City of Westland
County of Wayne
State of Michigan

Comprehensive Financial Plan
For Pension and
Other Post-Employment Benefits

October 5, 2020

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COMPREHENSIVE FINANCIAL PLAN FOR PENSION AND OTHER POST-EMPLOYMENT BENEFITS

This Comprehensive Financial Plan for Pension and Other Post-Employment Benefits (the "Plan") is being prepared pursuant to Section 518 of Public Act 34 of 2001, as amended (the "Act 34"). In accordance with Act 34, the City of Westland (the "City") is planning to issue bonds to finance a portion of the City's unfunded pension liability for the City's Municipal Employees Retirement System ("MERS") pension plan for general government employees, as further described in this Plan.

Act 34 requires the City to take certain steps in order to be eligible to issue bonds to fund a portion of its pension liability, including:

1. The closure of its defined benefit pension plan, with effective dates by division shown on page 3 herein.
2. The preparation, approval, and public posting of this Plan analyzing the funding of the City's retirement and other post-employment health care benefit plans.
3. Have conducted an internal or external review to verify eligible participants are receiving benefits consistent with the Plan within 1 year from the date of issuance of the bonds.
4. Publication of a Notice of Intent to issue bonds, and expiration of the right of referendum relating thereto.
5. Obtaining a credit rating from a nationally recognized rating agency in the "A" rating category or higher.
6. Certifying the City has funded its defined benefit plans' annual actuarially determined contribution for the most recently available three (3) audited financial statement years.
7. Certifying the City is compliant with the reporting requirements in accordance with the Protecting Local Government Retirement and Benefits Act, Public Act 202, of 2017.
8. Provide evidence that it has the legal debt capacity to issue the proposed bonds.
9. Have applied for and obtained approval from the Michigan Department of Treasury to issue the bonds.

The Plan provided herein will provide a general overview of the City's pension/retirement and post-employment health care plans, the historical and proposed funding for these plans, as well as analysis of the estimated benefit of issuing limited tax general obligation bonds to fund a portion of the City's unfunded pension liability as authorized by Act 34.

PENSION PLANS OVERVIEW

The City of Westland provides retirement benefits, with alternative lump-sum payment options, to employees who meet the eligibility requirements, including age and years of service. The benefits are provided through Municipal Employees' Retirement System of Michigan (MERS) for general government employees, and the Police and Fire defined benefit pension plan. The City also contributes to a defined contribution pension plan for certain employees who meet eligibility requirements. The benefits of the defined contribution plan are administered by MERS of Michigan.

Defined Benefit Plan - MERS

The City of Westland participates in the Municipal Employees' Retirement System of Michigan ("MERS") for general government employees, an agent multiple-employer defined benefit plan. The plan provides certain retirement, disability and death benefits to Plan members and beneficiaries.

MERS is an agent multiple employer, statewide public employee pension plan established by the Michigan Legislature under Public Act 35 of 1945 and administered by a nine-member retirement board. MERS issues a publicly available financial report that includes financial statements and required supplementary information. This report may be obtained by accessing the MERS website at www.mersofmich.com.

The City approved the closure of the MERS plan for new hires by division as shown in the table below. The City has implemented a defined contribution plan for employees no longer eligible for the defined benefit plan.

Division	Status	Date Closed to New Hires
10 - AFSCME	Closed	6/20/1999
11 - Supervisory	Closed	6/30/2010
12 - Mayor, Staff	Closed	12/31/2007
13 - Judges,Crt.Super	Closed	12/31/2016
14 - Court, Union	Closed	9/30/2003
15 - AFSCME 6/21/99	Closed	6/30/2015
17 - CrtUn Hired10/03	Closed	12/31/2016
18 - Dispatchers hired bfr. 7/1/14	Closed	6/30/2014
19 - Mayor Staff hired after 1/1/08	Closed	6/30/2015
20 - Crt Admin & Union aft 7/1/10	Closed	12/31/2016
21 - Dispatchers on/aft 7/1/14	Closed	6/30/2019
22 - Supervisory aft 7/1/10	Closed	7/1/2018
23 - UAW	Closed	7/1/2018
90 - Eld HC Administration	Closed	6/30/2014
91 - Eld HC General	Closed	6/30/2014

Source: City of Westland

Membership – Membership in the MERS plan is made up of 15 Divisions including various employee groups hired prior to various plan closing dates. A breakdown of the employees covered by the Plan as of the December 31, 2019 valuation is provided below.

Division #	Division	Active	Vested Former	Retirees & Beneficiaries	Pending Refunds	Total
10	AFSCME	12	5	127	0	144
11	Supervisory	6	3	42	0	51
12	Mayor, Staff	4	6	55	0	65
13	Judges, Crt.Super	6	2	20	0	28
14	Court, Union	3	3	15	0	21
15	AFSCME, 6/21/99	19	6	10	0	35
17	Crt Un Hired 10/03	5	0	1	0	6
18	Dispatchers hired bfr. 7/1/14	2	12	13	1	28
19	Mayor Staff hired after 1/1/08	3	0	3	1	7
20	Crt Admin & Union aft 7/1/10	4	0	0	1	5
21	Dispatchers on/aft 7/1/14	0	2	0	14	16
22	Supervisory aft 7/1/10	3	0	0	1	4
23	UAW	5	0	0	0	5
90	Eld HC Administration	0	1	2	0	3
91	Eld HC General	0	5	21	1	27
Total		**72**	**45**	**309**	**19**	**445**

Benefits – The MERS plan provides retirement, disability, and death benefits to full time employee groups who were hired prior to various plan closing dates. To be eligible, employees must have a minimum years of service (ranging from 25 to 30), as well as meet minimum retirement age in most circumstances. Retirement benefits are calculated as various percentages (ranging from 1 to 2.8 percent) of the employees' final three-year or five-year average compensation times the employee's years of service. The plan provides for an annual automatic 2.5% (non-compounded) cost of living allowance increase after age 55 or 50 and is limited to 15-25 years.

Benefit terms, within the parameters established by MERS, are generally established and amended by authority of the City Council, usually after negotiation of these terms with the affected unions.

Contribution Rates – The City is required to contribute at least equal to the actuarially determined rate, as established by MERS Retirement Board. The actuarially determined rate is the estimated amount necessary to finance the cost of benefits earned by employees during the year (commonly referred to as "normal cost"), with an additional amount to finance any unfunded accrued liability. The City establishes contribution rates to be paid by its covered employees.

Covered employees contribute a percentage of their salary as follows:

Division #	Division	Employee Contribution %
10	AFSCME	5.00%
11	Supervisory	6.00%
12	Mayor, Staff	5.00%
13	Judges, Crt.Super	5.00%
14	Court, Union	5.00%
15	AFSCME	5.00%
17	Crt Un Hired	5.00%
18	Dispatchers hired bfr. 7/1/14	5.00%
19	Mayor Staff hired after 1/1/08	5.00%
20	Crt Admin & Union aft 7/1/10	5.00%
21	Dispatchers on/aft 7/1/14	3.00%
22	Supervisory aft 7/1/10	6.00%
23	UAW	6.00%
90	Eld HC Administration	5.00%
91	Eld HC General	5.00%

Source: 12/31/2019 MERS Annual Actuarial Valuation, page 9

Funding - As of December 31, 2019, the MERS Plan had an unfunded liability as shown in the following table, based on actuarial value of assets and the market value of assets.

Pension Funding - MERS	Actuarial Value of Assets (12/31/2019)	Market Value of Assets (12/31/2019)	Market Value of Assets (6/30/2020*)
Actuarial Accrued Liability (AAL)	$146,243,837	$146,243,837	$146,243,837
Value of Assets	$58,770,551	$58,006,090	$54,624,510
Unfunded Actuarial Liability (UAL)	$87,473,286	$88,237,747	$91,619,327
Funded Ratio	40.19%	39.66%	37.35%
Covered Payroll	$4,635,244	$4,635,244	$4,635,244
UAL as % of Covered Payroll	1887.13%	1903.63%	1976.58%

Source: December 31, 2019 MERS Annual Actuarial Valuation, pages 20-21, and MERS Statement of Fiduciary Net Position as of 6/30/20.
*If the market value of assets is used in determining the amount to be funded through the issuance of bonds, an updated market value will be used which is within 150 days of the bond closing.

