COLA for future retirees (05/01/1995) |
| 9/1/1995 | Benefit B-4 (80% max) |
| 9/1/1995 | Benefit F55 (With 15 Years of Service) |
| 7/1/1992 | Benefit B-3 (80% max) |
| 7/1/1992 | Benefit F55 (With 25 Years of Service) |
| 7/1/1992 | Member Contribution Rate 2.00% |
| 7/1/1992 | Benefit FAC-3 (3 Year Final Average Compensation) |
| 7/1/1992 | 10 Year Vesting |
| 11/24/1970 | Covered by Act 88 |
| 7/1/1968 | Fiscal Month - July |

## 20 - Pol Ofcrs Union

| | |
|---|---|
| 12/1/2016 | Service Credit Purchase Estimates - Yes |
| 12/1/2013 | Option B Yes |
| 12/1/2013 | DC Adoption Date 12-01-2013 |
| 11/1/2004 | Benefit F50 (With 25 Years of Service) |
| 11/1/2004 | Member Contribution Rate 4.26% |
| 1/1/2001 | E2 2.5% COLA for future retirees (05/01/1995) |
| 1/1/2000 | E2 2.4% COLA for future retirees (05/01/1995) |
| 7/1/1997 | Benefit RS 50 (50% Post-Ret. Spouse Benefits) |
| 1/1/1996 | E2 2.5% COLA for future retirees (05/01/1995) |
| 5/1/1995 | Benefit B-4 (80% max) |
| 5/1/1995 | Member Contribution Rate 3.00% |
| 7/1/1993 | Benefit FAC-3 (3 Year Final Average Compensation) |
| 7/1/1992 | Benefit B-3 (80% max) |
| 7/1/1992 | Benefit F55 (With 25 Years of Service) |
| 7/1/1992 | Member Contribution Rate 1.70% |
| 7/1/1989 | Benefit FAC-5 (5 Year Final Average Compensation) |
| 7/1/1989 | 10 Year Vesting |
| 7/1/1989 | Benefit C-2/Base B-1 |
| 11/24/1970 | Covered by Act 88 |
| 7/1/1968 | Fiscal Month - July |

## Plan Provisions, Actuarial Assumptions, and Actuarial Funding Method

Details on MERS plan provisions, actuarial assumptions, and actuarial methodology can be found in the Appendix. Some actuarial assumptions are specific to this municipality and its divisions. These are listed below.

### Increase in Final Average Compensation

| Division | FAC Increase Assumption |
|---|---|
| All Divisions | 6.00% |

### Withdrawal Rate Scaling Factor

| Division | Withdrawal Rate Scaling Factor |
|---|---|
| All Divisions | 100% |

### Miscellaneous and Technical Assumptions

Loads – None.

### Amortization Policy for Closed Divisions

| Closed Division | Amortization Option |
|---|---|
| 01 - Clerical Union | Accelerated to 5-Year Amortization |
| 02 - Pol/Union Sgts | Accelerated to 15-Year Amortization |
| 07 - Library Dir. | Accelerated to 5-Year Amortization |
| 10 - DPW Union | Accelerated to 15-Year Amortization |
| 12 - Dpt Hds Dpty | Accelerated to 5-Year Amortization |
| 20 - Pol Ofcrs Union | Accelerated to 15-Year Amortization |

# Appendix B: CBIZ Supplemental Information related to MERS Pension Plan dated November 3, 2017

CBIZ Retirement Plan Services
CBIZ Benefits & Insurance Services, Inc.
17199 Laurel Park North, Ste. 405
Livonia, MI 48152
http://retirement.cbiz.com

November 3, 2017

Wixom, City of

In care of:
Municipal Employees' Retirement System of Michigan
1134 Municipal Way
Lansing, Michigan 48917

**Re: Wixom, City of (6316) – All Divisions – Projections of Amortization Payment of Unfunded Accrued Liability**

As requested by Wixom, City of (6316) – All Divisions, we have illustrated the series of amortization payments scheduled to fund the unfunded accrued liability (UAL) calculated as of December 31, 2016, using the data and benefit provisions from the December 31, 2016 annual actuarial valuation. The results are calculated using a 7.75% investment return assumption, as well as the 5.75% and 6.75% investment return assumptions, as requested by the Michigan Department of Treasury for their analysis of application requests to issue Long-Term Securities under PA 329 of 2012.

The purpose of this letter is to show the pattern in the annual amortization payment of the UAL under the amortization policy which would be followed in the absence of a Pension Obligation Bond issuance, and to show the amortization payments of the UAL calculated using both the actuarial value and market value of assets. **Please note that the illustrated pattern in the annual amortization payment is contingent upon the adoption of the extended amortization period for the Initial UAL effective in the 2018 fiscal year for all divisions. Please see the report on the amortization extension study performed for the City of Wixom dated October 12, 2017.**

The estimates from this study should not be used for short term budgeting purposes because the assumptions are designed to be a long term expectation of future events. These estimates illustrate the long term pattern of amortization payments under different funding policies. A projection of contribution rates for budgeting purposes would require additional analysis, which is beyond the scope of this study.

**Please note this letter should be distributed to any interested parties only in its entirety.**

CBIZ Retirement Plan Services
CBIZ Benefits & Insurance Services, Inc.
17199 Laurel Park North, Ste. 405
Livonia, MI 48152
http://retirement.cbiz.com

*Wixom, City of*

We projected the annual amortization payments, starting with the amortization periods that would have been in effect for the calendar year beginning January 1, 2017, under the amortization policies available for each division as revised in the amortization extension study referenced above. The 2017 and 2018 amortization payments shown in this analysis will not match the amortization portion of the projected employer contributions from the 2014, 2015 and 2016 annual valuations because these annual valuations determine the contributions for a particular fiscal year, not a calendar year, and for the 2014 valuations, the underlying actuarial assumptions are different. Additionally, the projection of annual amortization payments was constructed using the amortization periods approved for each division in the amortization extension study. **Any normal cost payments are in addition to the amortization payment, and are not affected by the amortization policy used.**

These results are for illustration purposes only. Actual amortization payments will depend on the results of future annual actuarial valuations.

### *Comments on Pension Obligation Bonds*

A discussion of pension obligation bonds is beyond the scope of this letter. It is important for the City to understand and acknowledge the following implications of funding the UAL using pension obligation bonds:

1. **The City will continue to be responsible for funding the employer normal cost as long as there are active members in the plan, and**
2. **If future financial or demographic experience is less favorable than assumed, additional UAL may emerge which would require additional City contributions.**
3. **Fully funding the current UAL does not guarantee that there will be no employer contribution requirements in the future.**

Our calculations were based on the following:

- Demographic information, financial information, benefit provisions and Funding Methods provided by MERS for the December 31, 2016 annual actuarial valuation, except where noted above.
- The actuarial assumptions that were used in the December 31, 2016 annual actuarial valuation, except for any phase-in of the impact of assumption changes.

As always, the MERS actuaries will closely watch the funding progress of all closed divisions. While not currently anticipated, the actuaries may recommend changes to the amortization policy in the future if they deem it necessary for the financial security of benefits provided by the municipality, which could result in more accelerated employer contributions than those shown in this report.

The undersigned are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion

**CBIZ Retirement Plan Services**
CBIZ Benefits & Insurance Services, Inc.
17199 Laurel Park North, Ste. 405
Livonia, MI 48152
http://retirement.cbiz.com

herein. Please see page 4 of this document for additional disclosures required by the Actuarial Standards of Practice.

If you have any questions or need additional information, please contact your MERS representative at (800) 767-6377.

Sincerely,

Cathy Nagy, FSA, MAAA
Actuary

W. James Koss, ASA, MAAA
Actuary

## Additional Disclosures Required by Actuarial Standards of Practice No. 41

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. Due to the limited scope of the actuary's assignment, the actuary did not perform an analysis of the potential range of such future measurements.

This report should not be relied on for any purpose other than the purpose described in the primary communication. Determination of the financial results associated with the benefits described in this report in a manner other than the intended purpose may produce significantly different results.

The calculation was based upon information furnished by the Employer and MERS staff, concerning Retirement System benefits and member information. CBIZ Retirement Plan Services is not responsible for the accuracy or completeness of the information provided to us for these calculations.

The developed findings included in this report consider data or other information through December 31, 2016. The findings are based on actuarial assumptions which were used in the December 31, 2016 actuarial valuations.

CBIZ Retirement Plan Services
CBIZ Benefits & Insurance Services, Inc.
17199 Laurel Park North, Ste. 405
Livonia, MI 48152
http://retirement.cbiz.com

**Wixom, City of (6316) - All Divisions**
**Projected Amortization Payments Based on December 31, 2016 Actuarial Valuation Data**
**Closed Amortization Policy Option R* - Using 7.75% Interest Rate**

| | Based on the Actuarial Value of Assets | | Based on the Market Value of Assets | |
|---|---|---|---|---|
| Calendar Year Beginning January 1 | Beginning of Year UAL Balance | Amortization Payment | Beginning of Year UAL Balance | Amortization Payment |
| 2017 | 15,000,000 | 1,100,000 | 16,400,000 | 1,200,000 |
| 2018 | 15,000,000 | 1,200,000 | 16,400,000 | 1,300,000 |
| 2019 | 15,000,000 | 1,200,000 | 16,400,000 | 1,300,000 |
| 2020 | 14,900,000 | 1,200,000 | 16,300,000 | 1,400,000 |
| 2021 | 14,800,000 | 1,300,000 | 16,100,000 | 1,400,000 |
| 2022 | 14,600,000 | 1,300,000 | 15,900,000 | 1,500,000 |
| 2023 | 14,300,000 | 1,400,000 | 15,600,000 | 1,500,000 |
| 2024 | 14,000,000 | 1,400,000 | 15,300,000 | 1,600,000 |
| 2025 | 13,600,000 | 1,500,000 | 14,800,000 | 1,600,000 |
| 2026 | 13,000,000 | 1,600,000 | 14,300,000 | 1,700,000 |
| 2027 | 12,400,000 | 1,600,000 | 13,600,000 | 1,800,000 |
| 2028 | 11,700,000 | 1,700,000 | 12,800,000 | 1,800,000 |
| 2029 | 10,900,000 | 1,700,000 | 11,900,000 | 1,900,000 |
| 2030 | 10,000,000 | 1,800,000 | 10,800,000 | 2,000,000 |
| 2031 | 8,900,000 | 1,900,000 | 9,600,000 | 2,000,000 |
| 2032 | 7,600,000 | 1,900,000 | 8,300,000 | 2,100,000 |
| 2033 | 6,200,000 | 1,500,000 | 6,700,000 | 1,600,000 |
| 2034 | 5,100,000 | 1,500,000 | 5,500,000 | 1,700,000 |
| 2035 | 3,900,000 | 1,600,000 | 4,200,000 | 1,700,000 |
| 2036 | 2,600,000 | 1,400,000 | 2,800,000 | 1,500,000 |
| 2037 | 1,400,000 | 1,400,000 | 1,500,000 | 1,500,000 |
| 2038 | - | - | - | - |

** The projected pattern of annual amortization payments is contingent upon the adoption of the approved amortization extension of 20 Years for Divisions 01, 02, 07, and 20, 18 Years for Division 10, and 15 Years for Division 12, effective July 1, 2018.*

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**Wixom, City of (6316) - All Divisions**
**Projected Amortization Payments Based on December 31, 2016 Actuarial Valuation Data**
**Closed Amortization Policy Option R* - Using 6.75% Interest Rate**

| | Based on the Actuarial Value of Assets | | Based on the Market Value of Assets | |
|---|---|---|---|---|
| Calendar Year Beginning January 1 | Beginning of Year UAL Balance | Amortization Payment | Beginning of Year UAL Balance | Amortization Payment |
| 2017 | 19,400,000 | 1,300,000 | 20,800,000 | 1,400,000 |
| 2018 | 19,300,000 | 1,400,000 | 20,700,000 | 1,500,000 |
| 2019 | 19,200,000 | 1,400,000 | 20,600,000 | 1,500,000 |
| 2020 | 19,000,000 | 1,500,000 | 20,400,000 | 1,600,000 |
| 2021 | 18,800,000 | 1,500,000 | 20,100,000 | 1,700,000 |
| 2022 | 18,400,000 | 1,600,000 | 19,800,000 | 1,700,000 |
| 2023 | 18,000,000 | 1,700,000 | 19,300,000 | 1,800,000 |
| 2024 | 17,500,000 | 1,700,000 | 18,800,000 | 1,800,000 |
| 2025 | 16,900,000 | 1,800,000 | 18,200,000 | 1,900,000 |
| 2026 | 16,200,000 | 1,900,000 | 17,400,000 | 2,000,000 |
| 2027 | 15,400,000 | 1,900,000 | 16,500,000 | 2,100,000 |
| 2028 | 14,500,000 | 2,000,000 | 15,500,000 | 2,100,000 |
| 2029 | 13,400,000 | 2,100,000 | 14,300,000 | 2,200,000 |
| 2030 | 12,200,000 | 2,100,000 | 13,000,000 | 2,300,000 |
| 2031 | 10,800,000 | 2,200,000 | 11,500,000 | 2,400,000 |
| 2032 | 9,200,000 | 2,300,000 | 9,800,000 | 2,500,000 |
| 2033 | 7,400,000 | 1,700,000 | 7,900,000 | 1,900,000 |
| 2034 | 6,100,000 | 1,800,000 | 6,500,000 | 1,900,000 |
| 2035 | 4,700,000 | 1,900,000 | 5,000,000 | 2,000,000 |
| 2036 | 3,000,000 | 1,600,000 | 3,200,000 | 1,700,000 |
| 2037 | 1,600,000 | 1,700,000 | 1,700,000 | 1,800,000 |
| 2038 | - | - | - | - |

** The projected pattern of annual amortization payments is contingent upon the adoption of the approved amortization extension of 20 Years for Divisions 01, 02, 07, and 20, 18 Years for Division 10, and 15 Years for Division 12, effective July 1, 2018.*

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Livonia, MI 48152
http://retirement.cbiz.com

**Wixom, City of (6316) - All Divisions**
**Projected Amortization Payments Based on December 31, 2016 Actuarial Valuation Data**
**Closed Amortization Policy Option R* - Using 5.75% Interest Rate**

| | Based on the Actuarial Value of Assets | | Based on the Market Value of Assets | |
|---|---|---|---|---|
| Calendar Year Beginning January 1 | Beginning of Year UAL Balance | Amortization Payment | Beginning of Year UAL Balance | Amortization Payment |
| 2017 | 24,700,000 | 1,600,000 | 26,100,000 | 1,600,000 |
| 2018 | 24,500,000 | 1,600,000 | 25,900,000 | 1,700,000 |
| 2019 | 24,200,000 | 1,700,000 | 25,600,000 | 1,800,000 |
| 2020 | 23,900,000 | 1,700,000 | 25,300,000 | 1,800,000 |
| 2021 | 23,500,000 | 1,800,000 | 24,800,000 | 1,900,000 |
| 2022 | 23,000,000 | 1,900,000 | 24,300,000 | 2,000,000 |
| 2023 | 22,400,000 | 1,900,000 | 23,700,000 | 2,100,000 |
| 2024 | 21,700,000 | 2,000,000 | 22,900,000 | 2,100,000 |
| 2025 | 20,900,000 | 2,100,000 | 22,000,000 | 2,200,000 |
| 2026 | 19,900,000 | 2,200,000 | 21,000,000 | 2,300,000 |
| 2027 | 18,800,000 | 2,300,000 | 19,900,000 | 2,400,000 |
| 2028 | 17,600,000 | 2,300,000 | 18,600,000 | 2,500,000 |
| 2029 | 16,200,000 | 2,400,000 | 17,100,000 | 2,600,000 |
| 2030 | 14,600,000 | 2,500,000 | 15,400,000 | 2,700,000 |
| 2031 | 12,900,000 | 2,600,000 | 13,600,000 | 2,800,000 |
| 2032 | 10,900,000 | 2,700,000 | 11,500,000 | 2,900,000 |
| 2033 | 8,800,000 | 2,000,000 | 9,200,000 | 2,100,000 |
| 2034 | 7,200,000 | 2,100,000 | 7,600,000 | 2,200,000 |
| 2035 | 5,500,000 | 2,200,000 | 5,800,000 | 2,300,000 |
| 2036 | 3,600,000 | 1,800,000 | 3,700,000 | 1,900,000 |
| 2037 | 1,900,000 | 1,900,000 | 2,000,000 | 2,000,000 |
| 2038 | - | - | - | - |

** The projected pattern of annual amortization payments is contingent upon the adoption of the approved amortization extension of 20 Years for Divisions 01, 02, 07, and 20, 18 Years for Division 10, and 15 Years for Division 12, effective July 1, 2018.*

# Appendix C: City of Wixom Retiree Health Care Plan Actuarial Valuation Report for the Fiscal Year Ending June 30, 2016

# City of Wixom
# Retiree Health Care Plan
## Actuarial Valuation Report
## as of June 30, 2016

# Table of Contents

July 18, 2017

Ms. Marilyn Stamper
Finance Manager
City of Wixom
49045 Pontiac Trail
Wixom, MI 48393

Dear Ms. Stamper:

Submitted in this report are the results of an Actuarial Valuation of the assets and liabilities associated with the employer financed retiree health benefits provided by the City of Wixom Retiree Health Care Plan. The date of the valuation was June 30, 2016.

This report was prepared at the request of the City of Wixom and is intended for use by the City of Wixom and those designated or approved by the City of Wixom. This report may be provided to parties other than City of Wixom only in its entirety and only with the permission of the City of Wixom. GRS is not responsible for unauthorized use of this report.

The purposes of the valuation are to measure the System's funding progress and to determine the Actuarially Computed Employer Contributions for the fiscal years beginning July 1, 2017 and July 1, 2018. This report should not be relied on for any purpose other than the purposes described herein. Determinations of financial results, associated with the benefits described in this report, for purposes other than those identified above may be significantly different. This report is not compliant with GASB Statements No. 74 or No. 75.

The findings in this report are based on data and other information through June 30, 2016. 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.

The valuation was based upon information furnished by the City Wixom concerning retiree health benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal reasonability and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by the City of Wixom.

This report has been prepared by actuaries who have substantial experience valuing public employee retiree health plans. To the best of our knowledge, the information contained in this report is accurate and fairly presents the actuarial position of the City of Wixom Retiree Health Care Plan 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 Shana M. Neeson are Members of the American Academy of Actuaries. These actuaries meet the Academy's Qualification Standards to render the actuarial opinions contained herein.

The signing actuaries are independent of the plan sponsor.

Respectfully submitted,

Mark Buis

Mark Buis, FSA, EA, FCA, MAAA

Shana M Neeson

Shana M. Neeson, ASA, MAAA

MB/SMN:mrb

# EXECUTIVE SUMMARY

# Executive Summary

## Actuarially Computed Employer Contribution

Please note that beginning with the fiscal year ending June 30, 2017, GASB Statement No. 43 will be replaced by GASB Statement No. 74. Also, beginning with the fiscal year ending June 30, 2018, GASB Statement No. 45 will be replaced by GASB Statement No. 75. As indicated by the City, no separate information is required for GASB Statement No. 74 for the fiscal year ending June 30, 2017. A separate GASB report will be required to comply with the actuarial requirements of GASB Statement No. 75 beginning with the fiscal year ending June 30, 2018. As such, there will no longer be an "Annual Required Contribution" calculated in the valuation reports. Therefore, we have determined the "Actuarially Computed Employer Contribution" for subsequent years.

We have calculated the Actuarially Computed Employer Contribution for the fiscal years beginning July 1, 2017 and July 1, 2018 under interest rate assumptions of 5.00%, 6.00%, and 7.00%. Below is a summary of the results. The Actuarially Computed Employer Contributions and estimated retiree premiums shown below include an adjustment for any implicit rate subsidy present in your pre-65 rates.