A breakdown of the unfunded or (overfunded) actuarial liability by division is shown on the following page.

		Based on Actuarial Value of Assets, 12/31/19		Based on Market Value of Assets, 12/31/19		Based on Market Value of Assets, 6/30/2020*	
Division	**Actuarial Acccrued Liability 12/31/19**	**Actuarial Value of Assets**	**Unfunded Actuarial Liability**	**Market Value of Assets**	**Unfunded Actuarial Liability**	**Market Value of Assets**	**Unfunded Actuarial Liability**
10	$49,547,873	$18,195,051	$31,352,822	$17,958,378	$31,589,495	$16,731,745	$32,816,128
11	24,672,009	6,174,002	18,498,007	6,093,693	18,578,316	5,588,683	19,083,326
12	32,357,394	5,740,045	26,617,349	5,665,381	26,692,013	5,282,878	27,074,516
13	11,584,799	4,336,882	7,247,917	4,280,470	7,304,329	4,066,296	7,518,503
14	5,361,165	2,914,989	2,446,176	2,877,072	2,484,093	2,693,932	2,667,233
15	7,469,313	7,314,582	154,731	7,219,437	249,876	6,959,830	509,483
17	686,409	1,025,849	(339,440)	1,012,505	(326,096)	981,103	(294,694)
18	8,842,855	6,111,407	2,731,448	6,031,913	2,810,942	5,777,524	3,065,331
19	1,494,810	2,414,660	(919,850)	2,383,252	(888,442)	2,288,337	(793,527)
20	163,566	595,293	(431,727)	587,550	(423,984)	574,034	(410,468)
21	23,721	213,407	(189,686)	210,632	(186,911)	210,010	(186,289)
22	170,801	562,550	(391,749)	555,232	(384,431)	544,215	(373,414)
23	1,593,554	1,032,116	561,438	1,018,690	574,864	1,003,907	589,647
90	629,134	321,864	307,270	317,678	311,456	277,496	351,638
91	1,646,434	1,488,523	157,911	1,469,161	177,273	1,330,035	316,399
S1	0	329,331	(329,331)	325,047	(325,047)	314,483	(314,483)
	$146,243,837	$58,770,551	$87,473,286	$58,006,090	$88,237,747	$54,624,510	$91,619,327

Source: December 31, 2019 MERS Annual Actuarial Valuation & MERS Statement of Fiduciary Net Position for the year/quarter ending 12/31/2019; 6/30/2020

**If the market value of assets is used in determining the amount to be funded through the issuance of bonds, an updated market value will be used which is within 150 days of the bond closing.*

The key actuarial assumptions used in determining the actuarial valuation of the City's MERS Plan as of December 31, 2019 included:

- 7.35% assumed investment rate of return
- A 5-year smoothing of investment returns
- 3.0% inflation rate
- Salary increases of 3.00%

Since assumptions are intended to be long-term assumptions, the actual Plan experience will not match the actuarial assumptions. Therefore, with each annual actuarial valuation the annual required contributions may increase or decrease based on the prior year's actual experience.

For further details on the MERS assumptions, please see Appendix A or the following link:

http://www.mersofmich.com/Employer/Work-Scenarios/Unfunded-Liability

Detail on the City's historical funding for the MERS Plan is provided below:

MERS Historical Pension Funding				
Actuarial Valuation Date	**Actuarial Value of Assets**	**Actuarial Accrued Liability (AAL)**	**Unfunded AAL**	**Funded Ratio**
12/31/2009	$56,913,144	$98,241,028	$41,327,884	57.93%
12/31/2010	57,465,343	104,515,192	47,049,849	54.98%
12/31/2011	56,636,806	109,980,544	53,343,738	51.50%
12/31/2012	55,450,156	112,765,537	57,315,381	49.17%
12/31/2013	55,364,925	116,937,134	61,572,209	47.35%
12/31/2014	58,181,031	124,252,898	66,071,867	46.82%
12/31/2015	58,112,861	133,503,204	75,390,343	43.53%
12/31/2016	58,036,689	135,877,079	77,840,390	42.71%
12/31/2017	58,878,856	138,551,008	79,672,152	42.50%
12/31/2018	58,718,582	140,406,350	81,687,768	41.82%
12/31/2019	58,770,551	146,243,837	87,473,286	40.19%

Source: December 31, 2019 MERS Annual Actuarial Valuation, page 21

Below is a history of City contributions for the MERS Plan:

MERS Defined Benefit Contributions			
Year Ending 12/31	**Annual Required Contribution**	**City's Annual Contribution**	**Percentage of ARC Contributed**
12/31/2009	$3,639,367	$3,639,367	100.00%
12/31/2010	3,480,225	3,480,225	100.00%
12/31/2011	3,297,691	3,297,691	100.00%
12/31/2012	3,410,979	3,410,979	100.00%
12/31/2013	3,935,037	3,935,037	100.00%
12/31/2014	4,403,242	5,623,374	127.71%
12/31/2015	4,903,859	5,168,527	105.40%
12/31/2016	5,133,653	5,316,066	103.55%
12/31/2017	5,951,992	6,005,409	100.90%
12/31/2018	6,246,611	6,715,660	107.51%
12/31/2019	6,486,882	6,768,342	104.34%

Source: December 31, 2019 MERS Annual Actuarial Valuation, page 21

Closure of Plan – As noted and shown on page 3 in detail by division, the City has closed all divisions of its MERS plan to new employees.

Defined Contribution Plan

As part of closing the MERS defined benefit pension plan, the City has also established a defined contribution plan for certain employees who meet the eligibility requirements. Benefit terms, including contribution requirements for the Defined Contribution Plan are established and may be amended by City Council. For each employee in the defined contribution plan, the City is required to contribute 10% to 15% of annual salary, exclusive of overtime pay, to an individual employee account. Employees are permitted to make contributions up to the applicable Internal Revenue Code limits. For fiscal year ended June 30, 2020, the total contributions were $494,946.72, including employer contributions in the amount of $323,443.85 and employee contributions in the amount of $171,502.87.

Cost Containment Measures-MERS Pension

The City has taken various measures to reduce the City's pension liability related to the MERS defined benefit pension plan and ongoing cost, as further described below.

- The City's Pension Plan has fifteen divisions. To date, all divisions have been closed to new hires. Pursuant to Section 518(10) of the Act, employee benefits within the closed divisions of the Pension Plan will not increase. Pursuant to Section 518(12) of the Act, the closed divisions will not be reopened to new hires.
- Across all divisions, employees are mandated to contribute a minimum of 3% to 6% of their salary towards their pension (depending on division and start date).
- The expiration date for UAW contracts allowed the City to successfully negotiate for UAW employees to increase their contributions from 3% to 6% of their salary towards their pension.
- For years ended December 31, 2014 through December 31, 2019, the City contributed a total of $2,471,139 in excess of the annual required contribution over that time period.
- The City has completed a review to verify eligible participants in the pension plans are receiving appropriate pension or other postemployment benefits consistent with their respective plan.

Police and Fire Pension Plan

Bonds will not be issued by the City for its Police and Fire Retirement System. The plan does not qualify in accordance with the Act.

The City provides defined benefit pension benefits to police and fire employees who meet eligibility requirements. The benefits are provided through the City of Westland Police and Fire Retirement System, a single-employer plan administered by the Police and Fire Pension Board, which consists of five members – two elected by plan members, two appointed by the City; and the City Treasurer who serves as an ex-officio member.