**City**

| Actuarially Computed Employer Contribution | 7.00 % Interest | 6.00% Interest | 5.00% Interest | Estimated Premiums Paid for Retirees |
|---|---|---|---|---|
| Fiscal Year Beginning July 1, 2017 | $707,172 | $856,999 | $1,029,595 | $409,876 |
| Fiscal Year Beginning July 1, 2018 | 702,395 | 850,968 | 1,021,977 | 446,697 |

**Library**

| Actuarially Computed Employer Contribution | 7.00 % Interest | 6.00% Interest | 5.00% Interest | Estimated Premiums Paid for Retirees |
|---|---|---|---|---|
| Fiscal Year Beginning July 1, 2017 | $15,432 | $17,513 | $19,528 | $ 27,725 |
| Fiscal Year Beginning July 1, 2018 | 15,432 | 17,513 | 19,528 | 31,256 |

For additional details please see Section A of the report.

# Executive Summary

## Liabilities and Assets

| City | | | |
|---|---|---|---|
| | 7.00% Interest | 6.00% Interest | 5.00% Interest |
| 1. Present Value of Future Benefit Payments | $13,667,022 | $16,063,446 | $19,134,880 |
| 2. Actuarial Accrued Liability | 12,298,927 | 14,149,215 | 16,428,211 |
| 3. Plan Assets | 6,097,256 | 6,102,639 | 6,107,921 |
| 4. Unfunded Actuarial Accrued Liability (2) – (3) | 6,201,671 | 8,046,576 | 10,320,290 |
| 5. Funded Ratio (3)/(2) | 49.6% | 43.1% | 37.2% |

| Library | | | |
|---|---|---|---|
| | 7.00% Interest | 6.00% Interest | 5.00% Interest |
| 1. Present Value of Future Benefit Payments | $354,690 | $395,209 | $444,260 |
| 2. Actuarial Accrued Liability | 354,690 | 395,209 | 444,260 |
| 3. Plan Assets | 175,839 | 170,456 | 165,174 |
| 4. Unfunded Actuarial Accrued Liability (2) – (3) | 178,851 | 224,753 | 279,086 |
| 5. Funded Ratio (3)/(2) | 49.6% | 43.1% | 37.2% |

The Present Value of Future Benefit Payments (PVFB) is the present value of all benefits projected to be paid from the plan for past and future service to current members. The Actuarial Accrued Liability is the portion of the PVFB allocated to past service by the Plan's funding method (see Section E titled "Actuarial Cost Method and Actuarial Assumptions").

# SECTION A

## VALUATION RESULTS

# City of Wixom – Results By Division
# City

| City | | | |
|---|---|---|---|
| | **7.00% Interest** | **6.00% Interest** | **5.00% Interest** |
| A. Present Value of Future Benefits | | | |
| i) Retirees and Beneficiaries | $ 6,198,832 | $ 6,952,236 | $ 7,869,197 |
| ii) Vested Terminated Members | 491,180 | 574,646 | 678,983 |
| iii) Active Members | 6,977,010 | 8,536,564 | 10,586,700 |
| Total Present Value of Future Benefits | $13,667,022 | $16,063,446 | $19,134,880 |
| B. Present Value of Future Normal Costs | 1,368,095 | 1,914,231 | 2,706,669 |
| C. Actuarial Accrued Liability (A.-B.) | 12,298,927 | 14,149,215 | 16,428,211 |
| D. Actuarial Value of Assets | 6,097,256 | 6,102,639 | 6,107,921 |
| E. Unfunded Actuarial Accrued Liability (C.-D.) | $ 6,201,671 | $ 8,046,576 | $10,320,290 |
| F. Funded Ratio (D./C.) | 49.6% | 43.1% | 37.2% |
| **G. Fiscal Year Beginning July 1, 2017** | | | |
| i) Employer Normal Cost | $ 172,093 | $ 229,978 | $ 307,470 |
| ii) Amortization of UAAL* | 535,079 | 627,021 | 722,125 |
| Actuarially Computed Employer Contribution | **$ 707,172** | **$ 856,999** | **$ 1,029,595** |
| **H. Fiscal Year Beginning July 1, 2018** | | | |
| Actuarially Computed Employer Contribution | **$ 702,395** | **$ 850,968** | **$ 1,021,977** |

** Unfunded Actuarial Accrued Liability.*

The unfunded actuarial accrued liabilities were amortized as a level dollar amount over a closed period of 27 years beginning July 1, 2017.

# City of Wixom – Results By Division
# Library

| Library | | | |
|---|---|---|---|
| | **7.00% Interest** | **6.00% Interest** | **5.00% Interest** |
| A. Present Value of Future Benefits | | | |
| i) Retirees and Beneficiaries | $ 354,690 | $ 395,209 | $ 444,260 |
| ii) Vested Terminated Members | 0 | 0 | 0 |
| iii) Active Members | 0 | 0 | 0 |
| Total Present Value of Future Benefits | $354,690 | $ 395,209 | $444,260 |
| B. Present Value of Future Normal Costs | 0 | 0 | 0 |
| C. Actuarial Accrued Liability (A.-B.) | 354,690 | 395,209 | 444,260 |
| D. Actuarial Value of Assets | 175,839 | 170,456 | 165,174 |
| E. Unfunded Actuarial Accrued Liability (C.-D.) | $ 178,851 | $ 224,753 | $ 279,086 |
| F. Funded Ratio (D./C.) | 49.6% | 43.1% | 37.2% |
| **G. Fiscal Year Beginning July 1, 2017** | | | |
| i) Employer Normal Cost | $ 0 | $ 0 | $ 0 |
| ii) Amortization of UAAL* | 15,432 | 17,513 | 19,528 |
| Actuarially Computed Employer Contribution | **$ 15,432** | **$ 17,513** | **$ 19,528** |
| **H. Fiscal Year Beginning July 1, 2018** | | | |
| Actuarially Computed Employer Contribution | **$ 15,432** | **$ 17,513** | **$ 19,528** |

** Unfunded Actuarial Accrued Liability.*

The unfunded actuarial accrued liabilities were amortized as a level dollar amount over a closed period of 27 years beginning July 1, 2017.

# Comments

**COMMENT A:** Overall Plan experience was unfavorable. The Actuarially Computed Employer Contribution has increased since the last valuation. Factors contributing to the increase include, but are not limited to:

- Higher post-65 medical rates than expected;
- More retirements than expected; and
- Resetting the short-term health care assumed rates of increase.

**COMMENT B:** In general, from one year to the next, liabilities and costs associated with a retiree health plan are far more volatile than those of a pension plan. This volatility is due in part to both difficult to predict health care costs, industry wide, and the constantly changing level of benefits being offered to plan participants. It is our understanding, for the City of Wixom's Plan, that retiree contracts which are split (one participant is over 65 and the second participant is under 65) remain on the Blue Cross Community Blue PPO plan until both participants are over the age of 65. Once both participants are over 65 their coverage switches to the PSHP plan. The costs associated with the PPO plan post-65 are significantly higher than the PSHP plan. As a result, the increased cost coupled with the current demographics of the small retiree population make the projected premium rates extremely volatile. We will continue to monitor the demographics of the retiree population in the future.

**Comment C:** One of the key assumptions used in any valuation of the cost of postemployment benefits is the rate of return on the assets that will be used to pay Plan benefits (discount rate). A higher discount rate will result in a lower Actuarially Computed Employer Contribution. A lower rate will tend to increase the Actuarially Computed Employer Contribution. As requested by the plan sponsor, we have calculated the liability and the resulting Actuarially Computed Employer Contribution using three different long-term projected rates of return. An assumed long-term rate of investment return of 7.00% may be appropriate to develop the liabilities of the plan in the case that the plan sponsor chooses to pre-fund the entire Actuarially Computed Employer Contribution and invests the resulting assets in such a way as to anticipate a 7.00% return.

**Comment D:** The Plan sponsor is required by GASB to perform actuarial valuations at least biennially unless there are significant changes in the OPEB.

**Comment E:** The contribution rates shown include amortization of the unfunded actuarial accrued liability over a closed period of 27 years for the period beginning July 1, 2017. A shorter amortization period would result in a higher Actuarially Computed Employer Contribution. As requested by the plan sponsor, a schedule of the amortization of the unfunded actuarial accrued liability over both the valuation period (27 years) and over a closed period of 19 years, for the period beginning July 1, 2017, is shown on page Appendix A-2.

# Comments

**Comment F:** Given the level of funded status, we recommend the City consider use of asset smoothing to limit volatility in contributions due to asset changes beginning with the next valuation (valuation date of June 30, 2018).

**Comment G:** The Market Value of assets as of June 30, 2016 for the City of Wixom was $6,273,095. It is our understanding that an additional contribution of $308,165 was deposited prior to June 30, 2016, but was not reflected in the Plan balance until early July 2016. As a result, the asset balance used in the valuation does not reflect the contributions in transit (the $308,165). For purposes of determining the contribution requirements for each of the groups (Library and City), the $6,273,095 was allocated between the two groups in proportion to each group's Actuarial Accrued Liability on the valuation date.

**Comment H:** The "Cadillac" tax is a 40% excise tax paid by the coverage provider (employer and/or insurer) on the value of health plan costs in excess of certain thresholds. The thresholds are $10,200 for single coverage or $27,500 for family coverage in 2020. Many plans are below the thresholds today, but are likely to exceed them in the next decade. The thresholds will be indexed at CPI-U, which is lower than the medical inflation rates affecting the cost of the plans. There is considerable uncertainty about how the tax would be applied, and considerable latitude in grouping of participants for tax purposes. Combining early retiree and Medicare eligible retiree costs is allowed and can keep plans under the thresholds for a longer period of time. For this valuation a 2.0% load was applied to the health care liabilities to approximate the cost for future excise tax, based on the current plan provision and assumptions. We have not identified any other specific provision of health care reform that would be expected to have a significant impact on the measured obligation. As additional guidance on the legislation is issued, we will review and monitor the impact.

**Comment I:** The GASB issued Statements Nos. 74 and 75 for OPEB valuations similar to the new pension standards. GASB Statement No. 74 for the plan OPEB disclosures is effective for fiscal years beginning after June 15, 2016. GASB Statement No. 75 for employer OPEB disclosures is effective for employer fiscal years beginning after June 15, 2017. The recently finalized GASB implementation guide for Statement No. 74 and forthcoming guide for Statement No. 75 will provide additional clarification related to the implementation of these Statements. It is our understanding that the City has consulted with its auditor and is not required to comply with GASB Statement No. 74. The City will ultimately need to comply with GASB Statement No. 75 for the fiscal year ending June 30, 2018. The information necessary for GASB Statement No. 75 for the June 30, 2018 fiscal year end will need to be developed at a later date. The basis for the GASB Statement No. 75 information is expected to be this valuation (as of June 30, 2016), where roll-forward techniques will be applied.

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

- The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations, and
- The measurement is inappropriate for assessing the need for or the amount of future employer contributions.

# SECTION B

## RETIREE PREMIUM RATE DEVELOPMENT

# Retiree Premium Rate Development

Initial premium rates were developed for the two classes of retirees (pre-65 and post-65). The fiscal year 2016-2017 fully-insured rates provided by the City of Wixom were utilized to determine the appropriate premium rates. The pre-65 fully-insured premiums are blended rates based on the combined experience of active and pre-65 retired members; therefore, there is an implicit employer subsidy for the non-Medicare eligible retirees since the average costs of providing health care benefits to retirees under age 65 is higher than the average cost of providing health care benefits to active employees. The true per capita cost for the pre-65 retirees is developed by adjusting the demographic differences between the active employees and retirees to reflect this implicit rate subsidy for the retirees. For the post-65 retirees, the fully-insured premium rate is used as the basis of the initial per capita cost without adjustments since the rate reflects the demographics of the post-65 retiree group.

The City carries a high deductible Blue Cross Community Blue plan for retirees under the age of 65 and a supplemental plan for Medicare eligible retirees which is provided by Benistar. Both plans have an HRA wrap that covers various fees (deductibles and copays). We made an adjustment to the fully-insured costs based on the fully insured equivalent rates provided by the City for the wraparound plan.

Age graded and sex distinct premiums are utilized by this valuation. The premiums developed by the preceding process are appropriate for the unique age and sex distribution currently existing. Over the future years covered by this valuation, the age and sex distribution will most likely change. Therefore, our process "distributes" the average premium over all age/sex combinations and assigns a unique premium for each combination. The age/sex specific premiums more accurately reflect the health care utilization and cost at that age.

# Retiree Premium Rate Development

The combined monthly one-person medical and drug premiums at select ages are shown below:

| For Those Not Eligible for Medicare (Pre-65) | | |
|---|---|---|
| **Age** | **Male** | **Female** |
| 40 | $ 397.43 | $ 645.79 |
| 50 | 644.23 | 793.63 |
| 60 | 1,094.89 | 1,078.09 |
| 64 | 1,331.42 | 1,256.50 |

| For Those Eligible for Medicare (Post-65) | | |
|---|---|---|
| **Age** | **Male** | **Female** |
| 65 | $ 587.37 | $ 554.01 |
| 75 | 687.22 | 670.58 |
| 85 | 726.69 | 735.25 |

James E. Pranschke is a Member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the American Academy of Actuaries to certify the per capita retiree health care rates shown above.

James E. Pranschke

James E. Pranschke , FSA, MAAA

# SECTION C

## SUMMARY OF BENEFITS

# City of Wixom Retiree Health Care Plan
# Summary of Benefits as of June 30, 2016

**Plan Participants**

Full time employees of the City of Wixom are eligible to receive retiree health care benefits. Department Heads and Deputy employees are included in the Full Time Non-Union division.

**Normal Health Care Retirement Conditions**

**DPW Union Employees**

Age 55 with 18 years of service

**Police Officers Union and Police/Union Sergeant Employees**

Age 50 with 20 years of service

**Full Time Non-Union, Clerical Union, and Non-Union Library Employees**

Age 55 with 15 years of service

**Retiree Health Care Benefit**

**DPW Union Employees retired prior to 6/14/2005**

The City will pay $300 per month towards the cost of retiree health care and prescription drug coverage until Medicare eligible, $0 thereafter. This applies to the retired employee with the retiree contributing the remaining balance, if any.

**Police Officers Union retired prior to 7/1/2004**

The City will pay $600 per month towards the cost of retiree health care and prescription drug coverage until Medicare eligible, $400 thereafter. This applies to the retired employee with the retiree contributing the remaining balance, if any.

**Clerical Union Employees retired prior to 4/12/2005**

The City will pay $200 per month towards the cost of retiree health care and prescription drug coverage until Medicare eligible, $0 thereafter. This applies to the retired employee with the retiree contributing the remaining balance, if any.

**Police/Union Sergeants retired prior to 12/21/2004**

The City will pay $600 per month towards the cost of retiree health care and prescription drug coverage until Medicare eligible, $400 thereafter. This applies to the retired employee with the retiree contributing the remaining balance, if any.

**DPW Union Employees retired on or after 6/14/2005 with a hire date of 8/12/2014 or prior, Police Officers Union Employees retired on or after 7/1/2004 with a hire date of 12/17/2013 or prior, Clerical Union Employees Retired on or after 4/12/2005 with a hire date of 6/10/2013 or prior, Police/Union Sergeants retired on or after 12/21/2004 with a hire date of 6/19/2014 or prior, Full Time Non-Union Employees retired on or after 1/1/2005 with a hire date of 6/30/2006 or prior, and Non-Union Library Employees retired on or after 1/1/2005 with a hire date of 6/30/2006 or prior**

The City will pay 90% of the cost of health care and prescription drug coverage for the retired employee and their spouse with the retiree/spouse contributing the remaining 10%.

# City of Wixom Retiree Health Care Plan
# Summary of Benefits as of June 30, 2016

**Active Employee Payroll Contribution**

**DPW Union Employees**

Effective 6/14/2005, active employees with a hire date of 8/12/2014 or prior will contribute by payroll deduction, the sum equivalent to 1.00% of their gross wages to a retiree health care fund.

**Police Officers Union**

Effective 7/1/2004, active employees with a hire date of 12/17/2013 or prior will contribute by payroll deduction, the sum equivalent to 1.00% of their gross wages to a retiree health care fund.

**Police/Union Sergeants**

Effective 1/1/2004, active employees with a hire date of 6/19/2014 or prior will contribute by payroll deduction, the sum equivalent to 1.00% of their gross wages to a retiree health care fund.

**Full Time Non-Union Employees**

Effective 7/1/2005, active employees with a hire date of 6/30/2006 or prior will contribute by payroll deduction, the sum equivalent to 1.00% of their gross wages to a retiree health care fund.

**Clerical Union**

Effective 4/12/2005, active employees with a hire date of 6/10/2013 or prior will contribute by payroll deduction, the sum equivalent to 1.00% of their gross wages to a retiree health care fund.

**Non-Union Library Employees**

Effective 7/1/2005, active employees with a hire date of 6/30/2006 or prior will contribute by payroll deduction, the sum equivalent to 1.00% of their gross wages to a retiree health care fund.

All member contributions are non-refundable.

**Early Health Care Retirement Conditions**

**DPW Union Employees**

Any age with 18 years of service

**Police Officers Union and Police/Union Sergeant Employees**

Any age with 20 years of service

**Department Heads, Deputy, Clerical Union, and Non-Union Library Employees**

Any age with 15 years of service

**Retiree Health Care Benefit Commencement**

**All Employees**

Benefit commences at normal health care retirement age.

# City of Wixom Retiree Health Care Plan
# Summary of Benefits as of June 30, 2016

**Deferred Health Care Retirement Conditions**

**DPW Union Employees**

Any age with 18 years of service

**Police Officers Union and Police/Union Sergeant Employees**

Any age with 20 years of service

**Full Time Non-Union, Clerical Union, and Non-Union Library Employees**

Any age with 15 years of service

**Retiree Health Care Benefit Commencement**

**All Employees**

Benefit commences at normal health care retirement age.

**Duty and Non-Duty Death-in-Service Health Care Retirement Conditions**

**DPW Union Employees**

Any age with 18 years of service

**Police Officers Union and Police/Union Sergeant Employees**

Any age with 20 years of service

**Department Heads, Deputy, Clerical Union, and Non-Union Library Employees**

Any age with 15 years of service

**Retiree Health Care Benefit Commencement**

Benefit is deferred until the deceased employee would have become eligible for retiree health care benefits.

**Duty Disabled Health Care Retirement Conditions**

No age or service condition

**Retiree Health Care Benefit Commencement**

Benefit commences immediately.

**Non-Duty Disabled Health Care Retirement Conditions**

Any age with 10 years of service

**Retiree Health Care Benefit Commencement**

Benefit commences immediately.

# City of Wixom Retiree Health Care Plan
# Summary of Benefits as of June 30, 2016

**Benefits for Spouses and Eligible Dependents of Retired Employees**

The surviving spouse and eligible dependents will continue to receive the benefits of the retiree health insurance program.  To be eligible, the spouse:

- must have been the spouse or eligible dependent of the retiree for one year (365 days) prior to the retiree’s retirement or termination;
- have been the retiree’s spouse on the day of the retirement or termination; and
- not be covered or eligible for coverage under another health care plan.

The surviving spouse may again become eligible under the City’s plan upon termination of their coverage under the other health insurance plan.

**Non-Medicare and Medicare–Eligible Provisions**

Retirees are required to enroll in Medicare once eligible. Retiree pays Medicare premiums.

**Vision Coverage**

Retired employees are not eligible for vision care benefits.

**Dental Coverage**

Retired employees are not eligible for dental care benefits.

**Retiree Opt-Out**

Retirees who elect to opt-out of the health care plan will not receive any cash payment in lieu of electing the City sponsored health care plan.

*This is a brief summary of the City of Wixom Retiree Health Care Plan provisions.  In the event that any description contained herein differs from the actual eligibility or benefit, the appropriate employee contract or governing document will prevail.*

# SECTION D

## SUMMARY OF PARTICIPANT DATA

# City of Wixom
# Total Active Members as of June 30, 2016
# By Age and Years of Service

| | Years of Service to Valuation Date | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|
| **Age** | **0-4** | **5-9** | **10-14** | **15-19** | **20-24** | **25-29** | **30 Plus** | **No.** |
| 20-24 | | | | | | | | |
| 25-29 | | | | | | | | |
| 30-34 | | 2 | | | | | | 2 |
| 35-39 | | | 1 | 1 | | | | 2 |
| 40-44 | | | 2 | | 2 | 1 | | 5 |
| 45-49 | | | 3 | 4 | 2 | 2 | | 11 |
| 50-54 | | | 2 | 1 | 2 | | | 5 |
| 55-59 | | | 1 | 1 | | | | 2 |
| 60-64 | | | 1 | 1 | | | | 2 |
| 65 & Over | | | | 1 | | | | 1 |
| **Totals** | | **2** | **10** | **9** | **6** | **3** | | **30** |

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

| OPEB Group | Count | Age | Service |
|---|---|---|---|
| City | 30 | 47.9 yrs. | 17.3 yrs. |
| Library | | | |
| Total | 30 | 47.9 yrs. | 17.3 yrs. |

# City of Wixom
# Total Inactive Members as of June 30, 2016
# By Age

## Number of Retiree and Beneficiary Contracts

| | Ineligible | Coverage^ | Coverage* | Total |
|---|---|---|---|---|
| Male | 0 | 4 | 10 | 14 |
| Female | 0 | 5 | 5 | 10 |
| Total | 0 | 9 | 15 | 24 |

** Includes family coverage.*
*^ Includes members receiving a monthly stipend.*

## Total Retired Members

| | Current Retirees By Age | | |
|---|---|---|---|
| **Age** | **City** | **Library** | **Total** |
| 40-44 | | | |
| 45-49 | 2 | | 2 |
| 50-54 | 1 | | 1 |
| 55-59 | 6 | 1 | 7 |
| 60-64 | 6 | | 6 |
| 65-69 | 7 | | 7 |
| 70-74 | | | |
| 75-79 | 1 | | 1 |
| 80-84 | | | |
| 85-89 | | | |
| 90-94 | | | |
| 95 + | | | |
| **Totals** | 23 | 1 | 24 |

There are two terminated members eligible for deferred Plan benefits, with an average age of 54.0 years.

# SECTION E

## ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

# Valuation Methods for
# City of Wixom
# as of June 30, 2016

***Actuarial Cost Method.*** Normal cost and the allocation of benefit values between service rendered before and after the valuation date was determined using an **Individual Entry-Age Actuarial Cost Method** having the following characteristics:

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

Actuarial gains (losses), as they occur, reduce (increase) the Unfunded Actuarial Accrued Liability.

***Financing of Unfunded Actuarial Accrued Liabilities.*** Unfunded actuarial accrued liabilities (UAAL) (full funding credit if assets exceed liabilities) were amortized as a level dollar amount over a closed 27-year period, since all divisions are closed to new hires. The UAAL was determined using the actuarial value of assets and actuarial accrued liability calculated as of the valuation date and projected to the beginning of the fiscal year at the assumed rate of investment return.

***Actuarial Value Assets.*** The Actuarial Value of Assets is set equal to the reported market value of assets.

# Valuation Methods for
# City of Wixom
# as of June 30, 2016

***Amortization Factors.*** The following amortization factors were used in developing the Actuarially Computed Employer Contribution for the fiscal years shown:

| | Fiscal Year Beginning July 01, | |
|---|---|---|
| **7.00% Interest** | **2017** | **2018** |
| Level Dollar | 12.4015 | 12.2350 |

| | Fiscal Year Beginning July 01, | |
|---|---|---|
| **6.00% Interest** | **2017** | **2018** |
| Level Dollar | 13.6030 | 13.3895 |

| | Fiscal Year Beginning July 01, | |
|---|---|---|
| **5.00% Interest** | **2017** | **2018** |
| Level Dollar | 15.0061 | 14.7316 |

# Actuarial Assumptions for
# City of Wixom
# as of June 30, 2016

The rationale for the rates of merit and seniority salary increase, retirement rates, early retirement rates, rates of separation from active membership, and disability rates used in this valuation is included in the MERS 5-year experience study for the period January 1, 2004 to December 31, 2008 issued March 2, 2010. All assumptions are expectations of future experience, not market measures

***The rates of investment return*** were 5.00%, 6.00%, and 7.00% a year, compounded annually net after investment expenses.

***Rates of price inflation*** are not specifically used for this valuation. However, a rate of price inflation of 2.00% to 3.00% would be consistent with other assumptions in this report.

***The rates of salary increase*** used for individual members are in accordance with the following table. This assumption is used to project a member's current salary to the salaries upon which future contributions will be based.

| Sample Ages | % Increase in Salary at Sample Ages | | |
|---|---|---|---|
| | Merit & Seniority | Base (Economic) | Increase Next Year |
| 20 | 13.00 % | 4.00 % | 17.00 % |
| 25 | 6.80 | 4.00 | 10.80 |
| 30 | 3.26 | 4.00 | 7.26 |
| 35 | 2.05 | 4.00 | 6.05 |
| 40 | 1.30 | 4.00 | 5.30 |
| 45 | 0.81 | 4.00 | 4.81 |
| 50 | 0.52 | 4.00 | 4.52 |
| 55 | 0.30 | 4.00 | 4.30 |

# Actuarial Assumptions for City of Wixom as of June 30, 2016

***The rates of post-retirement mortality*** used for individual members are in accordance with the following tables.

For healthy retirees, mortality rates are based on the RP-2000 Mortality Combined Healthy Tables Projected 20 years with U.S. Projection Scale BB. Mortality rates were adjusted to include margin for future mortality improvement as described in the table name. Sample rates are as follows:

| Sample Ages | Probability of Dying Next Year (Healthy) Males | Females | Future Life Expectancy (Years) Males | Females |
|---|---|---|---|---|
| 50 | 0.20% | 0.16% | 32.99 | 35.59 |
| 55 | 0.34 | 0.25 | 28.37 | 30.90 |
| 60 | 0.59 | 0.41 | 23.94 | 26.34 |
| 65 | 1.00 | 0.76 | 19.74 | 21.98 |
| 70 | 1.64 | 1.32 | 15.83 | 17.93 |
| 75 | 2.80 | 2.21 | 12.26 | 14.25 |
| 80 | 4.76 | 3.60 | 9.13 | 10.95 |

These assumptions are used to measure the probabilities of each benefit payment being made after retirement.

For disabled retirees, mortality rates are based on the healthy life table above, but set-forward ten years.

***The rates of pre-retirement mortality*** use the same mortality tables as post retirement mortality with 90% of active deaths assumed non-duty and 10% assumed duty related.

# Actuarial Assumptions for
# City of Wixom
# as of June 30, 2016

## Retirement Rates

A schedule of retirement rates is used to measure the probability of eligible members retiring during the next year. To reflect the impact plan design may have on retirement experience, separate retirement rates apply to valuation divisions with pension benefit multipliers less than or equal to 2.50% and greater than 2.50%. Certain Retirement ages may not apply, depending on the benefit age of first eligibility.

### Normal Retirement - Age Based Benefit Provisions

| | Percent of Eligible Active Members Retiring within Next Year*# | |
|---|---|---|
| Retirement Ages | Less Than or Equal to 2.50% | Greater Than 2.50% |
| 50 | 20% | 23% |
| 51 | 20 | 23 |
| 52 | 20 | 24 |
| 53 | 20 | 26 |
| 54 | 20 | 26 |
| 55 | 20 | 30 |
| 56 | 20 | 33 |
| 57 | 21 | 35 |
| 58 | 21 | 39 |
| 59 | 21 | 42 |
| 60 | 21 | 43 |
| 61 | 22 | 48 |
| 62 | 22 | 49 |
| 63 | 22 | 49 |
| 64 | 23 | 50 |
| 65 | 25 | 50 |
| 66 | 25 | 50 |
| 67 | 26 | 50 |
| 68 | 28 | 50 |
| 69 | 30 | 50 |
| 70 | 100 | 100 |

* *For those eligible prior to age 50, the retirement rate is 22% per year. Members in a defined contribution plan follow the retirement pattern of those with a defined benefit of less than or equal to 2.50% per year.*

\# *All members who reach eligibility for normal retirement pension benefits before reaching eligibility for retiree health benefits are assumed to retire at the rate of 3% per year during the period when they are not eligible for health benefits.*

# Actuarial Assumptions for
# City of Wixom
# as of June 30, 2016

## Early Retirement - Reduced Pension Benefit

| Retirement Ages | Percent of Eligible Active Members Retiring Within Next Year |
|---|---|
| 50 | 1.60% |
| 51 | 1.60 |
| 52 | 2.30 |
| 53 | 3.30 |
| 54 | 4.50 |
| 55 | 3.50 |
| 56 | 3.25 |
| 57 | 3.00 |
| 58 | 4.50 |
| 59 | 5.75 |

In the case of a member's eligibility for early reduced pension retirement precedes eligibility for OPEB retirement, the percent of eligible active members retiring within the next year is as described in the table above or 3%, whichever is smaller.

# Actuarial Assumptions for
# City of Wixom
# as of June 30, 2016

***Rates of separation from active membership*** are used to estimate the number of employees at each age that are expected to terminate employment before qualifying for retirement benefits. The rates of separation from active membership do not apply to members eligible to retire, and do not include separation on account of death or disability. The assumed rates of separation applied in the current valuation are based on years of service, and scaled up or down according to each group's experience.

| Group | Separation Rate Scaling Factor |
|---|---|
| All Divisions | 100% |

The base separation rates (see the table below) are multiplied by the scaling factor to obtain the assumed withdrawal rates. Sample rates of separation from active employment, before application of the scaling factor, are shown below:

| Sample Years of Service | % of Active Members Separating Within the Next Year |
|---|---|
| 0 | 20.00% |
| 1 | 17.00 |
| 2 | 14.00 |
| 3 | 11.00 |
| 4 | 9.00 |
| 5 | 6.50 |
| 10 | 5.00 |
| 15 | 3.70 |
| 20 | 3.00 |
| 25 | 2.70 |
| 30 | 2.60 |
| 34 and over | 2.40 |

# Assumptions for City of Wixom as of June 30, 2016

**Disability Rates**

Disability rates are used in the valuation to estimate the incidence of member disability in future years.

The assumed rates of disablement at various ages are shown below:

| Sample Ages | Percent Becoming Disabled Within the Next Year |
|---|---|
| 20 | 0.02% |
| 25 | 0.02 |
| 30 | 0.02 |
| 35 | 0.06 |
| 40 | 0.06 |
| 45 | 0.11 |
| 50 | 0.24 |
| 55 | 0.60 |
| 60 | 0.60 |
| 65 | 0.60 |

85% of the disabilities are assumed to be non-duty and 15% of the disabilities are assumed to be duty related.

# Actuarial Assumptions for
# City of Wixom
# as of June 30, 2016

***Health care cost trend rates*** are displayed in the following table:

| Year After Valuation | Health Care Trend Inflation Rates Medical/Drug |
|---|---|
| 1 | 9.00% |
| 2 | 8.25% |
| 3 | 7.50% |
| 4 | 7.00% |
| 5 | 6.50% |
| 6 | 6.00% |
| 7 | 5.50% |
| 8 | 5.00% |
| 9 | 4.50% |
| 10 | 4.00% |
| 11 | 4.00% |
| 12 | 4.00% |
| 13 | 4.00% |
| 14 | 4.00% |
| 15 | 4.00% |
| 16+ | 4.00% |

# Miscellaneous and Technical Assumptions for City of Wixom as of June 30, 2016

**Administrative Expenses** No explicit assumption has been made for administrative expenses.

**Decrement Operation** Disability and withdrawal do not operate during retirement eligibility.

**Decrement Timing** Decrements of all types are assumed to occur mid-year.

**Eligibility Testing** Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.

**Incidence of Contributions** Contributions are assumed to be received continuously throughout the year based upon the computed contribution shown in this report.

**Marriage Assumption** 70% of males and 70% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses for active member valuation purposes.

**Medicare Coverage** Assumed to be available for all covered employees on attainment of age 65. Disabled retirees were assumed to be eligible for Medicare coverage at age 65.

**Health Care Coverage at Retirement** The table below shows the assumed portion of future retirees electing one-person or two-person/family coverage, or opting out of coverage entirely.

| | | Two-Person/Family | | |
|---|---|---|---|---|
| | One-Person | Electing | Continuing | Opt-Out |
| Male | 30% | 70% | 100% | 0% |
| Female | 30% | 70% | 100% | 0% |

# APPENDIX A

# Amortization Payoff Schedule
# 27 Year Basis

| Date | Period | Unfunded Liability (BOY) | Interest | Payment($) | Unfunded Liability (EOY) |
|---|---|---|---|---|---|
| June 30, 2016 | | $6,380,522 | | | |
| July 1, 2017 | 27 | 6,827,159 | $458,850 | $550,511 | $6,735,498 |
| July 1, 2018 | 26 | 6,735,498 | 452,434 | 550,511 | 6,637,421 |
| July 1, 2019 | 25 | 6,637,421 | 445,569 | 550,511 | 6,532,479 |
| July 1, 2020 | 24 | 6,532,479 | 438,223 | 550,511 | 6,420,191 |
| July 1, 2021 | 23 | 6,420,191 | 430,363 | 550,511 | 6,300,043 |
| July 1, 2022 | 22 | 6,300,043 | 421,952 | 550,511 | 6,171,484 |
| July 1, 2023 | 21 | 6,171,484 | 412,953 | 550,511 | 6,033,926 |
| July 1, 2024 | 20 | 6,033,926 | 403,324 | 550,511 | 5,886,739 |
| July 1, 2025 | 19 | 5,886,739 | 393,021 | 550,511 | 5,729,249 |
| July 1, 2026 | 18 | 5,729,249 | 381,997 | 550,511 | 5,560,735 |
| July 1, 2027 | 17 | 5,560,735 | 370,201 | 550,511 | 5,380,425 |
| July 1, 2028 | 16 | 5,380,425 | 357,579 | 550,511 | 5,187,493 |
| July 1, 2029 | 15 | 5,187,493 | 344,074 | 550,511 | 4,981,056 |
| July 1, 2030 | 14 | 4,981,056 | 329,623 | 550,511 | 4,760,168 |
| July 1, 2031 | 13 | 4,760,168 | 314,161 | 550,511 | 4,523,818 |
| July 1, 2032 | 12 | 4,523,818 | 297,617 | 550,511 | 4,270,924 |
| July 1, 2033 | 11 | 4,270,924 | 279,914 | 550,511 | 4,000,327 |
| July 1, 2034 | 10 | 4,000,327 | 260,972 | 550,511 | 3,710,788 |
| July 1, 2035 | 9 | 3,710,788 | 240,704 | 550,511 | 3,400,981 |
| July 1, 2036 | 8 | 3,400,981 | 219,018 | 550,511 | 3,069,488 |
| July 1, 2037 | 7 | 3,069,488 | 195,813 | 550,511 | 2,714,790 |
| July 1, 2038 | 6 | 2,714,790 | 170,985 | 550,511 | 2,335,264 |
| July 1, 2039 | 5 | 2,335,264 | 144,418 | 550,511 | 1,929,171 |
| July 1, 2040 | 4 | 1,929,171 | 115,991 | 550,511 | 1,494,651 |
| July 1, 2041 | 3 | 1,494,651 | 85,575 | 550,511 | 1,029,715 |
| July 1, 2042 | 2 | 1,029,715 | 53,029 | 550,511 | 532,233 |
| July 1, 2043 | 1 | 532,233 | 18,206 | 550,511 | (72) |

Unfunded liability at June 30, 2016 projected to July 1, 2017 with 7.00% interest. Payment based on 7.00% interest over 27 years commencing with the Fiscal Year beginning July 1, 2017.

# Amortization Payoff Schedule
## 19 Year Basis

| Date | Period | Unfunded Liability (BOY) | Interest | Payment($) | Unfunded Liability (EOY) |
|---|---|---|---|---|---|
| June 30, 2016 | | $6,380,522 | | | |
| July 1, 2017 | 19 | 6,827,159 | $455,807 | $638,455 | $6,644,511 |
| July 1, 2018 | 18 | 6,644,511 | 443,022 | 638,455 | 6,449,078 |
| July 1, 2019 | 17 | 6,449,078 | 429,341 | 638,455 | 6,239,964 |
| July 1, 2020 | 16 | 6,239,964 | 414,703 | 638,455 | 6,016,212 |
| July 1, 2021 | 15 | 6,016,212 | 399,041 | 638,455 | 5,776,798 |
| July 1, 2022 | 14 | 5,776,798 | 382,282 | 638,455 | 5,520,625 |
| July 1, 2023 | 13 | 5,520,625 | 364,350 | 638,455 | 5,246,520 |
| July 1, 2024 | 12 | 5,246,520 | 345,162 | 638,455 | 4,953,227 |
| July 1, 2025 | 11 | 4,953,227 | 324,632 | 638,455 | 4,639,404 |
| July 1, 2026 | 10 | 4,639,404 | 302,664 | 638,455 | 4,303,613 |
| July 1, 2027 | 9 | 4,303,613 | 279,159 | 638,455 | 3,944,317 |
| July 1, 2028 | 8 | 3,944,317 | 254,008 | 638,455 | 3,559,870 |
| July 1, 2029 | 7 | 3,559,870 | 227,097 | 638,455 | 3,148,512 |
| July 1, 2030 | 6 | 3,148,512 | 198,302 | 638,455 | 2,708,359 |
| July 1, 2031 | 5 | 2,708,359 | 167,491 | 638,455 | 2,237,395 |
| July 1, 2032 | 4 | 2,237,395 | 134,524 | 638,455 | 1,733,464 |
| July 1, 2033 | 3 | 1,733,464 | 99,248 | 638,455 | 1,194,257 |
| July 1, 2034 | 2 | 1,194,257 | 61,504 | 638,455 | 617,306 |
| July 1, 2035 | 1 | 617,306 | 21,117 | 638,455 | (32) |

Unfunded liability at June 30, 2016 projected to July 1, 2017 with 7.00% interest. Payment based on 7.00% interest over 19 years commencing with the Fiscal Year beginning July 1, 2017.

# APPENDIX B

# Glossary

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

**Actuarial Accrued Liability.** The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as "accrued liability" or "past service liability."

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

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

**Actuarial Equivalent.** A single amount or series of amounts of equal value to another single amount or series of amounts, computed on the basis of the rate(s) of interest and mortality tables used by the plan.

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

**Amortization.** Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

**Actuarially Computed Employer Contribution.** The Actuarially Computed Employer Contribution is the normal cost plus the portion of the unfunded actuarial accrued liability to be amortized in the current period. The Actuarially Computed Employer Contribution is an amount that is actuarially determined in accordance with the requirements so that, if paid on an ongoing basis, it would be expected to provide sufficient resources to fund both the normal cost for each year and the amortized unfunded actuarial accrued liability.

**Governmental Accounting Standards Board (GASB).** GASB is the private, nonpartisan, nonprofit organization that works to create and improve the rules U.S. state and local governments follow when accounting for their finances and reporting them to the public.

**Implicit Rate Subsidy.** It is common practice for employers to allow retirees to continue in the employer's group health insurance plan (which also covers active employees), often charging the retiree some portion of the premium charged for active employees. Under the theory that retirees have higher utilization of services, the difference between the true cost of providing retiree coverage and what the retiree is being charged is known as the implicit rate subsidy.

# Glossary (Concluded)

**Medical Trend Rate (Health Care Inflation).** The increase in the cost of providing health care benefits over time. Trend includes such elements as pure price inflation, changes in utilization, advances in medical technology, and cost shifting.