Membership – As of the most recent actuarial reports dated June 30, 2019, total membership for the Police and Fire Retirement System consisted of:

Membership	Total
Active Employees	142
Retired	258
Beneficiaries	10
Disabled	13
Terminated Vested Participants	3
Total	426

Source: 6/30/19 Actuarial Valuation Report, page 22

Benefits – The plan provides retirement, disability, and death benefits to full time employee groups. To be eligible, employees must have 25 or more years of service, as well as meet minimum retirement age of 50 in most circumstances. Retirement benefits are calculated as various percentages (ranging from 1.75 to 2.8 percent) of the employees' average final compensation.

Benefit terms, within the parameters established by the plan, are generally established and amended by authority of the City Council, usually after negotiation of the terms with the affected groups.

Contribution Rates - The City contributes to the Police and Fire Pension Plan via lump sum contributions on an annual basis. For fiscal year ended June 30, 2020, the City contributed $6,930,276. The City's contributions are funded through an Act 345 millage.

Funding – As of June 30, 2019, the plan's actuarial value of assets was $167,124,682 and the actuarial accrued liability was $230,177,436, for an unfunded actuarial accrued liability (UAAL) of $63,052,743, for a funding ratio of 72.61%.

Pension Funding - Police and Fire	Actuarial Value of Assets (6/30/2019)	Market Value of Assets (6/30/2019)
Actuarial Accrued Liability (AAL)	$230,177,436	$230,177,436
Value of Assets	$167,124,682	$168,608,364
Unfunded Actuarial Liability (UAL)	$63,052,754	$61,569,072
Funded Ratio	72.61%	73.25%
Covered Payroll	$11,946,038	$11,946,038
UAL as % of Covered Payroll	527.81%	515.39%

Source: June 30, 2019 City of Westland Police and Fire Retirement System Actuarial Valuation Report

The key actuarial assumptions used in determining the actuarial valuation of the City's Police and Fire Retirement Plan as of June 30, 2019 included:

- 7.25% assumed investment rate of return, net of expenses
- A 5-year smoothing period
- Salary increases of 3.25%

As assumptions are intended to be long-term assumptions, the actual plan experience will not match the actuarial assumptions. Therefore, with each annual actuarial valuation the annual required contributions may increase or decrease based on the prior year's actual experience.

Detail on the City's historical funding for the Fire and Police Pension Plan is provided below:

Fire and Police Historical Pension Funding				
Actuarial Valuation Date	**Actuarial Value of Assets**	**Actuarial Accrued Liability (AAL)**	**Unfunded AAL**	**Funded Ratio**
6/30/2010	$156,459,851	$168,863,574	$12,403,723	92.65%
6/30/2011	155,652,824	175,310,438	19,657,614	88.79%
6/30/2012	149,304,993	181,989,998	32,685,005	82.04%
6/30/2013	144,412,629	192,556,612	48,143,983	75.00%
6/30/2014	150,536,237	204,643,567	54,107,330	73.56%
6/30/2015	154,516,130	213,099,595	58,583,465	72.51%
6/30/2016	154,907,025	223,150,535	68,243,510	69.42%
6/30/2017	159,167,192	226,893,469	67,726,277	70.15%
6/30/2018	168,541,032	227,215,316	58,674,284	74.18%
6/30/2019	167,124,682	230,177,436	63,052,754	72.61%

Source: June 30, 2019 Annual Actuarial Valuation; City of Westland Annual Comprehensive Financial Reports, and City of Westland

Below is a history of City contributions for the Police and Fire Plan:

Police and Fire Pension Historical Contributions			
Fiscal Year Ending 6/30	**Annual Required Contribution**	**City's Annual Contribution**	**Percentage of ARC Contributed**
6/30/2009	$4,738,178	$4,738,178	100.00%
6/30/2010	3,829,140	3,829,140	100.00%
6/30/2011	4,137,201	4,137,201	100.00%
6/30/2012	4,494,952	4,494,952	100.00%
6/30/2013	4,990,887	4,990,887	100.00%
6/30/2014	5,813,007	5,813,007	100.00%
6/30/2015	6,693,504	6,693,504	100.00%
6/30/2016	6,717,939	6,717,939	100.00%
6/30/2017	6,841,964	6,879,391	100.55%
6/30/2018	7,398,670	7,398,670	100.00%
6/30/2019	7,597,694	7,597,694	100.00%

Source: City of Westland Comprehensive Annual Financial Report, Fiscal Year Ending June 30, 2019, page 61

Cost Containment Measures-Police and Fire Pension

The City has taken various measures to reduce the City's pension liability related to the Police and Fire defined benefit pension plan and ongoing cost, as further described below.

- Related to the fire contract, employees hired after November 1, 2014 now receive a 2.25% multiplier, a decrease from 2.8%. Further the Average Final Compensation (AFC) is based on base wages only. For employees hired after January 1, 2010 but before November 1, 2014, the AFC is based on base wages, over time, and 240 hours of unused sick leave. Prior to November 1, 2010 the AFC was based on all related compensation.
- Related to the police contract, the AFC for officers hired on or after January 1, 2010 is now calculated on base pay and overtime pay. For police officers hired on or after July 1, 2014:
    - For years of service earned prior to July 1, 2019, credit is based on a 1.75% multiplier based on wages only;
    - Effective July 1, 2019 and for years of service earned thereafter, credit is based on a 2.25% multiplier and is calculated on base pay and overtime pay.
- Related to the police lieutenant and sergeant contract, the AFC for officers hired on or after January 1, 2010 and prior to July 1, 2014 is calculated on base pay and overtime pay. The pension for police officers with an original hire date that is on or after July 1, 2014 include a 1.75% multiplier and is based on base wages only.

Compliance with Protecting Local Government Retirement and Benefits Act

The City is fully compliant with the Protecting Local Government Retirement and Benefits Act 202 of 2017 ("Act 202"). Act 202 considers pension plans underfunded when the systems funding ratio is below 60% and the annual required contribution is greater than 10% of the governmental fund revenues.

Pursuant to Act 202, the MERS defined benefit plan is considered underfunded. Therefore, as required by Act 202, the City filed a Corrective Action Plan, which was approved by the Michigan Department of Treasury on December 27, 2018.

POST EMPLOYMENT HEALTH CARE BENEFITS PLAN

Currently, the City does not anticipate issuing Bonds to fund its retiree health care plan.

The City provides Other Postemployment Benefits (OPEB) for all employees who meet eligibility requirements. The benefits are provided through the City of Westland Retiree Health Care Plan, a single-employer plan administered by the City of Westland. The City of Westland Retiree Health Care Plan is closed to all new hires. Depending on the employee group, employees hired on/after 2010 to 2014 are enrolled in a Health Care Savings Program (HCSP) and required to purchase their own medical coverage at retirement (i.e. not from the City).

During the June 30, 2019 fiscal year, the City opened a Plan Trust. As of June 30, 2020, all plan investments are held in the MERS of Michigan Retiree Health Funding Vehicle. MERS issues a publicly available financial report, which includes another postemployment benefits fund. This report can be obtained at www.mersofmichigan.com or in writing to MERS at 1134 Municipal Way, Lansing, MI 48917.

Membership – As of the most recent actuarial reports dated June 30, 2019, total membership for the Westland Retiree Health Care Plan consisted of:

Membership	Total
Inactive receiving benefits	**458**
Inactive not yet receiving benefits	**27**
Active	**197**
Total	**682**

Source: 2019 disclosure document

Benefits – The City of Westland Retiree Health Care Plan provides healthcare benefits for eligible employees upon retirement in accordance with labor contracts and City Council resolution. Benefits are provided through the City's self-insurance program, and the full cost of benefits are covered by the plan.

Contributions - Retiree healthcare costs are paid by the City on a "pay-as-you-go" basis. Additionally, the City contributes additional amounts, as determined by City Council. For the fiscal year ended June 30, 2019, the City made payments for postemployment health benefit premiums of $8,070,396 plus prefunded contributions of $500,000.

Eligibility / Covered Employees – A member may retire with benefits after a minimum of 25-30 years of service and meet the minimum retirement age ranging from 50 to 65. As noted, depending on the employee group, employees hired on/after 2010 to 2014 are enrolled in a Health Care Savings Program (HCSP) and are required to purchase their own medical coverage at retirement (i.e. not from the City).

Funding – As of June 30, 2019, the Retiree Health Care Plan was 0.3% funded with an unfunded actuarial liability of $165,246,823. Pursuant to City's approved Corrective Action Plan pursuant to Act 202, the City intends to fund the trust fund with $500,000 each year and not withdraw from the trust fund until the trust fund is self-sufficient to pay all future benefit payments. As noted earlier, retiree healthcare costs are paid by the City on a "pay-as-you-go" basis.

OPEB Funding	Value as of 6/30/19
Actuarial Accrued Liability (AAL)	$165,751,057
Value of Assets	$504,234
Unfunded Actuarial Liability (UAL)	$165,246,823
Funded Ratio	0.30%

Source: June 30, 2019 Actuarial Valuation Report, page 3

The following table shows the City's historical funding of its post-employment health benefits plan.

Historical OPEB Funding				
Actuarial Valuation Date	**Actuarial Value of Assets**	**Actuarial Accrued Liability (AAL)**	**Unfunded AAL**	**Funded Ratio**
6/30/2008	$0	$181,861,454	$181,861,454	0.00%
6/30/2011	0	216,389,936	216,389,936	0.00%
6/30/2013	0	235,582,416	235,582,416	0.00%
6/30/2015	0	279,605,383	279,605,383	0.00%
6/30/2019	504,234	165,751,057	165,246,823	0.30%

Source: City of Westland Comprehensive Annual Financial Reports; June 30, 2019 Annual Actuarial Report

The main actuarial assumptions used in determining the actuarial valuation as of June 30, 2019 included:

- A level dollar amortization, 30-year closed amortization method with 29 years remaining in FY 2019/20.
- A 6.05% investment rate of return
- General wage inflation is 3.75%, with implicit inflation of 2.5% annually

As assumptions are intended to be long-term assumptions, the actual plan experience will not match the actuarial assumptions. Therefore, with each annual actuarial valuation the annual required contributions may increase or decrease based on the prior year's actual experience.

The following table shows the City's contribution and funding progress of its post-employment health benefits plan.

OPEB Contributions			
Year Ended 6/30	Actuarially Determined Contribution	City's Annual Contribution	Percentage Contributed
2013	$13,821,250	$6,550,255	47.39%
2014	13,821,250	6,203,861	44.89%
2015	14,532,590	7,223,809	49.71%
2016	14,532,590	7,822,651	53.83%
2017	14,532,590	7,943,997	54.66%
2018*			
2019	13,467,910	8,570,396	63.64%

**In 2018, no contributions in relation to the actuarially determined contribution are shown, as there was no actuarial determined contribution*

Source: June 30, 2019 Actuarial Valuation

Cost Containment Measures

The City has taken various measures to reduce the City's OPEB liabilities and ongoing cost, as further described below.

- In October 2009, the City changed health insurance advisors and converted health programs to self-insured plans. The cash refund and annual cost savings were significant. The amount of savings exceeded $1,650,000 for healthcare.
- In September 2016, the City converted all Medicare retirees to the Medicare Advantage Plan. This helped contribute towards lowering the liability in the actuarial report for fiscal year ended June 30, 2017 by approximately $104 million of the total $114,832,278.
- The City established a trust for the OPEB plan that allowed the City to start contributing towards the total healthcare liability. It is the City's intent is to fund the trust fund with $500,000 each year and not withdraw from the trust fund until the trust fund is self-sufficient to pay all future benefit payments. The City contributed $500,000 to the trust fund in the fiscal year ended June 30, 2020.
- Depending on the employee group, employees hired on/after 2010 to 2014 are enrolled in a Health Care Savings Program (HCSP) and are required to purchase their own medical coverage at retirement (i.e. not from the City).

Compliance with Protecting Local Government Retirement and Benefits Act

The City is fully compliant with the Protecting Local Government Retirement and Benefits Act 202 of 2017 ("Act 202"). Act 202 considers pension plans underfunded when the systems funding ratio is below 40% and the annual required contribution is greater than 12% of the governmental fund revenues.

Pursuant to Act 202, the City's Westland Post-Employment Benefits Plan is considered underfunded. Therefore, as required by Act 202, the City filed a Corrective Action Plan, which was approved by the Michigan Department of Treasury on December 27, 2018.

In preparing the Corrective Action Plan, the City worked to implement changes to each group within the Post-Employment Benefits Plan in order address the four approval criteria identified as best practices by the Municipal Stability Board which include underfunded status, reasonable timeframe, legal and feasible and affordability. The changes are summarized in large part below:

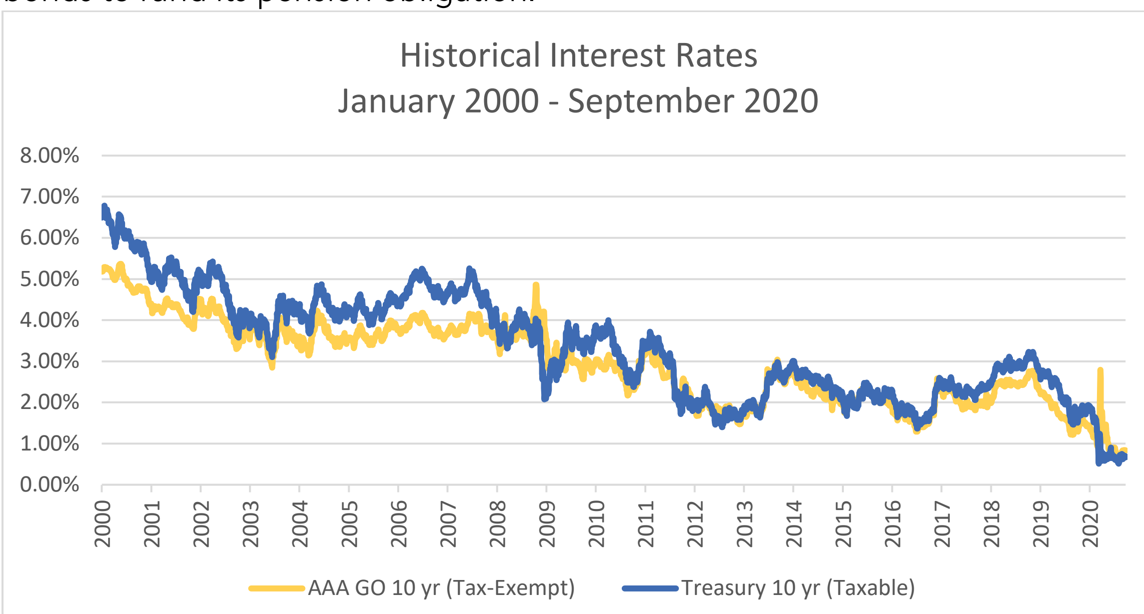
- In October 2009, the City changed health insurance advisors and converted health programs to self-insured plans. The cash refund and annual cost savings were significant. The amount of savings exceeded $1,650,000 for healthcare
- In September 2016, the City converted all Medicare Retirees to the Medicare Advantage Plan. This helped contribute towards lowering the liability in the actuary report for fiscal year ended June 30, 2017 by approximately $104 million of the total $114,832,278.
- The City established a trust for the OPEB plan that allowed the City to start contributing towards the total healthcare liability. It is the City's intent is to fund the trust fund with $500,000 each year and not withdraw from the trust fund until the trust fund is self-sufficient to pay all future benefit payments. The additional $500,000 ($437,500 for General Fund) will be above the pay-go costs. As the Pension plan becomes fully funded, the annual required contribution will decrease, which will allow additional funding for the OPEB plan.
- Recently expired union contracts for several groups provided the opportunity for the City to negotiate plan provisions in a manner to lower or limit total OPEB liability as the City has done in the past with other contracts.
- All new hires in all union groups, except non-union for the 18th District Court, do not receive post-retirement health benefits. Therefore, there will be minimal normal cost associated with new hires. Subsequent to the corrective action plan, the City will contribute towards the normal cost for all new hires that would receive retiree health benefits.