**Normal Cost.** The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as "current service cost." Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

**Other Postemployment Benefits (OPEB).** OPEB are postemployment benefits other than pensions. OPEB generally takes the form of health insurance and dental, vision, prescription drugs or other healthcare benefits.

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

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

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

GRS Retirement Consulting
800.521.0498 | P: 248.799.9000 | F: 248.799.9020 | www.grsconsulting.com

July 18, 2017

Ms. Marilyn Stamper
Finance Manager
City of Wixom
49045 Pontiac Trail
Wixom, MI 48393

**Re: City of Wixom Retiree Health Care Plan**

Dear Ms. Stamper:

Enclosed are 10 copies of our June 30, 2016 report of the actuarial valuation of the City of Wixom Retiree Health Care Plan.

Respectfully submitted,

Shana M Neeson

Shana M. Neeson, ASA, MAAA

SMN:mrb
Enclosures

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

# Appendix D: GRS Supplemental Retiree Health Care Amortization Schedules

GRS Retirement Consulting
800.521.0498 | P: 248.799.9000 | F: 248.799.9020 | www.grsconsulting.com

April 4, 2018

Ms. Marilyn Stamper
Finance Manager
City of Wixom
49045 Pontiac Trail
Wixom, MI 48393

**Re: City of Wixom Retiree Health Care Plan**

Dear Ms. Stamper:

As requested via email, enclosed are the following exhibits:

- Amortization schedules for Unfunded Actuarial Accrued Liability at various interest rates and amortization periods.

Please call if you have any questions regarding the calculations enclosed.

Sincerely,

Shana M Neeson

Shana M. Neeson, ASA, FCA, MAAA

SMN:sc
Enclosure

cc: Laura Frankowiak, GRS

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

# City of Wixom Retiree Health Care Plan
# as of June 30, 2016

| | |
|---|---|
| **Requested By:** | Ms. Marilyn Stamper, Finance Manager<br>City of Wixom |
| **Date:** | April 4, 2018 |
| **Submitted By:** | Shana M. Neeson, ASA, FCA, MAAA and Mark Buis, FSA, EA, FCA, MAAA<br>Gabriel, Roeder, Smith & Company |

The City of Wixom requested six amortization payoff schedules for the City of Wixom Retiree Health Care Plan. The schedules use the same actuarial methods and assumptions from the June 30, 2016 City of Wixom Retiree Health Care Valuation report dated July 18, 2017, unless otherwise noted.

The valuation was based upon data furnished by the City of Wixom for the June 30, 2016 actuarial valuation.

The sample payoff schedules provided in this report include schedules with:

- An assumed 7% investment rate of return and a closed 27-year amortization period;
- An assumed 7% investment rate of return and a closed 19-year amortization period;
- An assumed 6% investment rate of return and a closed 27-year amortization period;
- An assumed 6% investment rate of return and a closed 19-year amortization period;
- An assumed 5% investment rate of return and a closed 27-year amortization period; and
- An assumed 5% investment rate of return and a closed 19-year amortization period.

Shana M. Neeson and Mark Buis are independent of the plan sponsor and are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

# Amortization Payoff Schedule
## 27-Year Basis with a 7% Assumed Rate of Investment Return

| Fiscal Year Beginning (BOY) | Fiscal Year Ending (EOY) | Period | Unfunded Liability (BOY) | Interest | Payment($) | Unfunded Liability (EOY) |
|---|---|---|---|---|---|---|
| July 1, 2016 | June 30, 2017 | | $6,380,522 | $446,637 | | $6,827,159 |
| July 1, 2017 | June 30, 2018 | 27 | 6,827,159 | 458,850 | $550,511 | 6,735,498 |
| July 1, 2018 | June 30, 2019 | 26 | 6,735,498 | 452,434 | 550,511 | 6,637,421 |
| July 1, 2019 | June 30, 2020 | 25 | 6,637,421 | 445,569 | 550,511 | 6,532,479 |
| July 1, 2020 | June 30, 2021 | 24 | 6,532,479 | 438,223 | 550,511 | 6,420,191 |
| July 1, 2021 | June 30, 2022 | 23 | 6,420,191 | 430,363 | 550,511 | 6,300,043 |
| July 1, 2022 | June 30, 2023 | 22 | 6,300,043 | 421,952 | 550,511 | 6,171,484 |
| July 1, 2023 | June 30, 2024 | 21 | 6,171,484 | 412,953 | 550,511 | 6,033,926 |
| July 1, 2024 | June 30, 2025 | 20 | 6,033,926 | 403,324 | 550,511 | 5,886,739 |
| July 1, 2025 | June 30, 2026 | 19 | 5,886,739 | 393,021 | 550,511 | 5,729,249 |
| July 1, 2026 | June 30, 2027 | 18 | 5,729,249 | 381,997 | 550,511 | 5,560,735 |
| July 1, 2027 | June 30, 2028 | 17 | 5,560,735 | 370,201 | 550,511 | 5,380,425 |
| July 1, 2028 | June 30, 2029 | 16 | 5,380,425 | 357,579 | 550,511 | 5,187,493 |
| July 1, 2029 | June 30, 2030 | 15 | 5,187,493 | 344,074 | 550,511 | 4,981,056 |
| July 1, 2030 | June 30, 2031 | 14 | 4,981,056 | 329,623 | 550,511 | 4,760,168 |
| July 1, 2031 | June 30, 2032 | 13 | 4,760,168 | 314,161 | 550,511 | 4,523,818 |
| July 1, 2032 | June 30, 2033 | 12 | 4,523,818 | 297,617 | 550,511 | 4,270,924 |
| July 1, 2033 | June 30, 2034 | 11 | 4,270,924 | 279,914 | 550,511 | 4,000,327 |
| July 1, 2034 | June 30, 2035 | 10 | 4,000,327 | 260,972 | 550,511 | 3,710,788 |
| July 1, 2035 | June 30, 2036 | 9 | 3,710,788 | 240,704 | 550,511 | 3,400,981 |
| July 1, 2036 | June 30, 2037 | 8 | 3,400,981 | 219,018 | 550,511 | 3,069,488 |
| July 1, 2037 | June 30, 2038 | 7 | 3,069,488 | 195,813 | 550,511 | 2,714,790 |
| July 1, 2038 | June 30, 2039 | 6 | 2,714,790 | 170,985 | 550,511 | 2,335,264 |
| July 1, 2039 | June 30, 2040 | 5 | 2,335,264 | 144,418 | 550,511 | 1,929,171 |
| July 1, 2040 | June 30, 2041 | 4 | 1,929,171 | 115,991 | 550,511 | 1,494,651 |
| July 1, 2041 | June 30, 2042 | 3 | 1,494,651 | 85,575 | 550,511 | 1,029,715 |
| July 1, 2042 | June 30, 2043 | 2 | 1,029,715 | 53,029 | 550,511 | 532,233 |
| July 1, 2043 | June 30, 2044 | 1 | 532,233 | 18,206 | 550,511 | (72) |

Unfunded liability at June 30, 2016 projected to July 1, 2017 with 7.00% interest. Payment based on 7.00% interest over 27 years commencing with the Fiscal Year beginning July 1, 2017.

# Amortization Payoff Schedule
# 19-Year Basis with a 7% Assumed Rate of Investment Return

| Fiscal Year Beginning (BOY) | Fiscal Year Ending (EOY) | Period | Unfunded Liability (BOY) | Interest | Payment($) | Unfunded Liability (EOY) |
|---|---|---|---|---|---|---|
| July 1, 2016 | June 30, 2017 | | $6,380,522 | $446,637 | | $6,827,159 |
| July 1, 2017 | June 30, 2018 | 19 | 6,827,159 | 455,807 | $638,455 | 6,644,511 |
| July 1, 2018 | June 30, 2019 | 18 | 6,644,511 | 443,022 | 638,455 | 6,449,078 |
| July 1, 2019 | June 30, 2020 | 17 | 6,449,078 | 429,341 | 638,455 | 6,239,964 |
| July 1, 2020 | June 30, 2021 | 16 | 6,239,964 | 414,703 | 638,455 | 6,016,212 |
| July 1, 2021 | June 30, 2022 | 15 | 6,016,212 | 399,041 | 638,455 | 5,776,798 |
| July 1, 2022 | June 30, 2023 | 14 | 5,776,798 | 382,282 | 638,455 | 5,520,625 |
| July 1, 2023 | June 30, 2024 | 13 | 5,520,625 | 364,350 | 638,455 | 5,246,520 |
| July 1, 2024 | June 30, 2025 | 12 | 5,246,520 | 345,162 | 638,455 | 4,953,227 |
| July 1, 2025 | June 30, 2026 | 11 | 4,953,227 | 324,632 | 638,455 | 4,639,404 |
| July 1, 2026 | June 30, 2027 | 10 | 4,639,404 | 302,664 | 638,455 | 4,303,613 |
| July 1, 2027 | June 30, 2028 | 9 | 4,303,613 | 279,159 | 638,455 | 3,944,317 |
| July 1, 2028 | June 30, 2029 | 8 | 3,944,317 | 254,008 | 638,455 | 3,559,870 |
| July 1, 2029 | June 30, 2030 | 7 | 3,559,870 | 227,097 | 638,455 | 3,148,512 |
| July 1, 2030 | June 30, 2031 | 6 | 3,148,512 | 198,302 | 638,455 | 2,708,359 |
| July 1, 2031 | June 30, 2032 | 5 | 2,708,359 | 167,491 | 638,455 | 2,237,395 |
| July 1, 2032 | June 30, 2033 | 4 | 2,237,395 | 134,524 | 638,455 | 1,733,464 |
| July 1, 2033 | June 30, 2034 | 3 | 1,733,464 | 99,248 | 638,455 | 1,194,257 |
| July 1, 2034 | June 30, 2035 | 2 | 1,194,257 | 61,504 | 638,455 | 617,306 |
| July 1, 2035 | June 30, 2036 | 1 | 617,306 | 21,117 | 638,455 | (32) |

Unfunded liability at June 30, 2016 projected to July 1, 2017 with 7.00% interest. Payment based on 7.00% interest over 19 years commencing with the Fiscal Year beginning July 1, 2017.

# Amortization Payoff Schedule
## 27-Year Basis with a 6% Assumed Rate of Investment Return

| Fiscal Year Beginning (BOY) | Fiscal Year Ending (EOY) | Period | Unfunded Liability (BOY) | Interest | Payment($) | Unfunded Liability (EOY) |
|---|---|---|---|---|---|---|
| July 1, 2016 | June 30, 2017 | | $8,271,329 | $496,280 | | $8,767,609 |
| July 1, 2017 | June 30, 2018 | 27 | 8,767,609 | 506,908 | $644,534 | 8,629,983 |
| July 1, 2018 | June 30, 2019 | 26 | 8,629,983 | 498,651 | 644,534 | 8,484,100 |
| July 1, 2019 | June 30, 2020 | 25 | 8,484,100 | 489,898 | 644,534 | 8,329,464 |
| July 1, 2020 | June 30, 2021 | 24 | 8,329,464 | 480,620 | 644,534 | 8,165,550 |
| July 1, 2021 | June 30, 2022 | 23 | 8,165,550 | 470,785 | 644,534 | 7,991,801 |
| July 1, 2022 | June 30, 2023 | 22 | 7,991,801 | 460,360 | 644,534 | 7,807,627 |
| July 1, 2023 | June 30, 2024 | 21 | 7,807,627 | 449,309 | 644,534 | 7,612,402 |
| July 1, 2024 | June 30, 2025 | 20 | 7,612,402 | 437,596 | 644,534 | 7,405,464 |
| July 1, 2025 | June 30, 2026 | 19 | 7,405,464 | 425,180 | 644,534 | 7,186,110 |
| July 1, 2026 | June 30, 2027 | 18 | 7,186,110 | 412,018 | 644,534 | 6,953,594 |
| July 1, 2027 | June 30, 2028 | 17 | 6,953,594 | 398,067 | 644,534 | 6,707,127 |
| July 1, 2028 | June 30, 2029 | 16 | 6,707,127 | 383,279 | 644,534 | 6,445,872 |
| July 1, 2029 | June 30, 2030 | 15 | 6,445,872 | 367,604 | 644,534 | 6,168,942 |
| July 1, 2030 | June 30, 2031 | 14 | 6,168,942 | 350,988 | 644,534 | 5,875,396 |
| July 1, 2031 | June 30, 2032 | 13 | 5,875,396 | 333,375 | 644,534 | 5,564,237 |
| July 1, 2032 | June 30, 2033 | 12 | 5,564,237 | 314,706 | 644,534 | 5,234,409 |
| July 1, 2033 | June 30, 2034 | 11 | 5,234,409 | 294,916 | 644,534 | 4,884,791 |
| July 1, 2034 | June 30, 2035 | 10 | 4,884,791 | 273,939 | 644,534 | 4,514,196 |
| July 1, 2035 | June 30, 2036 | 9 | 4,514,196 | 251,703 | 644,534 | 4,121,365 |
| July 1, 2036 | June 30, 2037 | 8 | 4,121,365 | 228,134 | 644,534 | 3,704,965 |
| July 1, 2037 | June 30, 2038 | 7 | 3,704,965 | 203,150 | 644,534 | 3,263,581 |
| July 1, 2038 | June 30, 2039 | 6 | 3,263,581 | 176,667 | 644,534 | 2,795,714 |
| July 1, 2039 | June 30, 2040 | 5 | 2,795,714 | 148,595 | 644,534 | 2,299,775 |
| July 1, 2040 | June 30, 2041 | 4 | 2,299,775 | 118,838 | 644,534 | 1,774,079 |
| July 1, 2041 | June 30, 2042 | 3 | 1,774,079 | 87,296 | 644,534 | 1,216,841 |
| July 1, 2042 | June 30, 2043 | 2 | 1,216,841 | 53,862 | 644,534 | 626,169 |
| July 1, 2043 | June 30, 2044 | 1 | 626,169 | 18,422 | 644,534 | 57 |

Unfunded liability at June 30, 2016 projected to July 1, 2017 with 6.00% interest. Payment based on 6.00% interest over 27 years commencing with the Fiscal Year beginning July 1, 2017.

# Amortization Payoff Schedule
## 19-Year Basis with a 6% Assumed Rate of Investment Return

| Fiscal Year Beginning (BOY) | Fiscal Year Ending (EOY) | Period | Unfunded Liability (BOY) | Interest | Payment($) | Unfunded Liability (EOY) |
|---|---|---|---|---|---|---|
| July 1, 2016 | June 30, 2017 | | $8,271,329 | $496,280 | | $8,767,609 |
| July 1, 2017 | June 30, 2018 | 19 | 8,767,609 | 503,386 | $763,090 | 8,507,905 |
| July 1, 2018 | June 30, 2019 | 18 | 8,507,905 | 487,804 | 763,090 | 8,232,619 |
| July 1, 2019 | June 30, 2020 | 17 | 8,232,619 | 471,287 | 763,090 | 7,940,816 |
| July 1, 2020 | June 30, 2021 | 16 | 7,940,816 | 453,779 | 763,090 | 7,631,505 |
| July 1, 2021 | June 30, 2022 | 15 | 7,631,505 | 435,220 | 763,090 | 7,303,635 |
| July 1, 2022 | June 30, 2023 | 14 | 7,303,635 | 415,548 | 763,090 | 6,956,093 |
| July 1, 2023 | June 30, 2024 | 13 | 6,956,093 | 394,695 | 763,090 | 6,587,698 |
| July 1, 2024 | June 30, 2025 | 12 | 6,587,698 | 372,591 | 763,090 | 6,197,199 |
| July 1, 2025 | June 30, 2026 | 11 | 6,197,199 | 349,162 | 763,090 | 5,783,271 |
| July 1, 2026 | June 30, 2027 | 10 | 5,783,271 | 324,326 | 763,090 | 5,344,507 |
| July 1, 2027 | June 30, 2028 | 9 | 5,344,507 | 298,000 | 763,090 | 4,879,417 |
| July 1, 2028 | June 30, 2029 | 8 | 4,879,417 | 270,095 | 763,090 | 4,386,422 |
| July 1, 2029 | June 30, 2030 | 7 | 4,386,422 | 240,515 | 763,090 | 3,863,847 |
| July 1, 2030 | June 30, 2031 | 6 | 3,863,847 | 209,160 | 763,090 | 3,309,917 |
| July 1, 2031 | June 30, 2032 | 5 | 3,309,917 | 175,925 | 763,090 | 2,722,752 |
| July 1, 2032 | June 30, 2033 | 4 | 2,722,752 | 140,695 | 763,090 | 2,100,357 |
| July 1, 2033 | June 30, 2034 | 3 | 2,100,357 | 103,351 | 763,090 | 1,440,618 |
| July 1, 2034 | June 30, 2035 | 2 | 1,440,618 | 63,767 | 763,090 | 741,295 |
| July 1, 2035 | June 30, 2036 | 1 | 741,295 | 21,807 | 763,090 | 12 |

Unfunded liability at June 30, 2016 projected to July 1, 2017 with 6.00% interest. Payment based on 6.00% interest over 19 years commencing with the Fiscal Year beginning July 1, 2017.

# Amortization Payoff Schedule
## 27-Year Basis with a 5% Assumed Rate of Investment Return

| Fiscal Year Beginning (BOY) | Fiscal Year Ending (EOY) | Period | Unfunded Liability (BOY) | Interest | Payment($) | Unfunded Liability (EOY) |
|---|---|---|---|---|---|---|
| July 1, 2016 | June 30, 2017 | | $10,599,376 | $529,969 | | $11,129,345 |
| July 1, 2017 | June 30, 2018 | 27 | 11,129,345 | 538,077 | $741,653 | 10,925,769 |
| July 1, 2018 | June 30, 2019 | 26 | 10,925,769 | 527,898 | 741,653 | 10,712,014 |
| July 1, 2019 | June 30, 2020 | 25 | 10,712,014 | 517,210 | 741,653 | 10,487,571 |
| July 1, 2020 | June 30, 2021 | 24 | 10,487,571 | 505,988 | 741,653 | 10,251,906 |
| July 1, 2021 | June 30, 2022 | 23 | 10,251,906 | 494,205 | 741,653 | 10,004,458 |
| July 1, 2022 | June 30, 2023 | 22 | 10,004,458 | 481,832 | 741,653 | 9,744,637 |
| July 1, 2023 | June 30, 2024 | 21 | 9,744,637 | 468,841 | 741,653 | 9,471,825 |
| July 1, 2024 | June 30, 2025 | 20 | 9,471,825 | 455,201 | 741,653 | 9,185,373 |
| July 1, 2025 | June 30, 2026 | 19 | 9,185,373 | 440,878 | 741,653 | 8,884,598 |
| July 1, 2026 | June 30, 2027 | 18 | 8,884,598 | 425,839 | 741,653 | 8,568,784 |
| July 1, 2027 | June 30, 2028 | 17 | 8,568,784 | 410,049 | 741,653 | 8,237,180 |
| July 1, 2028 | June 30, 2029 | 16 | 8,237,180 | 393,468 | 741,653 | 7,888,995 |
| July 1, 2029 | June 30, 2030 | 15 | 7,888,995 | 376,059 | 741,653 | 7,523,401 |
| July 1, 2030 | June 30, 2031 | 14 | 7,523,401 | 357,779 | 741,653 | 7,139,527 |
| July 1, 2031 | June 30, 2032 | 13 | 7,139,527 | 338,586 | 741,653 | 6,736,460 |
| July 1, 2032 | June 30, 2033 | 12 | 6,736,460 | 318,432 | 741,653 | 6,313,239 |
| July 1, 2033 | June 30, 2034 | 11 | 6,313,239 | 297,271 | 741,653 | 5,868,857 |
| July 1, 2034 | June 30, 2035 | 10 | 5,868,857 | 275,052 | 741,653 | 5,402,256 |
| July 1, 2035 | June 30, 2036 | 9 | 5,402,256 | 251,722 | 741,653 | 4,912,325 |
| July 1, 2036 | June 30, 2037 | 8 | 4,912,325 | 227,226 | 741,653 | 4,397,898 |
| July 1, 2037 | June 30, 2038 | 7 | 4,397,898 | 201,504 | 741,653 | 3,857,749 |
| July 1, 2038 | June 30, 2039 | 6 | 3,857,749 | 174,497 | 741,653 | 3,290,593 |
| July 1, 2039 | June 30, 2040 | 5 | 3,290,593 | 146,139 | 741,653 | 2,695,079 |
| July 1, 2040 | June 30, 2041 | 4 | 2,695,079 | 116,363 | 741,653 | 2,069,789 |
| July 1, 2041 | June 30, 2042 | 3 | 2,069,789 | 85,099 | 741,653 | 1,413,235 |
| July 1, 2042 | June 30, 2043 | 2 | 1,413,235 | 52,271 | 741,653 | 723,853 |
| July 1, 2043 | June 30, 2044 | 1 | 723,853 | 17,802 | 741,653 | 2 |

Unfunded liability at June 30, 2016 projected to July 1, 2017 with 5.00% interest. Payment based on 5.00% interest over 27 years commencing with the Fiscal Year beginning July 1, 2017.