RATING REQUIREMENT

The City is in the process of obtaining a rating from one of the major credit rating agencies, and the rating will be received prior to sale of the bonds. The City understands that it must achieve a credit rating in the 'A' category or higher from at least one rating agency in order to receive approval from the Michigan Department of Treasury and issue the bonds. The City's existing credit ratings with Moody's and S&P Global are 'A3" and 'A+' respectively, a copy of which latest reports available are included in Appendix E herein.

BOND ISSUANCE CONSIDERATIONS

The City anticipates issuing bonds as authorized by Act 34 to partially fund the unfunded pension liability for its MERS Plan. The chart below shows a history of 10-year US Treasury rates along with the 10-year tax-exempt national AAA rated MMD interest rates. Since interest rates are near historically low levels, the City anticipates receiving favorable interest rates for the limited tax general obligation bonds to fund its pension obligation.



Determination of Bond Amount

Act 34 limits the amount the City can bond to achieve a funded level of 95% based on the actuarial value of assets or market value of assets, respectively. This is shown in greater detail on the Estimated Bond Amount table on the next page. The assets from all overfunded division were reallocated to non-overfunded divisions such that the overfunded divisions would be 95% funded, and the additional assets were applied to the underfunded divisions such that the divisions would be equally funded. Further information on the asset reallocation is provided in the GRS Supplemental Valuation report included in Appendix B herein. The table on the following page is before the asset reallocation.

		Based on Actuarial Value of Assets, 12/31/19		Based on Market Value of Assets, 12/31/19		Based on Market Value of Assets, 6/30/2020*	
Division	**Actuarial Acccrued Liability 12/31/19**	**Actuarial Value of Assets**	**Unfunded Actuarial Liability**	**Market Value of Assets**	**Unfunded Actuarial Liability**	**Market Value of Assets**	**Unfunded Actuarial Liability**
10	$49,547,873	$18,195,051	$31,352,822	$17,958,378	$31,589,495	$16,731,745	$32,816,128
11	24,672,009	6,174,002	18,498,007	6,093,693	18,578,316	5,588,683	19,083,326
12	32,357,394	5,740,045	26,617,349	5,665,381	26,692,013	5,282,878	27,074,516
13	11,584,799	4,336,882	7,247,917	4,280,470	7,304,329	4,066,296	7,518,503
14	5,361,165	2,914,989	2,446,176	2,877,072	2,484,093	2,693,932	2,667,233
15	7,469,313	7,314,582	154,731	7,219,437	249,876	6,959,830	509,483
17	686,409	1,025,849	(339,440)	1,012,505	(326,096)	981,103	(294,694)
18	8,842,855	6,111,407	2,731,448	6,031,913	2,810,942	5,777,524	3,065,331
19	1,494,810	2,414,660	(919,850)	2,383,252	(888,442)	2,288,337	(793,527)
20	163,566	595,293	(431,727)	587,550	(423,984)	574,034	(410,468)
21	23,721	213,407	(189,686)	210,632	(186,911)	210,010	(186,289)
22	170,801	562,550	(391,749)	555,232	(384,431)	544,215	(373,414)
23	1,593,554	1,032,116	561,438	1,018,690	574,864	1,003,907	589,647
90	629,134	321,864	307,270	317,678	311,456	277,496	351,638
91	1,646,434	1,488,523	157,911	1,469,161	177,273	1,330,035	316,399
S1	0	329,331	(329,331)	325,047	(325,047)	314,483	(314,483)
	$146,243,837	$58,770,551	$87,473,286	$58,006,090	$88,237,747	$54,624,510	$91,619,327

Source: December 31, 2019 MERS Annual Actuarial Valuation & MERS Statement of Fiduciary Net Position for the year/quarter ending 12/31/2019; 6/30/2020

**If the market value of assets is used in determining the amount to be funded through the issuance of bonds, an updated market value will be used which is within 150 days of the bond closing.*

The annual required contribution the City makes for its defined benefit pension plans 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 34, only a portion of the unfunded accrued liability may be financed with bonds, to the 95% funding level, depending on the value of assets used, as noted above.

The City is planning to issue an amount that will achieve the maximum funding level possible for its MERS plan, based on either the market value of assets or the actuarial value of assets. This determination will be made prior to the bond sale. The sources and uses for these two different options are shown on the following page. Also shown is the projected funding levels before and after the proposed bonds are issued.

The City understands that a more recent value of assets, determined within 150 days of closing, will need to be used if the bond amount is based on the market value of assets.

Based on the actuarial value and market value information provided above for the divisions which are underfunded, the maximum amount which may be funded with bond proceeds, based on actuarial value of assets and the market value of assets is shown below.

Pension Funding	Actuarial Value of Assets	Market Value of Assets 12/31/19	Market Value of Assets 6/30/20*
Actuarial Accrued Liability (AAL)	$146,243,837	$146,243,837	$146,243,837
Value of Assets	$58,770,551	$58,006,090	$54,624,510
Unfunded Actuarial Liability (UAL)	$87,473,286	$88,237,747	$91,619,327
Funded Ratio	40.19%	39.66%	37.35%
Maximum Funding Level Bondable	95.00%	95.00%	95.00%
Maximum Funding Level	$138,931,645	$138,931,645	$138,931,645
Value of Assets	$58,770,551	$58,006,090	$54,624,510
Maximum Amount to be Bonded:	$80,161,094	$80,925,555	$84,307,135

Source: December 31, 2019 MERS Annual Actuarial Valuation, pages 20-21, and MERS Statement of Fiduciary Net Position as of 6/30/20.

**If the market value of assets is used in determining the amount to be funded through the issuance of bonds, an updated market value will be used which is within 150 days of the bond closing.*

The table below shows the estimated maximum bond amounts using both the actuarially value of assets and market value of assets as of December 31, 2019 and the market value of assets as of June 30, 2020. Should the City fund based on the market value of assets, the bond amount will be based on the unfunded liability using the market value of assets within 150 days of the bond closing. In order to provide flexibility for changes in the market value of assets, the City is using a not-to-exceed bond amount of $89,000,000.

Estimated Bond Amount - 95% Funding				
		Based on UAL Using 12/31/19 Actuarial Value of Assets	Based on UAL Using 12/31/19 Market Value of Assets	Based on UAL Using 6/30/20 Market Value of Assets
(a)	Actuarial Accrued Liability (AAL)	$146,243,837	$146,243,837	$146,243,837
(b)	Maximum % Funding Level for Bonding	95.00%	95.00%	95.00%
(c)	Maximum Funding Level for Bonding in Dollars (a x b)	$138,931,645	$138,931,645	$138,931,645
(d)	Less: Value of Assets*	$58,770,551	$58,006,090	$54,624,510
(e)	Unfunded Liability to be Bonded (c - d)	$80,161,094	$80,925,555	$84,307,135
(f)	Plus: Estimated Issuance Cost[1]	$1,108,906	$1,109,445	$1,127,865
(g)	Estimated Bond Amount (e + f)	$81,270,000	$82,035,000	$85,435,000
(h)	Funding Level After Bonding (d + e / a)	95.00%	95.00%	95.00%
(i)	Funding Level Before Bonding (d / a)	40.19%	39.66%	37.35%

Source: December 31, 2019 MERS Annual Actuarial Valuation

[1] Includes estimated underwriter's discount and an allotment for bond insurance

The City is planning to issue the bonds using whichever methodology results in the highest funding amount in order to achieve the maximum funding level, while also achieving the required minimum net present value savings as provided by Act 34.