# Amortization Payoff Schedule
# 19-Year Basis with a 5% Assumed Rate of Investment Return

| Fiscal Year Beginning (BOY) | Fiscal Year Ending (EOY) | Period | Unfunded Liability (BOY) | Interest | Payment($) | Unfunded Liability (EOY) |
|---|---|---|---|---|---|---|
| July 1, 2016 | June 30, 2017 | | $10,599,376 | $529,969 | | $11,129,345 |
| July 1, 2017 | June 30, 2018 | 19 | 11,129,345 | 534,185 | $898,616 | 10,764,914 |
| July 1, 2018 | June 30, 2019 | 18 | 10,764,914 | 515,963 | 898,616 | 10,382,261 |
| July 1, 2019 | June 30, 2020 | 17 | 10,382,261 | 496,830 | 898,616 | 9,980,475 |
| July 1, 2020 | June 30, 2021 | 16 | 9,980,475 | 476,741 | 898,616 | 9,558,600 |
| July 1, 2021 | June 30, 2022 | 15 | 9,558,600 | 455,647 | 898,616 | 9,115,631 |
| July 1, 2022 | June 30, 2023 | 14 | 9,115,631 | 433,499 | 898,616 | 8,650,514 |
| July 1, 2023 | June 30, 2024 | 13 | 8,650,514 | 410,243 | 898,616 | 8,162,141 |
| July 1, 2024 | June 30, 2025 | 12 | 8,162,141 | 385,824 | 898,616 | 7,649,349 |
| July 1, 2025 | June 30, 2026 | 11 | 7,649,349 | 360,185 | 898,616 | 7,110,918 |
| July 1, 2026 | June 30, 2027 | 10 | 7,110,918 | 333,263 | 898,616 | 6,545,565 |
| July 1, 2027 | June 30, 2028 | 9 | 6,545,565 | 304,996 | 898,616 | 5,951,945 |
| July 1, 2028 | June 30, 2029 | 8 | 5,951,945 | 275,315 | 898,616 | 5,328,644 |
| July 1, 2029 | June 30, 2030 | 7 | 5,328,644 | 244,149 | 898,616 | 4,674,177 |
| July 1, 2030 | June 30, 2031 | 6 | 4,674,177 | 211,426 | 898,616 | 3,986,987 |
| July 1, 2031 | June 30, 2032 | 5 | 3,986,987 | 177,067 | 898,616 | 3,265,438 |
| July 1, 2032 | June 30, 2033 | 4 | 3,265,438 | 140,989 | 898,616 | 2,507,811 |
| July 1, 2033 | June 30, 2034 | 3 | 2,507,811 | 103,108 | 898,616 | 1,712,303 |
| July 1, 2034 | June 30, 2035 | 2 | 1,712,303 | 63,332 | 898,616 | 877,019 |
| July 1, 2035 | June 30, 2036 | 1 | 877,019 | 21,568 | 898,616 | (29) |

Unfunded liability at June 30, 2016 projected to July 1, 2017 with 5.00% interest. Payment based on 5.00% interest over 19 years commencing with the Fiscal Year beginning July 1, 2017.

# Comments and Actuarial Disclosures

The findings in this report are based on data and other information through June 30, 2016. 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.

Except where otherwise indicated, the actuarial assumptions, methods, and plan provisions were consistent with those used in the June 30, 2016 actuarial valuation of the City of Wixom Retiree Health Care Plan dated July 18, 2017.

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 Wixom as of the valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices, with the Actuarial Standards of Practice issued by the Actuarial Standards Board, and with applicable statutes.

No statement in this report is intended to be interpreted as a recommendation in favor of the changes, or in opposition to them. This report should not be relied on for any purpose other than the purpose described in the primary communication.

Please note that we are not attorneys or investment experts and no statement in this report should be construed to provide tax advice, legal advice or investment advice.

# Appendix E: Pension and OPEB Obligation Bond Financial Analysis

## SOURCES AND USES OF FUNDS

City of Wixom
Pension Bonds - Assuming Market Value of Assets

| | |
|---|---|
| Sources: | |
| Bond Proceeds: | |
| Par Amount | 17,105,000.00 |
| | 17,105,000.00 |
| Uses: | |
| Project Fund Deposits: | |
| UAAL Funding | 16,435,929.00 |
| Buffer | 500,000.00 |
| | 16,935,929.00 |
| Delivery Date Expenses: | |
| Cost of Issuance | 100,000.00 |
| Underwriter's Discount | 68,420.00 |
| | 168,420.00 |
| Other Uses of Funds: | |
| Additional Proceeds | 651.00 |
| | 17,105,000.00 |

## BOND PRICING

City of Wixom
Pension Bonds - Assuming Market Value of Assets

| Bond Component | Maturity Date | Amount | Rate | Yield | Price |
|---|---|---|---|---|---|
| Bond Component: | | | | | |
| | 05/01/2019 | 265,000 | 2.800% | 2.800% | 100.000 |
| | 05/01/2020 | 375,000 | 3.170% | 3.170% | 100.000 |
| | 05/01/2021 | 385,000 | 3.380% | 3.380% | 100.000 |
| | 05/01/2022 | 500,000 | 3.570% | 3.570% | 100.000 |
| | 05/01/2023 | 520,000 | 3.770% | 3.770% | 100.000 |
| | 05/01/2024 | 645,000 | 3.820% | 3.820% | 100.000 |
| | 05/01/2025 | 675,000 | 3.970% | 3.970% | 100.000 |
| | 05/01/2026 | 800,000 | 4.020% | 4.020% | 100.000 |
| | 05/01/2027 | 935,000 | 4.120% | 4.120% | 100.000 |
| | 05/01/2028 | 975,000 | 4.220% | 4.220% | 100.000 |
| | 05/01/2029 | 1,120,000 | 4.370% | 4.370% | 100.000 |
| | 05/01/2030 | 1,270,000 | 4.470% | 4.470% | 100.000 |
| | 05/01/2031 | 1,330,000 | 4.570% | 4.570% | 100.000 |
| | 05/01/2032 | 1,500,000 | 4.620% | 4.620% | 100.000 |
| | 05/01/2033 | 1,055,000 | 4.670% | 4.670% | 100.000 |
| | 05/01/2034 | 1,210,000 | 4.510% | 4.510% | 100.000 |
| | 05/01/2035 | 1,260,000 | 4.530% | 4.530% | 100.000 |
| | 05/01/2036 | 1,115,000 | 4.550% | 4.550% | 100.000 |
| | 05/01/2037 | 1,170,000 | 4.570% | 4.570% | 100.000 |
| | | 17,105,000 | | | |

| | | |
|---|---|---|
| Dated Date | 08/01/2018 | |
| Delivery Date | 08/01/2018 | |
| First Coupon | 11/01/2018 | |
| Par Amount | 17,105,000.00 | |
| Original Issue Discount | | |
| Production | 17,105,000.00 | 100.000000% |
| Underwriter's Discount | -68,420.00 | -0.400000% |
| Purchase Price | 17,036,580.00 | 99.600000% |
| Accrued Interest | | |
| Net Proceeds | 17,036,580.00 | |

## BOND SUMMARY STATISTICS

City of Wixom
Pension Bonds - Assuming Market Value of Assets

| | |
|---|---|
| Dated Date | 08/01/2018 |
| Delivery Date | 08/01/2018 |
| Last Maturity | 05/01/2037 |
| Arbitrage Yield | 4.423579% |
| True Interest Cost (TIC) | 4.469204% |
| Net Interest Cost (NIC) | 4.474346% |
| All-In TIC | 4.536348% |
| Average Coupon | 4.440206% |
| Average Life (years) | 11.716 |
| Duration of Issue (years) | 8.974 |
| Par Amount | 17,105,000.00 |
| Bond Proceeds | 17,105,000.00 |
| Total Interest | 8,898,561.25 |
| Net Interest | 8,966,981.25 |
| Total Debt Service | 26,003,561.25 |
| Maximum Annual Debt Service | 1,834,419.00 |
| Average Annual Debt Service | 1,386,856.60 |
| Underwriter's Fees (per $1000) | |
| Average Takedown | |
| Other Fee | 4.000000 |
| Total Underwriter's Discount | 4.000000 |
| Bid Price | 99.600000 |

| Bond Component | Par Value | Price | Average Coupon | Average Life |
|---|---|---|---|---|
| Bond Component | 17,105,000.00 | 100.000 | 4.440% | 11.716 |
| | 17,105,000.00 | | | 11.716 |

| | TIC | All-In TIC | Arbitrage Yield |
|---|---|---|---|
| Par Value | 17,105,000.00 | 17,105,000.00 | 17,105,000.00 |
| + Accrued Interest | | | |
| + Premium (Discount) | | | |
| - Underwriter's Discount | -68,420.00 | -68,420.00 | |
| - Cost of Issuance Expense | | -100,000.00 | |
| - Other Amounts | | | |
| Target Value | 17,036,580.00 | 16,936,580.00 | 17,105,000.00 |
| Target Date | 08/01/2018 | 08/01/2018 | 08/01/2018 |
| Yield | 4.469204% | 4.536348% | 4.423579% |

## BOND DEBT SERVICE

City of Wixom
Pension Bonds - Assuming Market Value of Assets

| Period Ending | Principal | Coupon | Interest | Debt Service | Bond Balance | Total Bond Value |
|---|---|---|---|---|---|---|
| 05/01/2019 | 265,000 | 2.800% | 550,463.25 | 815,463.25 | 16,840,000 | 16,840,000 |
| 05/01/2020 | 375,000 | 3.170% | 726,531.00 | 1,101,531.00 | 16,465,000 | 16,465,000 |
| 05/01/2021 | 385,000 | 3.380% | 714,643.50 | 1,099,643.50 | 16,080,000 | 16,080,000 |
| 05/01/2022 | 500,000 | 3.570% | 701,630.50 | 1,201,630.50 | 15,580,000 | 15,580,000 |
| 05/01/2023 | 520,000 | 3.770% | 683,780.50 | 1,203,780.50 | 15,060,000 | 15,060,000 |
| 05/01/2024 | 645,000 | 3.820% | 664,176.50 | 1,309,176.50 | 14,415,000 | 14,415,000 |
| 05/01/2025 | 675,000 | 3.970% | 639,537.50 | 1,314,537.50 | 13,740,000 | 13,740,000 |
| 05/01/2026 | 800,000 | 4.020% | 612,740.00 | 1,412,740.00 | 12,940,000 | 12,940,000 |
| 05/01/2027 | 935,000 | 4.120% | 580,580.00 | 1,515,580.00 | 12,005,000 | 12,005,000 |
| 05/01/2028 | 975,000 | 4.220% | 542,058.00 | 1,517,058.00 | 11,030,000 | 11,030,000 |
| 05/01/2029 | 1,120,000 | 4.370% | 500,913.00 | 1,620,913.00 | 9,910,000 | 9,910,000 |
| 05/01/2030 | 1,270,000 | 4.470% | 451,969.00 | 1,721,969.00 | 8,640,000 | 8,640,000 |
| 05/01/2031 | 1,330,000 | 4.570% | 395,200.00 | 1,725,200.00 | 7,310,000 | 7,310,000 |
| 05/01/2032 | 1,500,000 | 4.620% | 334,419.00 | 1,834,419.00 | 5,810,000 | 5,810,000 |
| 05/01/2033 | 1,055,000 | 4.670% | 265,119.00 | 1,320,119.00 | 4,755,000 | 4,755,000 |
| 05/01/2034 | 1,210,000 | 4.510% | 215,850.50 | 1,425,850.50 | 3,545,000 | 3,545,000 |
| 05/01/2035 | 1,260,000 | 4.530% | 161,279.50 | 1,421,279.50 | 2,285,000 | 2,285,000 |
| 05/01/2036 | 1,115,000 | 4.550% | 104,201.50 | 1,219,201.50 | 1,170,000 | 1,170,000 |
| 05/01/2037 | 1,170,000 | 4.570% | 53,469.00 | 1,223,469.00 | | |
| | 17,105,000 | | 8,898,561.25 | 26,003,561.25 | | |

## SOURCES AND USES OF FUNDS

City of Wixom
Pension Bonds - Assuming Actuarial Value of Assets

| | |
|---|---|
| **Sources:** | |
| Bond Proceeds: | |
| Par Amount | 15,690,000.00 |
| | 15,690,000.00 |
| **Uses:** | |
| Project Fund Deposits: | |
| UAAL Funding | 15,023,302.00 |
| Buffer | 500,000.00 |
| | 15,523,302.00 |
| Delivery Date Expenses: | |
| Cost of Issuance | 100,000.00 |
| Underwriter's Discount | 62,760.00 |
| | 162,760.00 |
| Other Uses of Funds: | |
| Additional Proceeds | 3,938.00 |
| | 15,690,000.00 |

BOND PRICING

City of Wixom
Pension Bonds - Assuming Actuarial Value of Assets

| Bond Component | Maturity Date | Amount | Rate | Yield | Price |
|---|---|---|---|---|---|
| Bond Component: | | | | | |
| | 05/01/2019 | 255,000 | 2.800% | 2.800% | 100.000 |
| | 05/01/2020 | 265,000 | 3.170% | 3.170% | 100.000 |
| | 05/01/2021 | 375,000 | 3.380% | 3.380% | 100.000 |
| | 05/01/2022 | 390,000 | 3.570% | 3.570% | 100.000 |
| | 05/01/2023 | 510,000 | 3.770% | 3.770% | 100.000 |
| | 05/01/2024 | 525,000 | 3.820% | 3.820% | 100.000 |
| | 05/01/2025 | 650,000 | 3.970% | 3.970% | 100.000 |
| | 05/01/2026 | 775,000 | 4.020% | 4.020% | 100.000 |
| | 05/01/2027 | 810,000 | 4.120% | 4.120% | 100.000 |
| | 05/01/2028 | 945,000 | 4.220% | 4.220% | 100.000 |
| | 05/01/2029 | 990,000 | 4.370% | 4.370% | 100.000 |
| | 05/01/2030 | 1,135,000 | 4.470% | 4.470% | 100.000 |
| | 05/01/2031 | 1,290,000 | 4.570% | 4.570% | 100.000 |
| | 05/01/2032 | 1,350,000 | 4.620% | 4.620% | 100.000 |
| | 05/01/2033 | 1,005,000 | 4.670% | 4.670% | 100.000 |
| | 05/01/2034 | 1,055,000 | 4.510% | 4.510% | 100.000 |
| | 05/01/2035 | 1,205,000 | 4.530% | 4.530% | 100.000 |
| | 05/01/2036 | 1,055,000 | 4.550% | 4.550% | 100.000 |
| | 05/01/2037 | 1,105,000 | 4.570% | 4.570% | 100.000 |
| | | 15,690,000 | | | |

| | | |
|---|---|---|
| Dated Date | 08/01/2018 | |
| Delivery Date | 08/01/2018 | |
| First Coupon | 11/01/2018 | |
| Par Amount | 15,690,000.00 | |
| Original Issue Discount | | |
| Production | 15,690,000.00 | 100.000000% |
| Underwriter's Discount | -62,760.00 | -0.400000% |
| Purchase Price | 15,627,240.00 | 99.600000% |
| Accrued Interest | | |
| Net Proceeds | 15,627,240.00 | |

## BOND SUMMARY STATISTICS

City of Wixom
Pension Bonds - Assuming Actuarial Value of Assets

| | |
|---|---|
| Dated Date | 08/01/2018 |
| Delivery Date | 08/01/2018 |
| Last Maturity | 05/01/2037 |
| | |
| Arbitrage Yield | 4.427213% |
| True Interest Cost (TIC) | 4.472528% |
| Net Interest Cost (NIC) | 4.477285% |
| All-In TIC | 4.545254% |
| Average Coupon | 4.443423% |
| | |
| Average Life (years) | 11.813 |
| Duration of Issue (years) | 9.036 |
| | |
| Par Amount | 15,690,000.00 |
| Bond Proceeds | 15,690,000.00 |
| Total Interest | 8,235,551.13 |
| Net Interest | 8,298,311.13 |
| Total Debt Service | 23,925,551.13 |
| Maximum Annual Debt Service | 1,659,971.50 |
| Average Annual Debt Service | 1,276,029.39 |
| | |
| Underwriter's Fees (per $1000) | |
| Average Takedown | |
| Other Fee | 4.000000 |
| | |
| Total Underwriter's Discount | 4.000000 |
| | |
| Bid Price | 99.600000 |

| Bond Component | Par Value | Price | Average Coupon | Average Life |
|---|---|---|---|---|
| Bond Component | 15,690,000.00 | 100.000 | 4.443% | 11.813 |
| | 15,690,000.00 | | | 11.813 |

| | TIC | All-In TIC | Arbitrage Yield |
|---|---|---|---|
| Par Value | 15,690,000.00 | 15,690,000.00 | 15,690,000.00 |
| + Accrued Interest | | | |
| + Premium (Discount) | | | |
| - Underwriter's Discount | -62,760.00 | -62,760.00 | |
| - Cost of Issuance Expense | | -100,000.00 | |
| - Other Amounts | | | |
| | | | |
| Target Value | 15,627,240.00 | 15,527,240.00 | 15,690,000.00 |
| | | | |
| Target Date | 08/01/2018 | 08/01/2018 | 08/01/2018 |
| Yield | 4.472528% | 4.545254% | 4.427213% |

BOND DEBT SERVICE

City of Wixom
Pension Bonds - Assuming Actuarial Value of Assets

| Period Ending | Principal | Coupon | Interest | Debt Service | Bond Balance | Total Bond Value |
|---|---|---|---|---|---|---|
| 05/01/2019 | 255,000 | 2.800% | 505,915.13 | 760,915.13 | 15,435,000 | 15,435,000 |
| 05/01/2020 | 265,000 | 3.170% | 667,413.50 | 932,413.50 | 15,170,000 | 15,170,000 |
| 05/01/2021 | 375,000 | 3.380% | 659,013.00 | 1,034,013.00 | 14,795,000 | 14,795,000 |
| 05/01/2022 | 390,000 | 3.570% | 646,338.00 | 1,036,338.00 | 14,405,000 | 14,405,000 |
| 05/01/2023 | 510,000 | 3.770% | 632,415.00 | 1,142,415.00 | 13,895,000 | 13,895,000 |
| 05/01/2024 | 525,000 | 3.820% | 613,188.00 | 1,138,188.00 | 13,370,000 | 13,370,000 |
| 05/01/2025 | 650,000 | 3.970% | 593,133.00 | 1,243,133.00 | 12,720,000 | 12,720,000 |
| 05/01/2026 | 775,000 | 4.020% | 567,328.00 | 1,342,328.00 | 11,945,000 | 11,945,000 |
| 05/01/2027 | 810,000 | 4.120% | 536,173.00 | 1,346,173.00 | 11,135,000 | 11,135,000 |
| 05/01/2028 | 945,000 | 4.220% | 502,801.00 | 1,447,801.00 | 10,190,000 | 10,190,000 |
| 05/01/2029 | 990,000 | 4.370% | 462,922.00 | 1,452,922.00 | 9,200,000 | 9,200,000 |
| 05/01/2030 | 1,135,000 | 4.470% | 419,659.00 | 1,554,659.00 | 8,065,000 | 8,065,000 |
| 05/01/2031 | 1,290,000 | 4.570% | 368,924.50 | 1,658,924.50 | 6,775,000 | 6,775,000 |
| 05/01/2032 | 1,350,000 | 4.620% | 309,971.50 | 1,659,971.50 | 5,425,000 | 5,425,000 |
| 05/01/2033 | 1,005,000 | 4.670% | 247,601.50 | 1,252,601.50 | 4,420,000 | 4,420,000 |
| 05/01/2034 | 1,055,000 | 4.510% | 200,668.00 | 1,255,668.00 | 3,365,000 | 3,365,000 |
| 05/01/2035 | 1,205,000 | 4.530% | 153,087.50 | 1,358,087.50 | 2,160,000 | 2,160,000 |
| 05/01/2036 | 1,055,000 | 4.550% | 98,501.00 | 1,153,501.00 | 1,105,000 | 1,105,000 |
| 05/01/2037 | 1,105,000 | 4.570% | 50,498.50 | 1,155,498.50 | | |
| | 15,690,000 | | 8,235,551.13 | 23,925,551.13 | | |

SOURCES AND USES OF FUNDS

City of Wixom
OPEB Bonds - Assuming Market Value of Assets

| | |
|---|---|
| Sources: | |
| Bond Proceeds: | |
| Par Amount | 6,790,000.00 |
| | 6,790,000.00 |
| Uses: | |
| Project Fund Deposits: | |
| UAAL Funding | 6,380,522.00 |
| Buffer | 300,000.00 |
| | 6,680,522.00 |
| Delivery Date Expenses: | |
| Cost of Issuance | 80,000.00 |
| Underwriter's Discount | 27,160.00 |
| | 107,160.00 |
| Other Uses of Funds: | |
| Additional Proceeds | 2,318.00 |
| | 6,790,000.00 |

# BOND PRICING

City of Wixom
OPEB Bonds - Assuming Market Value of Assets

| Bond Component | Maturity Date | Amount | Rate | Yield | Price |
|---|---|---|---|---|---|
| Bond Component: | | | | | |
| | 05/01/2019 | 225,000 | 2.800% | 2.800% | 100.000 |
| | 05/01/2020 | 155,000 | 3.170% | 3.170% | 100.000 |
| | 05/01/2021 | 160,000 | 3.380% | 3.380% | 100.000 |
| | 05/01/2022 | 165,000 | 3.570% | 3.570% | 100.000 |
| | 05/01/2023 | 170,000 | 3.770% | 3.770% | 100.000 |
| | 05/01/2024 | 180,000 | 3.820% | 3.820% | 100.000 |
| | 05/01/2025 | 185,000 | 3.970% | 3.970% | 100.000 |
| | 05/01/2026 | 190,000 | 4.020% | 4.020% | 100.000 |
| | 05/01/2027 | 200,000 | 4.120% | 4.120% | 100.000 |
| | 05/01/2028 | 210,000 | 4.220% | 4.220% | 100.000 |
| | 05/01/2029 | 215,000 | 4.370% | 4.370% | 100.000 |
| | 05/01/2030 | 225,000 | 4.470% | 4.470% | 100.000 |
| | 05/01/2031 | 235,000 | 4.570% | 4.570% | 100.000 |
| | 05/01/2032 | 245,000 | 4.620% | 4.620% | 100.000 |
| | 05/01/2033 | 260,000 | 4.670% | 4.670% | 100.000 |
| | 05/01/2034 | 270,000 | 4.510% | 4.510% | 100.000 |
| | 05/01/2035 | 285,000 | 4.530% | 4.530% | 100.000 |
| | 05/01/2036 | 295,000 | 4.550% | 4.550% | 100.000 |
| | 05/01/2037 | 310,000 | 4.570% | 4.570% | 100.000 |
| | 05/01/2038 | 325,000 | 4.590% | 4.590% | 100.000 |
| | 05/01/2039 | 340,000 | 4.590% | 4.590% | 100.000 |
| | 05/01/2040 | 355,000 | 4.590% | 4.590% | 100.000 |
| | 05/01/2041 | 370,000 | 4.590% | 4.590% | 100.000 |
| | 05/01/2042 | 390,000 | 4.590% | 4.590% | 100.000 |
| | 05/01/2043 | 405,000 | 4.590% | 4.590% | 100.000 |
| | 05/01/2044 | 425,000 | 4.590% | 4.590% | 100.000 |
| | | 6,790,000 | | | |

| | | |
|---|---|---|
| Dated Date | 08/01/2018 | |
| Delivery Date | 08/01/2018 | |
| First Coupon | 11/01/2018 | |
| Par Amount | 6,790,000.00 | |
| Original Issue Discount | | |
| Production | 6,790,000.00 | 100.000000% |
| Underwriter's Discount | -27,160.00 | -0.400000% |
| Purchase Price | 6,762,840.00 | 99.600000% |
| Accrued Interest | | |
| Net Proceeds | 6,762,840.00 | |

# BOND SUMMARY STATISTICS

City of Wixom
OPEB Bonds - Assuming Market Value of Assets

| | |
|---|---|
| Dated Date | 08/01/2018 |
| Delivery Date | 08/01/2018 |
| Last Maturity | 05/01/2044 |
| | |
| Arbitrage Yield | 4.495490% |
| True Interest Cost (TIC) | 4.533899% |
| Net Interest Cost (NIC) | 4.540277% |
| All-In TIC | 4.648402% |
| Average Coupon | 4.514393% |
| | |
| Average Life (years) | 15.454 |
| Duration of Issue (years) | 10.661 |
| | |
| Par Amount | 6,790,000.00 |
| Bond Proceeds | 6,790,000.00 |
| Total Interest | 4,737,065.75 |
| Net Interest | 4,764,225.75 |
| Total Debt Service | 11,527,065.75 |
| Maximum Annual Debt Service | 445,998.00 |
| Average Annual Debt Service | 447,653.04 |
| | |
| Underwriter's Fees (per $1000) | |
| Average Takedown | |
| Other Fee | 4.000000 |
| | |
| Total Underwriter's Discount | 4.000000 |
| | |
| Bid Price | 99.600000 |

| Bond Component | Par Value | Price | Average Coupon | Average Life |
|---|---|---|---|---|
| Bond Component | 6,790,000.00 | 100.000 | 4.514% | 15.454 |
| | 6,790,000.00 | | | 15.454 |

| | TIC | All-In TIC | Arbitrage Yield |
|---|---|---|---|
| Par Value | 6,790,000.00 | 6,790,000.00 | 6,790,000.00 |
| + Accrued Interest | | | |
| + Premium (Discount) | | | |
| - Underwriter's Discount | -27,160.00 | -27,160.00 | |
| - Cost of Issuance Expense | | -80,000.00 | |
| - Other Amounts | | | |
| Target Value | 6,762,840.00 | 6,682,840.00 | 6,790,000.00 |
| Target Date | 08/01/2018 | 08/01/2018 | 08/01/2018 |
| Yield | 4.533899% | 4.648402% | 4.495490% |

BOND DEBT SERVICE

City of Wixom
OPEB Bonds - Assuming Market Value of Assets

| Period Ending | Principal | Coupon | Interest | Debt Service | Bond Balance | Total Bond Value |
|---|---|---|---|---|---|---|
| 05/01/2019 | 225,000 | 2.800% | 220,508.25 | 445,508.25 | 6,565,000 | 6,565,000 |
| 05/01/2020 | 155,000 | 3.170% | 287,711.00 | 442,711.00 | 6,410,000 | 6,410,000 |
| 05/01/2021 | 160,000 | 3.380% | 282,797.50 | 442,797.50 | 6,250,000 | 6,250,000 |
| 05/01/2022 | 165,000 | 3.570% | 277,389.50 | 442,389.50 | 6,085,000 | 6,085,000 |
| 05/01/2023 | 170,000 | 3.770% | 271,499.00 | 441,499.00 | 5,915,000 | 5,915,000 |
| 05/01/2024 | 180,000 | 3.820% | 265,090.00 | 445,090.00 | 5,735,000 | 5,735,000 |
| 05/01/2025 | 185,000 | 3.970% | 258,214.00 | 443,214.00 | 5,550,000 | 5,550,000 |
| 05/01/2026 | 190,000 | 4.020% | 250,869.50 | 440,869.50 | 5,360,000 | 5,360,000 |
| 05/01/2027 | 200,000 | 4.120% | 243,231.50 | 443,231.50 | 5,160,000 | 5,160,000 |
| 05/01/2028 | 210,000 | 4.220% | 234,991.50 | 444,991.50 | 4,950,000 | 4,950,000 |
| 05/01/2029 | 215,000 | 4.370% | 226,129.50 | 441,129.50 | 4,735,000 | 4,735,000 |
| 05/01/2030 | 225,000 | 4.470% | 216,734.00 | 441,734.00 | 4,510,000 | 4,510,000 |
| 05/01/2031 | 235,000 | 4.570% | 206,676.50 | 441,676.50 | 4,275,000 | 4,275,000 |
| 05/01/2032 | 245,000 | 4.620% | 195,937.00 | 440,937.00 | 4,030,000 | 4,030,000 |
| 05/01/2033 | 260,000 | 4.670% | 184,618.00 | 444,618.00 | 3,770,000 | 3,770,000 |
| 05/01/2034 | 270,000 | 4.510% | 172,476.00 | 442,476.00 | 3,500,000 | 3,500,000 |
| 05/01/2035 | 285,000 | 4.530% | 160,299.00 | 445,299.00 | 3,215,000 | 3,215,000 |
| 05/01/2036 | 295,000 | 4.550% | 147,388.50 | 442,388.50 | 2,920,000 | 2,920,000 |
| 05/01/2037 | 310,000 | 4.570% | 133,966.00 | 443,966.00 | 2,610,000 | 2,610,000 |
| 05/01/2038 | 325,000 | 4.590% | 119,799.00 | 444,799.00 | 2,285,000 | 2,285,000 |
| 05/01/2039 | 340,000 | 4.590% | 104,881.50 | 444,881.50 | 1,945,000 | 1,945,000 |
| 05/01/2040 | 355,000 | 4.590% | 89,275.50 | 444,275.50 | 1,590,000 | 1,590,000 |
| 05/01/2041 | 370,000 | 4.590% | 72,981.00 | 442,981.00 | 1,220,000 | 1,220,000 |
| 05/01/2042 | 390,000 | 4.590% | 55,998.00 | 445,998.00 | 830,000 | 830,000 |
| 05/01/2043 | 405,000 | 4.590% | 38,097.00 | 443,097.00 | 425,000 | 425,000 |
| 05/01/2044 | 425,000 | 4.590% | 19,507.50 | 444,507.50 | | |
| | 6,790,000 | | 4,737,065.75 | 11,527,065.75 | | |

# Appendix F: Evidence of Rating

MOODY'S
INVESTORS SERVICE

ISSUER COMMENT
30 March 2018

RATING

General Obligation (or GO Related) [1]

| | |
|---|---|
| Aa2 | No Outlook |

Contacts

Nathan Carley +1.312.706.9958
*Associate Lead Analyst*
nathan.carley@moodys.com

Mark McIntire +1.312.706.9960
*VP-Sr Credit Officer/ Manager*
mark.mcintire@moodys.com



# City of Wixom, MI

## Annual Comment on Wixom

### Issuer Profile

The City of Wixom is located in Oakland County, in the southeastern region of Michigan's Lower Peninsula. The city lies within the Detroit metro area, approximately 28 miles northwest of downtown. The county has a population of 1,235,215 and a high population density of 1,416 people per square mile. The county's median family income is $90,234 (1st quartile) and the December 2017 unemployment rate was 3.2% (1st quartile) [2] . The largest industry sectors that drive the local economy are professional/scientific/technical services, health services, and retail trade.

### Credit Overview

Wixom has a very strong credit position. Its Aa2 rating is slightly higher than the US cities median of Aa3. The notable credit factors include a robust financial position, a healthy tax base with a strong wealth and income profile, a moderate debt burden and an elevated pension liability.

**Finances:** The financial position of Wixom is robust and is relatively favorable in comparison to the assigned rating of Aa2. The city's fund balance as a percent of operating revenues (64.2%) is far superior to the US median, and saw an impressive increase from 2013 to 2017. Moreover, the cash balance as a percent of operating revenues (68.8%) is far stronger than the US median.

**Economy and Tax Base:** Wixom has a healthy economy and tax base, which are in line with the assigned rating of Aa2. The city's full value per capita ($119,033) is slightly above the US median, and increased dramatically between 2013 and 2017. Moreover, the median family income equates to a healthy 120.8% of the US level. Lastly, the total full value ($1.6 billion) is consistent with other Moody's-rated cities nationwide.

**Debt and Pensions:** The debt burden of Wixom is moderate and is consistent with its Aa2 rating. The net direct debt to full value (0.5%) is below the US median, and fell from 2013 to 2017. That said, the pension liability of the city is elevated and is a weakness when compared to the assigned rating of Aa2. The Moody's-adjusted net pension liability to operating revenues (2.8x) is materially higher than the US median.

**Management and Governance:** Michigan cities have an Institutional Framework score [3] of A, which is moderate compared to the nation. Institutional Framework scores measure a sector's legal ability to increase revenues and decrease expenditures. Property taxes are the major revenue sources for most cities, though a handful of cities have voter-approved income taxes. Property tax revenue is capped, limiting a city's revenue-raising ability. cities can override the limitation with voter approval. Unpredictable revenue fluctuations tend to be moderate. Across the sector, fixed and mandated costs are relatively high. Michigan has public sector unions, which can limit the ability to cut expenditures. Unpredictable expenditure fluctuations tend to be high.

## Sector Trends - Michigan Cities

Most Michigan cities' credit profiles are stabilizing after years of substantial pressure, boosted by improvements in key revenue streams and strategic budget decisions. Property taxes, the largest revenue source for most cities, are stabilizing as taxable valuations have begun to grow in most of the state. State aid has also stabilized following significant cuts. Expenditure reductions implemented during the economic downturn have positioned cities to maintain balanced financial operations. However, the recovery is lagging for a handful of distressed cities with unusually weak demographic and economic profiles.

EXHIBIT 1

**Key Indicators [4] [5] Wixom**

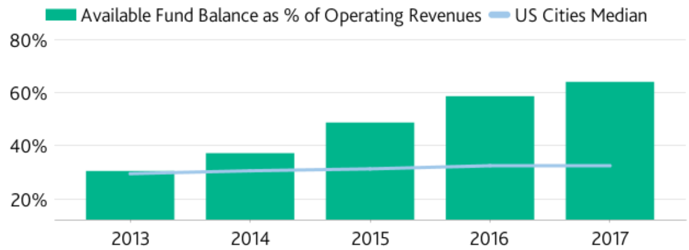
| | 2013 | 2014 | 2015 | 2016 | 2017 | US Median | Credit Trend |
|---|---|---|---|---|---|---|---|
| **Economy / Tax Base** | | | | | | | |
| Total Full Value | $1,309M | $1,335M | $1,464M | $1,522M | $1,637M | $1,787M | Improved |
| Full Value Per Capita | $96,443 | $97,939 | $106,942 | $110,639 | $119,033 | $88,380 | Improved |
| Median Family Income (% of US Median) | 117% | 124% | 121% | 121% | 121% | 113% | Stable |
| **Finances** | | | | | | | |
| Available Fund Balance as % of Operating Revenues | 30.5% | 37.3% | 48.8% | 58.8% | 64.2% | 32.5% | Improved |
| Net Cash Balance as % of Operating Revenues | 43.5% | 51.5% | 69.3% | 67.9% | 68.8% | 35.4% | Improved |
| **Debt / Pensions** | | | | | | | |
| Net Direct Debt / Full Value | 1.2% | 1.0% | 0.8% | 0.7% | 0.5% | 1.2% | Improved |
| Net Direct Debt / Operating Revenues | 1.70x | 1.21x | 1.07x | 0.90x | 0.74x | 0.93x | Improved |
| Moody's-adjusted Net Pension Liability (3-yr average) to Full Value | 1.6% | 1.8% | 1.8% | 1.9% | 2.0% | 1.7% | Stable |
| Moody's-adjusted Net Pension Liability (3-yr average) to Operating Revenues | 2.28x | 2.12x | 2.47x | 2.62x | 2.83x | 1.46x | Weakened |

| | 2013 | 2014 | 2015 | 2016 | 2017 | US Median |
|---|---|---|---|---|---|---|
| **Debt and Financial Data** | | | | | | |
| Population | 13,581 | 13,640 | 13,690 | 13,758 | N/A | N/A |
| Available Fund Balance ($000s) | $2,795 | $4,134 | $5,220 | $6,490 | $7,344 | $7,221 |
| Net Cash Balance ($000s) | $3,984 | $5,717 | $7,410 | $7,497 | $7,865 | $7,930 |
| Operating Revenues ($000s) | $9,157 | $11,095 | $10,690 | $11,043 | $11,440 | $21,262 |
| Net Direct Debt ($000s) | $15,542 | $13,385 | $11,388 | $9,931 | $8,434 | $18,822 |
| Moody's Adjusted Net Pension Liability (3-yr average) ($000s) | $20,898 | $23,507 | $26,439 | $28,929 | $32,351 | $29,896 |

*Source: Moody's Investors Service*

EXHIBIT 2

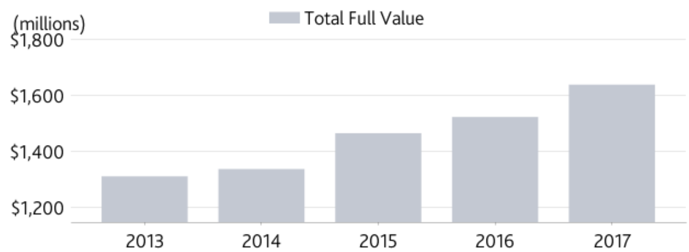
**Available fund balance as a percent of operating revenues increased from 2013 to 2017**




*Source: Issuer financial statements; Moody's Investors Service*

EXHIBIT 3

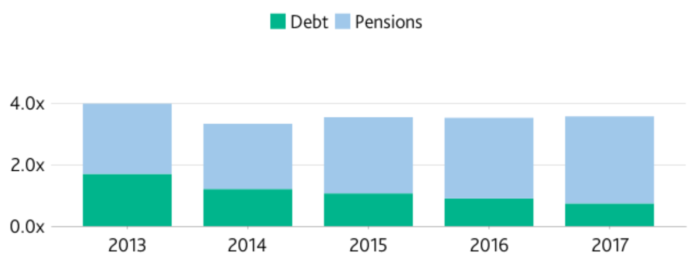
**Full value of the property tax base increased from 2013 to 2017**




*Source: Issuer financial statements; Government data sources; Offering statements; Moody's Investors Service*

EXHIBIT 4

**Moody's-adjusted net pension liability to operating revenues increased from 2013 to 2017**




*Source: Issuer financial statements; Government data sources; Offering statements; Moody's Investors Service*

## Endnotes

1 The rating referenced in this report is the issuer's General Obligation (GO) rating or its highest public rating that is GO-related. A GO bond is generally backed by the full faith and credit pledge and total taxing power of the issuer. GO-related securities include general obligation limited tax, annual appropriation, lease revenue, non-ad valorem, and moral obligation debt. The referenced ratings reflect the government's underlying credit quality without regard to state guarantees, enhancement programs or bond insurance.