Legal Debt Limitation Compliance

As of October 5, 2020, the City's outstanding debt is shown below:

DIRECT DEBT: As of October 5, 2020

Dated Date	Purpose	Bond Type	Final Maturity	Principal Outstanding
1/22/2010	Sewer Revenue, SRF 5398-01	Revenue	4/1/2030	$312,794
4/1/2010	Sewer Revenue SRF 3014-01	Revenue	4/1/2031	1,567,183
4/1/2013	2013 City Hall IPA	LTGO	10/1/2027	885,000
9/30/2013	Tax Increment Finance	LTGO	4/1/2034	13,340,000
4/2/2014	Downtown Development	LTGO	4/1/2025	1,595,000
9/11/2014	Capital Improvement	LTGO	4/1/2033	4,025,000
6/23/2015	Capital Improvement	LTGO	4/1/2034	9,155,000
9/11/2015	HUD Section 108 Loan	LTGO	8/1/2027	335,000
3/19/208	2018 Fire Truck IPA	LTGO	3/9/2025	501,804
TOTAL DIRECT DEBT				$31,716,781
	Less: Revenue Bonds			($1,879,977)
NET DIRECT DEBT SUBJECT TO LEGAL DEBT MARGIN				$29,836,804

Based on the above outstanding debt information, as well as the City's 2020 State Equalized Value, the City has the legal debt capacity to issue the Bonds, at the proposed not-to-exceed amount, as computed below:

LEGAL DEBT MARGIN - October 5, 2020		
2020 State Equalized Value (SEV)		$2,457,209,067
2020 "Equalized" IFT Value		$1,002,220
Total 2020 Valuation		$2,458,211,287
Legal Debt Limit - 10% of 2020 Total Valuation		**$245,720,907**
Total Bonded Debt Outstanding	$31,716,781	
Less: Revenue Bonds	(1,879,977)	
Net Amount Subject to Legal Debt Limit		**$29,836,804**
LEGAL DEBT MARGIN AVAILABLE		**$215,884,103**
Proposed NTE Amount of LTGO OPEB Bonds		$89,000,000
Share of Legal Debt Margin Available After New Bonds		51.64%
Est. Legal Debt Margin Available After New Bonds		$126,884,103

Source: 2020 Wayne County Equalization Report; Municipal Advisory Council of Michigan; City of Westland

In order to provide a buffer for the variance in the market value of assets and/or updated actuarial liability valuation which may become available prior to the issuance of the bonds, the City has set a maximum not-to-exceed bond amount of $89,000,000 to fund its pension obligation, which is within the City's legal debt capacity as shown above.

Proposed Bond Structure and Estimated Savings

Act 34 requires the debt service schedule for the bonds to not materially deviate from level or descending annual debt service. However, the City may take into account other municipal securities when determining the level annual debt service for the first 5 years of the issuance.

Act 34 also requires the projected net present value savings between the actuarially determined amortization payments at the plans investment rate of return, and the debt service requirements to be at least 15% of the par amount of the bonds, unless the Michigan Department of Treasury determines that it is in the financial best interest of the City. This minimum savings threshold could impact the size, structure and timing of the bonds.

The savings analyses provided herein compare the estimated payments the City will need to make if it issues bonds to fund the pension obligation to the maximum 95% level based on actuarial value of assets and market value of assets, versus those it is currently projected to make. If the City issues bonds, it will be responsible for the bond payments, the remaining UAL amortization payments (which will be required due to the remaining unfunded liability), and the normal cost. If the City does not issue pension bonds, it will be responsible for the full UAL amortization payments and the normal cost.

The analyses assume that the actuarial assumptions are accurate, including that the future rate of return is 7.35%. Appendix G includes comparative analysis at the lowered assumed rates of return of 6.35% and 5.35% (or 1% and 2% below the current rate of return assumption) for the options that assume the actuarial value of assets.

Analysis Using the Actuarial Value of Assets

Pension Analysis - Market Rates with 7.35% Discount Rate - Assuming Actuarial Value of Assets as of 12-31-2019										
Ending 6/30	UAL Payment (a)	Anticipated Normal Cost (a)	Total UAAL Amortization Payment and Normal Cost	Estimated Bond Payments (b)	UAL Payments Already Made (c)	Payments Related to UAL Remaining After Bonding (d)	Anticipated Normal Cost (a)	Estimated Bond, Normal and UAL Payments	Difference	Present Value @ 3.13% (e)
2020										
2021	$6,655,000	$636,000	$7,291,000	$0	$6,655,000	$0	$636,000	$7,291,000	$0	$0
2022	6,340,000	523,000	6,863,000	4,602,035		101,500	523,000	5,226,535	1,636,465	1,566,835
2023	6,185,000	442,000	6,627,000	4,601,513	--	104,500	442,000	5,148,013	1,478,987	1,373,090
2024	6,370,000	387,000	6,757,000	4,603,348	--	107,500	387,000	5,097,848	1,659,152	1,493,616
2025	6,560,000	334,500	6,894,500	4,601,525	--	110,500	334,500	5,046,525	1,847,975	1,613,121
2026	6,760,000	287,000	7,047,000	4,600,584	--	114,000	287,000	5,001,584	2,045,416	1,731,294
2027	6,960,000	247,000	7,207,000	4,603,543	--	117,500	247,000	4,968,043	2,238,957	1,837,608
2028	7,170,000	214,000	7,384,000	4,605,115	--	121,000	214,000	4,940,115	2,443,885	1,944,939
2029	7,385,000	186,000	7,571,000	4,600,315	--	124,500	186,000	4,910,815	2,660,185	2,052,841
2030	7,595,000	161,500	7,756,500	4,604,445	--	120,500	161,500	4,886,445	2,870,055	2,147,591
2031	7,800,000	140,500	7,940,500	4,604,378	--	99,950	140,500	4,844,828	3,095,672	2,246,128
2032	8,010,000	123,000	8,133,000	4,604,221	--	76,800	123,000	4,804,021	3,328,980	2,342,118
2033	8,230,000	107,500	8,337,500	4,602,970	--	68,250	107,500	4,778,720	3,558,780	2,427,823
2034	8,455,000	94,050	8,549,050	4,601,004	--	67,300	94,050	4,762,354	3,786,696	2,504,923
2035	8,695,000	83,300	8,778,300	4,604,408	--	67,800	83,300	4,755,508	4,022,793	2,580,356
2036	8,955,000	74,450	9,029,450	4,602,884	--	69,850	74,450	4,747,184	4,282,266	2,663,445
2037	9,225,000	65,950	9,290,950	4,600,454	--	71,950	65,950	4,738,354	4,552,596	2,745,663
2038	9,500,000	55,750	9,555,750	4,602,528	--	74,100	55,750	4,732,378	4,823,373	2,820,701
2039	9,785,000	43,800	9,828,800	4,604,532	--	76,300	43,800	4,724,632	5,104,168	2,894,339
2040	9,295,000	32,300	9,327,300	4,601,281	--	101,700	32,300	4,735,281	4,592,020	2,524,912
2041	8,005,000	23,050	8,028,050	4,602,497	--	150,500	23,050	4,776,047	3,252,004	1,733,850
2042	7,460,000	16,150	7,476,150	4,602,815	--	178,000	16,150	4,796,965	2,679,185	1,385,101
2043	7,680,000	10,950	7,690,950	4,601,945	--	183,500	10,950	4,796,395	2,894,555	1,451,037
2044	7,910,000	7,150	7,917,150	4,604,500	--	189,000	7,150	4,800,650	3,116,500	1,514,893
2045	6,470,000	4,650	6,474,650	4,605,083	--	166,000	4,650	4,775,733	1,698,917	800,765
2046	2,975,000	3,150	2,978,150	4,603,375	--	104,650	3,150	4,711,175	-1,733,025	-792,056
2047	727,500	2,200	729,700	4,602,829		61,100	2,200	4,666,129	-3,936,429	-1,744,503
2048	421,000	1,550	422,550	--	--	53,650	1,550	55,200	367,350	157,858
2049	433,500	1,135	434,635	--	--	55,250	1,135	56,385	378,250	157,610
2050	446,500	485	446,985	--	--	56,950	485	57,435	389,550	157,393
2051	341,500	--	341,500	--	--	48,500	--	48,500	293,000	114,791
2052	115,000	--	115,000	--	--	19,600	--	19,600	95,400	36,242
	$198,915,000	**$4,309,070**	**$203,224,070**	**$119,674,126**	**$6,655,000**	**$3,062,200**	**$4,309,070**	**$133,700,396**	**$69,523,674**	**$46,484,326**