2 The demographic data presented, including population, population density, per capita personal income and unemployment rate are derived from the most recently available US government databases. Population, population density and per capita personal income come from the American Community Survey while the unemployment rate comes from the Bureau of Labor Statistics.

The largest industry sectors are derived from the Bureau of Economic Analysis. Moody's allocated the per capita personal income data and unemployment data for all counties in the US census into quartiles. The quartiles are ordered from strongest-to-weakest from a credit perspective: the highest per capita personal income quartile is first quartile, and the lowest unemployment rate is first quartile.

3 The institutional framework score assesses a municipality's legal ability to match revenues with expenditures based on its constitutionally and legislatively conferred powers and responsibilities. See US Local Government General Obligation Debt (December 2016) methodology report for more details.

4 For definitions of the metrics in the Key Indicators Table, US Local Government General Obligation Methodology and Scorecard User Guide (July 2014) . Metrics represented as N/A indicate the data were not available at the time of publication.

5 The medians come from our most recently published local government medians report, Medians - Tax Base Growth Reinforces Sector Stability as Pension Troubles Remain (March 2017) which is available on Moodys.com. The medians presented here are based on the key metrics outlined in Moody's GO methodology and the associated scorecard.

REPORT NUMBER 1111747

## CLIENT SERVICES


| | |
|---|---|
| Americas | 1-212-553-1653 |
| Asia Pacific | 852-3551-3077 |
| Japan | 81-3-5408-4100 |
| EMEA | 44-20-7772-5454 |


MOODY'S INVESTORS SERVICE

INVESTORS SERVICE

# Rating Action: Moody's assigns Aa2 to Wixom, MI's $4.3M GOLT Bonds

09 Dec 2014

**Aa2 rating affirmed on outstanding rated GOULT and GOLT debt**

New York, December 09, 2014 --

Moody's Rating

Issue: 2014 General Obligation Limited Tax Refunding Bonds; Rating: Aa2; Sale Amount: $4,275,000; Expected Sale Date: 12-10-2014; Rating Description: General Obligation Limited Tax

Opinion

Moody's Investors Service has assigned a Aa2 rating to the City of Wixom, MI's $4.3 million 2014 General Obligation Limited Tax Refunding Bonds. The bonds are secured by the city's general obligation limited tax (GOLT) pledge subject to applicable constitutional, statutory and charter tax rate limitations. Proceeds from bonds will advance refund certain maturities of the city's outstanding 2005 Development Bonds (Limited Tax General Obligation) for savings. Concurrently, Moody's has affirmed the Aa2 rating on the city's outstanding rated general obligation unlimited tax (GOULT) and GOLT debt. Post sale, the city will have $760,000 and $4.5 million of outstanding rated GOULT and GOLT debt, respectively.

SUMMARY RATING RATIONALE

The Aa2 GOULT rating reflects the city's healthy financial position which is expected to strengthen supported by a supplementary operating levy approved by voters in November 2012. Also incorporated is the city's moderately-sized, suburban tax base which is beginning to show signs of rebounding following significant valuation loss; above average socioeconomic profile; and manageable debt and pension burdens. The city's GOLT debt is also rated Aa2 given the strong underlying credit quality and the presence of a degree of financial flexibility stemming from strengthening finances and the ability to go to voters for tax rate limit overrides.

STRENGTHS

• Moderately-sized tax base in Oakland County (Aaa stable) with room for future development

• Above average socioeconomic profile

• Healthy financial position supported by November 2012 approval of a supplemental operating levy

CHALLENGES

• Significant declines in full value between 2006 and 2012

• Stagnant to declining revenue trends prior to supplemental millage

What Could Change the Rating Up

• Significant tax base growth and/or improved socioeconomic characteristics

• Substantial and sustained improvements to operating reserves and liquidity

What Could Change the Rating Down

• Deterioration to the city's tax base and/or local economy

• Material declines in reserves and/or liquidity

PRINCIPAL METHODOLOGY USED

The principal methodology used in this rating was US Local Government General Obligation Debt publishec January 2014. Please see the Credit Policy page on www.moodys.com for a copy of this methodology.

REGULATORY DISCLOSURES

For ratings issued on a program, series or category/class of debt, this announcement provides certain regulatory disclosures in relation to each rating of a subsequently issued bond or note of the same serie category/class of debt or pursuant to a program for which the ratings are derived exclusively from existing ratings in accordance with Moody's rating practices. For ratings issued on a support provider, this announcement provides certain regulatory disclosures in relation to the rating action on the support provide and in relation to each particular rating action for securities that derive their credit ratings from the support provider's credit rating. For provisional ratings, this announcement provides certain regulatory disclosures relation to the provisional rating assigned, and in relation to a definitive rating that may be assigned subsequent to the final issuance of the debt, in each case where the transaction structure and terms hav changed prior to the assignment of the definitive rating in a manner that would have affected the rating. For further information please see the ratings tab on the issuer/entity page for the respective issuer on www.moodys.com.

Regulatory disclosures contained in this press release apply to the credit rating and, if applicable, the relate rating outlook or rating review.

Please see www.moodys.com for any updates on changes to the lead rating analyst and to the Moody's le entity that has issued the rating.

Please see the ratings tab on the issuer/entity page on www.moodys.com for additional regulatory disclosur for each credit rating.

Andrew Thomas Van Dyck Dobos
Associate Analyst
Public Finance Group
Moody's Investors Service, Inc.
100 N Riverside Plaza
Suite 2220
Chicago, IL 60606
U.S.A.
JOURNALISTS: 212-553-0376
SUBSCRIBERS: 212-553-1653

David Levett
Analyst
Public Finance Group
JOURNALISTS: 212-553-0376
SUBSCRIBERS: 212-553-1653

Releasing Office:
Moody's Investors Service, Inc.
250 Greenwich Street
New York, NY 10007
U.S.A.
JOURNALISTS: 212-553-0376
SUBSCRIBERS: 212-553-1653

MOODY'S
INVESTORS SERVICE



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# Appendix G: Comparisons of the Annual Unfunded Actuarial Accrued Liability Amortization to Estimated Bond Payments at Various Rates of Return

pfm

555 Briarwood Circle
Suite 333
Ann Arbor, MI 48108

734-994-9700
734-994-9710 fax
www.pfm.com

# City of Wixom
# Limited Tax General Obligation
# Bonds, Series 2018
# (Federally Taxable)

**Scenario 2 - UAL @ 7.75% Rate of Return vs Bonding for UAL @ 7.75% Rate of Return at Various Interest Rates**

| Pension Analysis - Market Rates with 7.75% Discount Rate - Assuming Market Value of Assets as of 12-31-2016 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Year Ending 12/31** | **UAL Payment (a)** | **UAAL Amortization Payment (d)** | **1-May Interest Payment** | **1-May Principal Payment** | **Est. Interest Rate** | **1-Nov Interest Payment** | **Estimated Bond Payments (b)** | **Estimated Bond Payments and UAAL Payment** | **Difference** | **Present Value @ 4.54% (c)** |
| 2018 | $1,300,000 | $758,333 | $0 | $0 | 0.00% | $183,488 | $183,488 | $941,821 | $358,179 | $351,547 |
| 2019 | 1,300,000 | -- | 366,976 | 265,000 | 2.80% | 363,266 | 995,241 | 995,241 | 304,759 | 285,995 |
| 2020 | 1,400,000 | -- | 363,266 | 375,000 | 3.17% | 357,322 | 1,095,587 | 1,095,587 | 304,413 | 273,139 |
| 2021 | 1,400,000 | -- | 357,322 | 385,000 | 3.38% | 350,815 | 1,093,137 | 1,093,137 | 306,863 | 263,260 |
| 2022 | 1,500,000 | -- | 350,815 | 500,000 | 3.57% | 341,890 | 1,192,706 | 1,192,706 | 307,295 | 252,066 |
| 2023 | 1,500,000 | -- | 341,890 | 520,000 | 3.77% | 332,088 | 1,193,979 | 1,193,979 | 306,022 | 240,010 |
| 2024 | 1,600,000 | -- | 332,088 | 645,000 | 3.82% | 319,769 | 1,296,857 | 1,296,857 | 303,143 | 227,324 |
| 2025 | 1,600,000 | -- | 319,769 | 675,000 | 3.97% | 306,370 | 1,301,139 | 1,301,139 | 298,861 | 214,282 |
| 2026 | 1,700,000 | -- | 306,370 | 800,000 | 4.02% | 290,290 | 1,396,660 | 1,396,660 | 303,340 | 207,953 |
| 2027 | 1,800,000 | -- | 290,290 | 935,000 | 4.12% | 271,029 | 1,496,319 | 1,496,319 | 303,681 | 199,054 |
| 2028 | 1,800,000 | -- | 271,029 | 975,000 | 4.22% | 250,457 | 1,496,486 | 1,496,486 | 303,515 | 190,218 |
| 2029 | 1,900,000 | -- | 250,457 | 1,120,000 | 4.37% | 225,985 | 1,596,441 | 1,596,441 | 303,559 | 181,901 |
| 2030 | 2,000,000 | -- | 225,985 | 1,270,000 | 4.47% | 197,600 | 1,693,585 | 1,693,585 | 306,416 | 175,558 |
| 2031 | 2,000,000 | -- | 197,600 | 1,330,000 | 4.57% | 167,210 | 1,694,810 | 1,694,810 | 305,191 | 167,186 |
| 2032 | 2,100,000 | -- | 167,210 | 1,500,000 | 4.62% | 132,560 | 1,799,769 | 1,799,769 | 300,231 | 157,255 |
| 2033 | 1,600,000 | -- | 132,560 | 1,055,000 | 4.67% | 107,925 | 1,295,485 | 1,295,485 | 304,515 | 152,502 |
| 2034 | 1,700,000 | -- | 107,925 | 1,210,000 | 4.51% | 80,640 | 1,398,565 | 1,398,565 | 301,435 | 144,338 |
| 2035 | 1,700,000 | -- | 80,640 | 1,260,000 | 4.53% | 52,101 | 1,392,741 | 1,392,741 | 307,260 | 140,673 |
| 2036 | 1,500,000 | -- | 52,101 | 1,115,000 | 4.55% | 26,735 | 1,193,835 | 1,193,835 | 306,165 | 134,023 |
| 2037 | 1,500,000 | -- | 26,735 | 1,170,000 | 4.57% | -- | 1,196,735 | 1,196,735 | 303,266 | 126,931 |
| 2038 | -- | -- | -- | -- | 0.00% | -- | -- | -- | -- | -- |
| | **$32,900,000** | **$758,333** | **$4,541,025** | **$17,105,000** | | **$4,357,537** | **$26,003,561** | **$26,761,895** | **$6,138,105** | **$4,085,215** |

(a) Based on CBIZ Letter dated November 3, 2017 - Assumes market value of assets
(b) Estimate only based on estimated taxable interest rates as of April 23, 2018
(c) Represents All-in TIC
(d) Assumes 7 months of UAL payments will be made prior to the bonds being sold

| | |
|---|---|
| UAL Funded with Bond Proceeds: | $16,435,929 |
| Estimated Bond Amount: | $17,105,000 |
| All-In TIC: | 4.536% |

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# City of Wixom
# Limited Tax General Obligation
# Bonds, Series 2018
# (Federally Taxable)

**Scenario 2 - UAL @ 6.75% Rate of Return vs Bonding for UAL @ 6.75% Rate of Return at Various Interest Rates**

| Pension Analysis - Market Rates with 6.75% Discount Rate - Assuming Market Value of Assets as of 12-31-2016 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Year Ending 12/31 | UAL Payment (a) | UAAL Amortization Payment (d) | 1-May Interest Payment | 1-May Principal Payment | Est. Interest Rate | 1-Nov Interest Payment | Estimated Bond Payments (b) | Payments Related to $4,368,573 UAAL Remaining After Bonding (e) | Estimated Bond Payments and UAAL Payment | Difference | Present Value @ 4.54% (c) |
| 2018 | $1,500,000 | $875,000 | $0 | $0 | 0.00% | $183,488 | $183,488 | 314,973 | 1,373,461 | $126,539 | $124,196 |
| 2019 | 1,500,000 | -- | 366,976 | 265,000 | 2.80% | 363,266 | 995,241 | 314,973 | 1,310,214 | 189,786 | 178,101 |
| 2020 | 1,600,000 | -- | 363,266 | 375,000 | 3.17% | 357,322 | 1,095,587 | 335,971 | 1,431,559 | 168,441 | 151,137 |
| 2021 | 1,700,000 | -- | 357,322 | 385,000 | 3.38% | 350,815 | 1,093,137 | 356,970 | 1,450,107 | 249,893 | 214,385 |
| 2022 | 1,700,000 | -- | 350,815 | 500,000 | 3.57% | 341,890 | 1,192,706 | 356,970 | 1,549,675 | 150,325 | 123,308 |
| 2023 | 1,800,000 | -- | 341,890 | 520,000 | 3.77% | 332,088 | 1,193,979 | 377,968 | 1,571,946 | 228,054 | 178,861 |
| 2024 | 1,800,000 | -- | 332,088 | 645,000 | 3.82% | 319,769 | 1,296,857 | 377,968 | 1,674,825 | 125,175 | 93,868 |
| 2025 | 1,900,000 | -- | 319,769 | 675,000 | 3.97% | 306,370 | 1,301,139 | 398,966 | 1,700,105 | 199,895 | 143,324 |
| 2026 | 2,000,000 | -- | 306,370 | 800,000 | 4.02% | 290,290 | 1,396,660 | 419,964 | 1,816,624 | 183,376 | 125,712 |
| 2027 | 2,100,000 | -- | 290,290 | 935,000 | 4.12% | 271,029 | 1,496,319 | 440,962 | 1,937,281 | 162,719 | 106,657 |
| 2028 | 2,100,000 | -- | 271,029 | 975,000 | 4.22% | 250,457 | 1,496,486 | 440,962 | 1,937,448 | 162,552 | 101,874 |
| 2029 | 2,200,000 | -- | 250,457 | 1,120,000 | 4.37% | 225,985 | 1,596,441 | 461,961 | 2,058,402 | 141,598 | 84,850 |
| 2030 | 2,300,000 | -- | 225,985 | 1,270,000 | 4.47% | 197,600 | 1,693,585 | 482,959 | 2,176,543 | 123,457 | 70,734 |
| 2031 | 2,400,000 | -- | 197,600 | 1,330,000 | 4.57% | 167,210 | 1,694,810 | 503,957 | 2,198,767 | 201,233 | 110,238 |
| 2032 | 2,500,000 | -- | 167,210 | 1,500,000 | 4.62% | 132,560 | 1,799,769 | 524,955 | 2,324,724 | 175,276 | 91,806 |
| 2033 | 1,900,000 | -- | 132,560 | 1,055,000 | 4.67% | 107,925 | 1,295,485 | 398,966 | 1,694,451 | 205,549 | 102,940 |
| 2034 | 1,900,000 | -- | 107,925 | 1,210,000 | 4.51% | 80,640 | 1,398,565 | 398,966 | 1,797,531 | 102,469 | 49,066 |
| 2035 | 2,000,000 | -- | 80,640 | 1,260,000 | 4.53% | 52,101 | 1,392,741 | 419,964 | 1,812,705 | 187,295 | 85,750 |
| 2036 | 1,700,000 | -- | 52,101 | 1,115,000 | 4.55% | 26,735 | 1,193,835 | 356,970 | 1,550,805 | 149,195 | 65,310 |
| 2037 | 1,800,000 | -- | 26,735 | 1,170,000 | 4.57% | -- | 1,196,735 | 377,968 | 1,574,702 | 225,298 | 94,298 |
| 2038 | -- | -- | -- | -- | 0.00% | -- | -- | -- | -- | -- | -- |
| | **$38,400,000** | **$875,000** | **$4,541,025** | **$17,105,000** | | **$4,357,537** | **$26,003,561** | **$8,063,313** | **$34,941,874** | **$3,458,126** | **$2,296,412** |

(a) Based on CBIZ Letter dated November 3, 2017 - Assumes market value of assets
(b) Estimate only based on estimated taxable interest rates as of April 23, 2018
(c) Represents All-in TIC
(d) Assumes 7 months of UAL payments will be made prior to the bonds being sold
(e) Assumes $16,435,929 payment towards UAL, leaving 21.00% of UAL payments remaining unfunded.

| | |
|---|---|
| UAL Funded with Bond Proceeds: | $16,435,929 |
| Estimated Bond Amount: | $17,105,000 |
| All-In TIC: | 4.536% |

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# City of Wixom
# Limited Tax General Obligation
# Bonds, Series 2018
# (Federally Taxable)

**Scenario 2 - UAL @ 5.75% Rate of Return vs Bonding for UAL @ 5.75% Rate of Return at Various Interest Rates**

| Pension Analysis - Market Rates with 5.75% Discount Rate - Assuming Market Value of Assets as of 12-31-2016 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Year Ending 12/31 | UAL Payment (a) | UAAL Amortization Payment (d) | 1-May Interest Payment | 1-May Principal Payment | Est. Interest Rate | 1-Nov Interest Payment | Estimated Bond Payments (b) | Payments Related to $9,655,598 UAAL Remaining After Bonding (e) | Estimated Bond Payments and UAAL Payment | Difference | Present Value @ 4.54% (c) |
| 2018 | $1,700,000 | $991,667 | $0 | $0 | 0.00% | $183,488 | $183,488 | 629,113 | 1,804,267 | ($104,267) | ($102,337) |
| 2019 | 1,800,000 | -- | 366,976 | 265,000 | 2.80% | 363,266 | 995,241 | 666,120 | 1,661,361 | 138,639 | 130,103 |
| 2020 | 1,800,000 | -- | 363,266 | 375,000 | 3.17% | 357,322 | 1,095,587 | 666,120 | 1,761,707 | 38,293 | 34,359 |
| 2021 | 1,900,000 | -- | 357,322 | 385,000 | 3.38% | 350,815 | 1,093,137 | 703,126 | 1,796,263 | 103,737 | 88,996 |
| 2022 | 2,000,000 | -- | 350,815 | 500,000 | 3.57% | 341,890 | 1,192,706 | 740,133 | 1,932,838 | 67,162 | 55,091 |
| 2023 | 2,100,000 | -- | 341,890 | 520,000 | 3.77% | 332,088 | 1,193,979 | 777,139 | 1,971,118 | 128,882 | 101,081 |
| 2024 | 2,100,000 | -- | 332,088 | 645,000 | 3.82% | 319,769 | 1,296,857 | 777,139 | 2,073,996 | 26,004 | 19,500 |
| 2025 | 2,200,000 | -- | 319,769 | 675,000 | 3.97% | 306,370 | 1,301,139 | 814,146 | 2,115,285 | 84,715 | 60,740 |
| 2026 | 2,300,000 | -- | 306,370 | 800,000 | 4.02% | 290,290 | 1,396,660 | 851,153 | 2,247,813 | 52,187 | 35,777 |
| 2027 | 2,400,000 | -- | 290,290 | 935,000 | 4.12% | 271,029 | 1,496,319 | 888,159 | 2,384,478 | 15,522 | 10,174 |
| 2028 | 2,500,000 | -- | 271,029 | 975,000 | 4.22% | 250,457 | 1,496,486 | 925,166 | 2,421,652 | 78,348 | 49,102 |
| 2029 | 2,600,000 | -- | 250,457 | 1,120,000 | 4.37% | 225,985 | 1,596,441 | 962,173 | 2,558,614 | 41,386 | 24,800 |
| 2030 | 2,700,000 | -- | 225,985 | 1,270,000 | 4.47% | 197,600 | 1,693,585 | 999,179 | 2,692,764 | 7,236 | 4,146 |
| 2031 | 2,800,000 | -- | 197,600 | 1,330,000 | 4.57% | 167,210 | 1,694,810 | 1,036,186 | 2,730,995 | 69,005 | 37,801 |
| 2032 | 2,900,000 | -- | 167,210 | 1,500,000 | 4.62% | 132,560 | 1,799,769 | 1,073,193 | 2,872,962 | 27,038 | 14,162 |
| 2033 | 2,100,000 | -- | 132,560 | 1,055,000 | 4.67% | 107,925 | 1,295,485 | 777,139 | 2,072,624 | 27,376 | 13,710 |
| 2034 | 2,200,000 | -- | 107,925 | 1,210,000 | 4.51% | 80,640 | 1,398,565 | 814,146 | 2,212,711 | (12,711) | (6,087) |
| 2035 | 2,300,000 | -- | 80,640 | 1,260,000 | 4.53% | 52,101 | 1,392,741 | 851,153 | 2,243,893 | 56,107 | 25,687 |
| 2036 | 1,900,000 | -- | 52,101 | 1,115,000 | 4.55% | 26,735 | 1,193,835 | 703,126 | 1,896,961 | 3,039 | 1,330 |
| 2037 | 2,000,000 | -- | 26,735 | 1,170,000 | 4.57% | -- | 1,196,735 | 740,133 | 1,936,867 | 63,133 | 26,424 |
| 2038 | -- | -- | -- | -- | 0.00% | -- | -- | -- | -- | -- | -- |
| | **$44,300,000** | **$991,667** | **$4,541,025** | **$17,105,000** | | **$4,357,537** | **$26,003,561** | **$16,393,942** | **$43,389,170** | **$910,830** | **$624,562** |

(a) Based on CBIZ Letter dated November 3, 2017 - Assumes market value of assets
(b) Estimate only based on estimated taxable interest rates as of April 23, 2018
(c) Represents All-in TIC
(d) Assumes 7 months of UAL payments will be made prior to the bonds being sold
(e) Assumes $16,435,929 payment towards UAL, leaving 37.01% of UAL payments remaining unfunded.

| | |
|---|---|
| UAL Funded with Bond Proceeds: | $16,435,929 |
| Estimated Bond Amount: | $17,105,000 |
| All-In TIC: | 4.536% |

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# City of Wixom
# Limited Tax General Obligation
# Bonds, Series 2018
# (Federally Taxable)

**Scenario 2 - UAL @ 7.00% Rate of Return vs Bonding for UAL @ 7.00% Rate of Return at Various Interest Rates**

OPEB Analysis - Market Rates with 7.00% Discount Rate - Assuming Market Value of Assets

| Year Ending 6/30 | UAL Payment (a) | UAAL Amortization Payment (d) | 1-Nov Interest Payment | 1-May Principal Payment | Est. Interest Rate | 1-May Interest Payment | Estimated Bond Payments (b) | Estimated Bond Payments and UAAL Payment | Difference | Present Value @ 4.65% (c) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2019 | $550,511 | $45,876 | $73,503 | $225,000 | 2.80% | $147,006 | $445,508 | $491,384 | $59,127 | $55,401 |
| 2020 | 550,511 | -- | 143,856 | 155,000 | 3.17% | 143,856 | 442,711 | 442,711 | 107,800 | 96,470 |
| 2021 | 550,511 | -- | 141,399 | 160,000 | 3.38% | 141,399 | 442,798 | 442,798 | 107,714 | 92,064 |
| 2022 | 550,511 | -- | 138,695 | 165,000 | 3.57% | 138,695 | 442,390 | 442,390 | 108,122 | 88,263 |
| 2023 | 550,511 | -- | 135,750 | 170,000 | 3.77% | 135,750 | 441,499 | 441,499 | 109,012 | 84,993 |
| 2024 | 550,511 | -- | 132,545 | 180,000 | 3.82% | 132,545 | 445,090 | 445,090 | 105,421 | 78,502 |
| 2025 | 550,511 | -- | 129,107 | 185,000 | 3.97% | 129,107 | 443,214 | 443,214 | 107,297 | 76,311 |
| 2026 | 550,511 | -- | 125,435 | 190,000 | 4.02% | 125,435 | 440,870 | 440,870 | 109,642 | 74,477 |
| 2027 | 550,511 | -- | 121,616 | 200,000 | 4.12% | 121,616 | 443,232 | 443,232 | 107,280 | 69,600 |
| 2028 | 550,511 | -- | 117,496 | 210,000 | 4.22% | 117,496 | 444,992 | 444,992 | 105,520 | 65,383 |
| 2029 | 550,511 | -- | 113,065 | 215,000 | 4.37% | 113,065 | 441,130 | 441,130 | 109,382 | 64,733 |
| 2030 | 550,511 | -- | 108,367 | 225,000 | 4.47% | 108,367 | 441,734 | 441,734 | 108,777 | 61,484 |
| 2031 | 550,511 | -- | 103,338 | 235,000 | 4.57% | 103,338 | 441,677 | 441,677 | 108,835 | 58,754 |
| 2032 | 550,511 | -- | 97,969 | 245,000 | 4.62% | 97,969 | 440,937 | 440,937 | 109,574 | 56,497 |
| 2033 | 550,511 | -- | 92,309 | 260,000 | 4.67% | 92,309 | 444,618 | 444,618 | 105,893 | 52,147 |
| 2034 | 550,511 | -- | 86,238 | 270,000 | 4.51% | 86,238 | 442,476 | 442,476 | 108,035 | 50,812 |
| 2035 | 550,511 | -- | 80,150 | 285,000 | 4.53% | 80,150 | 445,299 | 445,299 | 105,212 | 47,262 |
| 2036 | 550,511 | -- | 73,694 | 295,000 | 4.55% | 73,694 | 442,389 | 442,389 | 108,123 | 46,389 |
| 2037 | 550,511 | -- | 66,983 | 310,000 | 4.57% | 66,983 | 443,966 | 443,966 | 106,545 | 43,659 |
| 2038 | 550,511 | -- | 59,900 | 325,000 | 4.59% | 59,900 | 444,799 | 444,799 | 105,712 | 41,372 |
| 2039 | 550,511 | -- | 52,441 | 340,000 | 4.59% | 52,441 | 444,882 | 444,882 | 105,630 | 39,483 |
| 2040 | 550,511 | -- | 44,638 | 355,000 | 4.59% | 44,638 | 444,276 | 444,276 | 106,236 | 37,927 |
| 2041 | 550,511 | -- | 36,491 | 370,000 | 4.59% | 36,491 | 442,981 | 442,981 | 107,530 | 36,665 |
| 2042 | 550,511 | -- | 27,999 | 390,000 | 4.59% | 27,999 | 445,998 | 445,998 | 104,513 | 34,036 |
| 2043 | 550,511 | -- | 19,049 | 405,000 | 4.59% | 19,049 | 443,097 | 443,097 | 107,414 | 33,410 |
| 2044 | 550,511 | -- | 9,754 | 425,000 | 4.59% | 9,754 | 444,508 | 444,508 | 106,004 | 31,490 |
| 2045 | -- | -- | -- | -- | 0.00% | -- | -- | -- | -- | -- |
| | **$14,313,286** | **$45,876** | **$2,331,782** | **$6,790,000** | | **$2,405,284** | **$11,527,066** | **$11,572,942** | **$2,740,344** | **$1,517,584** |

(a) Based on GRS Letter dated April 4, 2018 - Assumes market value of assets
(b) Estimate only based on estimated taxable interest rates as of April 23, 2018
(c) Represents All-in TIC
(d) Assumes 1 month of UAL payments will be made prior to the bonds being sold

| | |
|---|---|
| UAL Funded with Bond Proceeds: | $6,380,522 |
| Estimated Bond Amount: | $6,790,000 |
| All-In TIC: | 4.648% |

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# City of Wixom
# Limited Tax General Obligation
# Bonds, Series 2018
# (Federally Taxable)

**Scenario 2 - UAL @ 6.00% Rate of Return vs Bonding for UAL @ 6.00% Rate of Return at Various Interest Rates**

| OPEB Analysis - Market Rates with 6.00% Discount Rate - Assuming Market Value of Assets | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Year Ending 6/30 | UAL Payment (a) | UAAL Amortization Payment (d) | 1-Nov Interest Payment | 1-May Principal Payment | Est. Interest Rate | 1-May Interest Payment | Estimated Bond Payments (b) | Payments Related to $1,890,807 UAAL Remaining After Bonding (e) | Estimated Bond Payments and UAAL Payment | Difference | Present Value @ 4.65% (c) |
| 2019 | $644,534 | $53,711 | $73,503 | $225,000 | 2.80% | $147,006 | $445,508 | 147,339 | $646,558 | ($2,024) | ($1,897) |
| 2020 | 644,534 | -- | 143,856 | 155,000 | 3.17% | 143,856 | 442,711 | 147,339 | 590,050 | 54,484 | 48,758 |
| 2021 | 644,534 | -- | 141,399 | 160,000 | 3.38% | 141,399 | 442,798 | 147,339 | 590,137 | 54,397 | 46,494 |
| 2022 | 644,534 | -- | 138,695 | 165,000 | 3.57% | 138,695 | 442,390 | 147,339 | 589,729 | 54,805 | 44,739 |
| 2023 | 644,534 | -- | 135,750 | 170,000 | 3.77% | 135,750 | 441,499 | 147,339 | 588,838 | 55,696 | 43,424 |
| 2024 | 644,534 | -- | 132,545 | 180,000 | 3.82% | 132,545 | 445,090 | 147,339 | 592,429 | 52,105 | 38,800 |
| 2025 | 644,534 | -- | 129,107 | 185,000 | 3.97% | 129,107 | 443,214 | 147,339 | 590,553 | 53,981 | 38,392 |
| 2026 | 644,534 | -- | 125,435 | 190,000 | 4.02% | 125,435 | 440,870 | 147,339 | 588,209 | 56,325 | 38,260 |
| 2027 | 644,534 | -- | 121,616 | 200,000 | 4.12% | 121,616 | 443,232 | 147,339 | 590,571 | 53,963 | 35,010 |
| 2028 | 644,534 | -- | 117,496 | 210,000 | 4.22% | 117,496 | 444,992 | 147,339 | 592,331 | 52,203 | 32,347 |
| 2029 | 644,534 | -- | 113,065 | 215,000 | 4.37% | 113,065 | 441,130 | 147,339 | 588,469 | 56,065 | 33,180 |
| 2030 | 644,534 | -- | 108,367 | 225,000 | 4.47% | 108,367 | 441,734 | 147,339 | 589,073 | 55,461 | 31,348 |
| 2031 | 644,534 | -- | 103,338 | 235,000 | 4.57% | 103,338 | 441,677 | 147,339 | 589,016 | 55,518 | 29,971 |
| 2032 | 644,534 | -- | 97,969 | 245,000 | 4.62% | 97,969 | 440,937 | 147,339 | 588,276 | 56,258 | 29,007 |
| 2033 | 644,534 | -- | 92,309 | 260,000 | 4.67% | 92,309 | 444,618 | 147,339 | 591,957 | 52,577 | 25,891 |
| 2034 | 644,534 | -- | 86,238 | 270,000 | 4.51% | 86,238 | 442,476 | 147,339 | 589,815 | 54,719 | 25,736 |
| 2035 | 644,534 | -- | 80,150 | 285,000 | 4.53% | 80,150 | 445,299 | 147,339 | 592,638 | 51,896 | 23,312 |
| 2036 | 644,534 | -- | 73,694 | 295,000 | 4.55% | 73,694 | 442,389 | 147,339 | 589,728 | 54,806 | 23,514 |
| 2037 | 644,534 | -- | 66,983 | 310,000 | 4.57% | 66,983 | 443,966 | 147,339 | 591,305 | 53,229 | 21,812 |
| 2038 | 644,534 | -- | 59,900 | 325,000 | 4.59% | 59,900 | 444,799 | 147,339 | 592,138 | 52,396 | 20,506 |
| 2039 | 644,534 | -- | 52,441 | 340,000 | 4.59% | 52,441 | 444,882 | 147,339 | 592,221 | 52,313 | 19,554 |
| 2040 | 644,534 | -- | 44,638 | 355,000 | 4.59% | 44,638 | 444,276 | 147,339 | 591,615 | 52,919 | 18,893 |
| 2041 | 644,534 | -- | 36,491 | 370,000 | 4.59% | 36,491 | 442,981 | 147,339 | 590,320 | 54,214 | 18,486 |
| 2042 | 644,534 | -- | 27,999 | 390,000 | 4.59% | 27,999 | 445,998 | 147,339 | 593,337 | 51,197 | 16,673 |
| 2043 | 644,534 | -- | 19,049 | 405,000 | 4.59% | 19,049 | 443,097 | 147,339 | 590,436 | 54,098 | 16,826 |
| 2044 | 644,534 | -- | 9,754 | 425,000 | 4.59% | 9,754 | 444,508 | 147,339 | 591,847 | 52,687 | 15,652 |
| 2045 | -- | -- | -- | -- | 0.00% | -- | -- | -- | -- | -- | -- |
| | **$16,757,884** | **$53,711** | **$2,331,782** | **$6,790,000** | | **$2,405,284** | **$11,527,066** | **3,830,814** | **$15,411,591** | **$1,346,293** | **$734,690** |

(a) Based on GRS Letter dated April 4, 2018 - Assumes market value of assets
(b) Estimate only based on estimated taxable interest rates as of April 23, 2018
(c) Represents All-in TIC
(d) Assumes 1 month of UAL payments will be made prior to the bonds being sold
(e) Assumes $6,380,522 payment towards UAL, leaving 22.86% of UAL payments remaining unfunded.

| | |
|---|---|
| UAL Funded with Bond Proceeds: | $6,380,522 |
| Estimated Bond Amount: | $6,790,000 |
| All-In TIC: | 4.648% |

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# City of Wixom
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# Bonds, Series 2018
# (Federally Taxable)

**Scenario 2 - UAL @ 5.00% Rate of Return vs Bonding for UAL @ 5.00% Rate of Return at Various Interest Rates**

**OPEB Analysis - Market Rates with 5.00% Discount Rate - Assuming Market Value of Assets**

| Year Ending 6/30 | UAL Payment (a) | UAAL Amortization Payment (d) | 1-Nov Interest Payment | 1-May Principal Payment | Est. Interest Rate | 1-May Interest Payment | Estimated Bond Payments (b) | Payments Related to $4,218,854 UAAL Remaining After Bonding (e) | Estimated Bond Payments and UAAL Payment | Difference | Present Value @ 4.65% (c) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2019 | $741,653 | $61,804 | $73,503 | $225,000 | 2.80% | $147,006 | $445,508 | 295,199 | $802,512 | ($60,859) | ($57,023) |
| 2020 | 741,653 | -- | 143,856 | 155,000 | 3.17% | 143,856 | 442,711 | 295,199 | 737,910 | 3,743 | 3,350 |
| 2021 | 741,653 | -- | 141,399 | 160,000 | 3.38% | 141,399 | 442,798 | 295,199 | 737,997 | 3,656 | 3,125 |
| 2022 | 741,653 | -- | 138,695 | 165,000 | 3.57% | 138,695 | 442,390 | 295,199 | 737,589 | 4,064 | 3,318 |
| 2023 | 741,653 | -- | 135,750 | 170,000 | 3.77% | 135,750 | 441,499 | 295,199 | 736,698 | 4,955 | 3,863 |
| 2024 | 741,653 | -- | 132,545 | 180,000 | 3.82% | 132,545 | 445,090 | 295,199 | 740,289 | 1,364 | 1,016 |
| 2025 | 741,653 | -- | 129,107 | 185,000 | 3.97% | 129,107 | 443,214 | 295,199 | 738,413 | 3,240 | 2,304 |
| 2026 | 741,653 | -- | 125,435 | 190,000 | 4.02% | 125,435 | 440,870 | 295,199 | 736,069 | 5,584 | 3,793 |
| 2027 | 741,653 | -- | 121,616 | 200,000 | 4.12% | 121,616 | 443,232 | 295,199 | 738,431 | 3,222 | 2,091 |
| 2028 | 741,653 | -- | 117,496 | 210,000 | 4.22% | 117,496 | 444,992 | 295,199 | 740,191 | 1,462 | 906 |
| 2029 | 741,653 | -- | 113,065 | 215,000 | 4.37% | 113,065 | 441,130 | 295,199 | 736,329 | 5,324 | 3,151 |
| 2030 | 741,653 | -- | 108,367 | 225,000 | 4.47% | 108,367 | 441,734 | 295,199 | 736,933 | 4,720 | 2,668 |
| 2031 | 741,653 | -- | 103,338 | 235,000 | 4.57% | 103,338 | 441,677 | 295,199 | 736,876 | 4,777 | 2,579 |
| 2032 | 741,653 | -- | 97,969 | 245,000 | 4.62% | 97,969 | 440,937 | 295,199 | 736,136 | 5,517 | 2,845 |
| 2033 | 741,653 | -- | 92,309 | 260,000 | 4.67% | 92,309 | 444,618 | 295,199 | 739,817 | 1,836 | 904 |
| 2034 | 741,653 | -- | 86,238 | 270,000 | 4.51% | 86,238 | 442,476 | 295,199 | 737,675 | 3,978 | 1,871 |
| 2035 | 741,653 | -- | 80,150 | 285,000 | 4.53% | 80,150 | 445,299 | 295,199 | 740,498 | 1,155 | 519 |
| 2036 | 741,653 | -- | 73,694 | 295,000 | 4.55% | 73,694 | 442,389 | 295,199 | 737,588 | 4,065 | 1,744 |
| 2037 | 741,653 | -- | 66,983 | 310,000 | 4.57% | 66,983 | 443,966 | 295,199 | 739,165 | 2,488 | 1,019 |
| 2038 | 741,653 | -- | 59,900 | 325,000 | 4.59% | 59,900 | 444,799 | 295,199 | 739,998 | 1,655 | 648 |
| 2039 | 741,653 | -- | 52,441 | 340,000 | 4.59% | 52,441 | 444,882 | 295,199 | 740,081 | 1,572 | 588 |
| 2040 | 741,653 | -- | 44,638 | 355,000 | 4.59% | 44,638 | 444,276 | 295,199 | 739,475 | 2,178 | 778 |
| 2041 | 741,653 | -- | 36,491 | 370,000 | 4.59% | 36,491 | 442,981 | 295,199 | 738,180 | 3,473 | 1,184 |
| 2042 | 741,653 | -- | 27,999 | 390,000 | 4.59% | 27,999 | 445,998 | 295,199 | 741,197 | 456 | 148 |
| 2043 | 741,653 | -- | 19,049 | 405,000 | 4.59% | 19,049 | 443,097 | 295,199 | 738,296 | 3,357 | 1,044 |
| 2044 | 741,653 | -- | 9,754 | 425,000 | 4.59% | 9,754 | 444,508 | 295,199 | 739,707 | 1,946 | 578 |
| 2045 | -- | -- | -- | -- | 0.00% | -- | -- | -- | -- | -- | -- |
| | **$19,282,978** | **$61,804** | **$2,331,782** | **$6,790,000** | | **$2,405,284** | **$11,527,066** | **7,675,175** | **$19,264,045** | **$18,933** | **($10,989)** |

(a) Based on GRS Letter dated April 4, 2018 - Assumes market value of assets
(b) Estimate only based on estimated taxable interest rates as of April 23, 2018
(c) Represents All-in TIC
(d) Assumes 1 month of UAL payments will be made prior to the bonds being sold
(e) Assumes $6,380,522 payment towards UAL, leaving 39.80% of UAL payments remaining unfunded.

| | |
|---|---|
| UAL Funded with Bond Proceeds: | $6,380,522 |
| Estimated Bond Amount: | $6,790,000 |
| All-In TIC: | 4.648% |