UAL Funded with Bond Proceeds:	**$80,161,094**
Estimated Bond Amount:	**$81,270,000**
All-In TIC:	**3.249%**
NPV Savings as % of Principal:	**57.20%**

(a) Based on GRS supplementals report dated 9/8/20; 9/28/20
including 50% of each of the prior and current calendar year figures
(b) Estimate only based on estimated interest rates as of 9/14/2020 plus .25% buffer
(c) Converts calendar year figures from GRS 9/8/20 supplemental report to City's fiscal year basis
For consistency purposes, the schedules assume the City continues to make the full monthly UAL amortization payments through June 30, 2021.
However, upon deposit of the bond proceeds into the System, the City will request the monthly amortization payments be reduced accordingly
(d) Converts remaining UAL amortization payments shown on GRS 9/14/20 supplemental report from a calendar year to a fiscal year basis
(e) Represents Arbitrage Yield

Analysis Using the Market Value of Assets

Pension Analysis - Market Rates with 7.35% Discount Rate - Assuming Market Value of Assets as of 12-31-2019										
Ending 6/30	UAL Payment (a)	Anticipated Normal Cost (a)	Total UAAL Amortization Payment and Normal Cost	Estimated Bond Payments (b)	UAL Payments Already Made (c)	Payments Related to UAL Remaining After Bonding (d)	Anticipated Normal Cost (a)	Estimated Bond, Normal and UAL Payments	Difference	Present Value @ 3.13% (e)
2020										
2021	$6,670,000	$636,000	$7,306,000	$0	$6,670,000	$0	$636,000	$7,306,000	$0	$0
2022	6,390,000	523,000	6,913,000	4,648,522	--	175,000	523,000	5,346,522	1,566,478	1,499,827
2023	6,255,000	442,000	6,697,000	4,647,486	--	252,500	442,000	5,341,986	1,355,014	1,257,995
2024	6,445,000	387,000	6,832,000	4,644,055	--	260,000	387,000	5,291,055	1,540,945	1,387,203
2025	6,635,000	334,500	6,969,500	4,646,932	--	268,000	334,500	5,249,432	1,720,068	1,501,471
2026	6,830,000	287,000	7,117,000	4,645,621	--	276,000	287,000	5,208,621	1,908,379	1,615,303
2027	7,035,000	247,000	7,282,000	4,648,156	--	284,000	247,000	5,179,156	2,102,844	1,725,897
2028	7,250,000	214,000	7,464,000	4,644,297	--	292,500	214,000	5,150,797	2,313,203	1,840,940
2029	7,470,000	186,000	7,656,000	4,644,014	--	301,500	186,000	5,131,514	2,524,486	1,948,126
2030	7,685,000	161,500	7,846,500	4,647,566	--	302,000	161,500	5,111,066	2,735,434	2,046,862
2031	7,880,000	140,500	8,020,500	4,646,895	--	278,500	140,500	5,065,895	2,954,605	2,143,778
2032	8,075,000	123,000	8,198,000	4,646,102	--	247,500	123,000	5,016,602	3,181,398	2,238,291
2033	8,290,000	107,500	8,397,500	4,644,178	--	238,000	107,500	4,989,678	3,407,822	2,324,843
2034	8,515,000	94,050	8,609,050	4,646,437	--	241,500	94,050	4,981,987	3,627,063	2,399,330
2035	8,760,000	83,300	8,843,300	4,644,046	--	247,000	83,300	4,974,346	3,868,954	2,481,685
2036	9,025,000	74,450	9,099,450	4,646,706	--	254,500	74,450	4,975,656	4,123,794	2,564,888
2037	9,295,000	65,950	9,360,950	4,648,278	--	262,000	65,950	4,976,228	4,384,722	2,644,427
2038	9,575,000	55,750	9,630,750	4,644,332	--	270,000	55,750	4,970,082	4,660,668	2,725,561
2039	9,860,000	43,800	9,903,800	4,645,380	--	278,000	43,800	4,967,180	4,936,621	2,799,340
2040	9,365,000	32,300	9,397,300	4,646,074	--	294,500	32,300	4,972,874	4,424,426	2,432,770
2041	8,070,000	23,050	8,093,050	4,646,139	--	320,000	23,050	4,989,189	3,103,861	1,654,873
2042	7,520,000	16,150	7,536,150	4,645,289	--	338,000	16,150	4,999,439	2,536,712	1,311,449
2043	7,745,000	10,950	7,755,950	4,648,146	--	348,500	10,950	5,007,596	2,748,354	1,377,753
2044	7,980,000	7,150	7,987,150	4,644,412	--	359,000	7,150	5,010,562	2,976,589	1,446,890
2045	6,530,000	4,650	6,534,650	4,643,773	--	308,000	4,650	4,956,423	1,578,227	743,883
2046	3,010,000	3,150	3,013,150	4,645,737	--	176,500	3,150	4,825,387	(1,812,237)	(828,263)
2047	744,000	2,200	746,200	4,648,654		85,750	2,200	4,736,604	(3,990,404)	(1,768,431)
2048	434,500	1,550	436,050	--	--	71,600	1,550	73,150	362,900	155,947
2049	447,500	1,135	448,635	--	--	73,750	1,135	74,885	373,750	155,736
2050	461,000	485	461,485	--	--	75,950	485	76,435	385,050	155,576
2051	352,500	--	352,500	--	--	62,650	--	62,650	289,850	113,558
2052	118,500	--	118,500	--	--	24,100	--	24,100	94,400	35,862
	$200,718,000	**$4,309,070**	**$205,027,070**	**$120,797,226**	**$6,670,000**	**$7,266,800**	**$4,309,070**	**$139,043,096**	**$65,983,974**	**$44,133,370**

UAL Funded with Bond Proceeds:	**$80,925,555**
Estimated Bond Amount:	**$82,035,000**
All-In TIC:	**3.248%**
NPV Savings as % of Principal:	**53.80%**

(a) Based on GRS supplemental reports dated 9/8/20; 9/28/20
including 50% of each of the prior and current calendar year figures

(b) Estimate only based on estimated interest rates as of 9/14/2020 plus .25% buffer

(c) Converts calendar year figures from GRS 9/8/20 supplemental report to City's fiscal year basis.
For consistency purposes, the schedules assume the City continues to make the full monthly UAL amortization payments through June 30, 2021
However, upon deposit of the bond proceeds into the System, the City will request the monthly amortization payments be reduced accordingly

(d) Converts remaining UAL amortization payments shown on GRS 9/14/20 supplemental report from a calendar year to a fiscal year basis.

(e) Represents Arbitrage Yield

Based on the preceding analysis, the City has determined that it is financially beneficial to pursue the issuance of bonds to fund a portion of the pension obligation.

Acknowledgment of future Annual Required Contributions

Since the actuarial value of the defined benefit plan's assets and liabilities are subject to change, the City acknowledges that it is possible the unfunded accrued liability may increase after the issuance of the bonds, thereby requiring the City to make additional actuarially determined amortization payments to the defined benefit plan beyond the principal and interest payments due on the bonds.

For example, MERS reduced the rate of return assumption from 7.75% to 7.35% effective with the December 31, 2019 actuarial report. Therefore, depending on the actual plan experience, as well as any other assumption change, the actuarial determined liability, and associated unfunded actuarial liability may continue to increase if rate of return assumptions were to be reduced again in the future.

Impact on Changes of Rate of Return on Investments

The calculation determining the unfunded actuarial accrued liability is based upon, among other assumptions, a 7.35% future annual investment rate of return on the actuarial value of assets. If actual investment returns achieved are lower than 7.35% annually the result would be a higher liability. Likewise, if the actual rate of return achieved is higher than 7.35%, the result would be a lower liability. The table below summarizes the City's unfunded actuarial accrued liability under different rate of return assumptions using the actuarial value of assets as of December 31, 2019.

Assumed Future Annual Smoothed Rate of Investment Return			
12/31/19 Valuation Results	**7.35%**	**6.35%[2]**	**5.35%[2]**
Accrued Liability[1]	$146,243,837	$162,170,551	$181,270,551
Actuarial Value of Assets	58,770,551	58,770,551	58,770,551
Unfunded Accrued Liability	$87,473,286	$103,400,000	$122,500,000
Funded Ratio	40%	36%	32%
Adjusted Unfunded Accrued Liability Net of Estimated Bond Proceeds*	$7,312,192	$23,238,906	$42,338,906
Adjusted Funded Ratio Net of Estimated Bond Proceeds*	95%	86%	77%

**Assumes application of $80,161,094 of bond proceeds to UAL.*

[1] Represents the current valuation assumptions as detailed in the December 31, 2019 MERS Annual Actuarial Valuation Report, Page 5

[2] Based on unfunded accrued liabilities provided in GRS supplemental report dated September 8, 2020.

The City understands that the actual savings achieved depends on many factors, including future financial or demographic experience, including the actual investment rate of return earned and the interest rate received on the bonds. Below is a table showing the estimated savings on a Net Present Value (NPV) basis for different combinations of bond interest rates and future projected investment rates of return. If future rates of return are lower than the 7.35% projected rate, the City's annual required contributions will increase, and the savings will be lower than projected in the analysis provided earlier.

The estimated NPV savings shown below are projected assuming the City issues bonds at an amount to achieve a 95% funding level based on the actuarial value of assets. The scenarios assume current estimated bond interest rates and current interest rates plus and minus 0.50%, as well as the current actuarial assumed investment rate of return of 7.35% along with a 1% and 2% lower rate of return.

NPV Savings	Current Bond Interest Rates - 0.50%	Current Bond Interest Rates*	Current Bond Interest Rates + 0.50%
	NPV Savings $	NPV Savings $	NPV Savings $
Expected Rate of Return (7.35%)	$54,374,991	**$46,484,326**	$39,229,445
Exp. Rate of Return less 100 bps (6.35%)	$40,677,546	**$33,605,078**	$27,101,548
Exp. Rate of Return less 200 bps (5.35%)	$33,536,725	**$21,490,920**	$15,693,423

**Current Interest Rates reflect market conditions as of September 14, 2020 plus .25%*

- Schedules based on actuarial value of assets

Historical Rate of Returns on Investments

Below is a comparison of the current investment rate of return with the returns of the MERS system for the past one, five, ten, and fifteen years as of December 31, 2019, as well as the historical earning rates since 2010.

MERS Historical Rate of Returns	
Assumed Rate of Return:	**7.35%**
One Year Average (2019):	14.14%
Five Year Average (2015-2019):	6.86%
Ten Year Average (2010-2015):	8.41%
Fifteen Year Average (2005-2019):	7.04%

MERS Historical Rate of Returns	
Year	Rate of Return
2019	14.14%
2018	-3.51%
2017	13.40%
2016	11.10%
2015	-0.85%
2014	6.68%
2013	15.00%
2012	11.39%
2011	2.30%
2010	14.43%

Source: 2019 MERS-wide Actuarial Report: https://resources.mersofmich.com/SharePointFormsService/Default.aspx?Publication=YourPartnerInRetirement.pdf

DESCRIPTION OF ACTION REQUIRED TO MEET OBLIGATIONS

The City allocates pension and post-employment health care costs to the various departments that receive benefits based on historical staff membership in the Plans. Similarly, the annual debt service for the Bonds to fund the pension obligations will be allocated proportionately to the departments that receive pension benefits. Revenue sources for the funds that will be allocated portions of the annual bond payments include annual operating levies, state shared revenues, utilities, and other sources of annual revenue.

The Mayor completes an annual budget by fund and presents it to the City Council for approval. The budget also includes a five-year financial plan. 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 bonds to fund the pension obligations 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 COMPLIANCE

As outlined in Act 34, the Plan contains the following elements:

Section 518 Subsection	Description	Page # and/or Appendix
5a	The preparation, approval, and public posting of this Plan analyzing the funding of the City's retirement and post-employment health care benefit plans.	The entirety of the Plan
5b	Evidence that the debt issuance along with other funds will be sufficient to eliminate the unfunded pension and accrued post-employment health care liability.	Page 17
5c	Provide evidence that it has the legal debt capacity to issue the proposed bonds.	Page 18
5d	Debt service schedule level or descending	Pages 20-21
5e	Projected net present value savings is at least 15% of the par amount of the bonds.	Page 20-21; 23
5f	Comparison of the current rate of return assumption to the actual annual rate of returns for the past 1, 5 and 10 years.	Page 24
5g	Acknowledgement that the figures are subject to change which could result in additional payments.	Page 22
5h	Certification the City has funded its defined benefit plans' annual actuarially determined contribution for the most recently available three (3) audited financial statement years.	Page 6
5i	Certification that the City is compliant on reporting requirements pursuant to Protecting Local Government Retirement and Benefits Act Public Act 202 of 2017.	Page 14
5j	Certification that the Plan is complete and accurate.	Page 26

Act 34 also requires the Plan be prepared and made publicly available. Accordingly, the City has prepared this Plan, which has been approved by the City Council on October 5, 2020 and has been made available in the City's clerk office for public review. It has also been posted and made publicly available on the City's website at www.cityofwestland.com .

CERTIFICATIONS

The City has prepared this Comprehensive Financial Plan for Pension and Other Post-Employment Benefits as required under Act 34 for the issuance of limited tax general obligation bonds to fund pension liability. In preparing this plan, information has been obtained from the Municipal Employees Retirement System and its actuary, GRS, the City's Police and Fire Retirement System and health care plan actuary (Nyhart), and PFM Financial Advisors LLC. The City believes the information provided by these firms to be reliable.

I certify the following:

- This Comprehensive Financial Plan is complete and accurate to the best of my knowledge and belief.
- The City's most recent audit report indicates the sum of all the City's defined benefit plans' actual contributions for the most recent 3 fiscal years are 100% or greater than the sum of all the City's defined benefit plans' actuarially determined contributions for the most recent 3 fiscal years.
- The City is compliant on any reporting requirements in accordance with the protecting local government retirement and benefits act, 2017 PA 202, MCL 38.2819.

William R. Wild Mayor City of Westland	Steve Smith Finance Director City of Westland	Daniel Block Budget Director City of Westland

Dated: October 5, 2020

Appendix A: Municipal Employees Retirement System of Michigan Annual Actuarial Valuation Report December 31, 2019

Municipal Employees' Retirement System

Municipal Employees' Retirement System of Michigan

Annual Actuarial Valuation Report
December 31, 2019 - Westland,City of (8211)

GRS

800.521.0498 | P: 248.799.9000 | www.grsconsulting.com

Spring, 2020

Westland,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 for Westland,City of (8211) as of December 31, 2019. The report includes the determination of liabilities and contribution rates resulting from the participation in the Municipal Employees' Retirement System of Michigan ("MERS"). This report contains the minimum actuarially determined contribution requirement, in alignment with the MERS Plan Document, Actuarial Policy, and the Michigan Constitution and governing statutes. Westland,City of is responsible for the employer contributions needed to provide MERS benefits for its employees and former employees.

The purposes of this valuation are to:

- Measure funding progress as of December 31, 2019,
- Establish contribution requirements for the fiscal year beginning July 1, 2021,
- Provide information regarding the identification and assessment of risk,
- Provide actuarial information in connection with applicable Governmental Accounting Standards Board (GASB) statements, and
- Provide information to assist the local unit of government with state reporting requirements.

This valuation assumed the continuing ability of the plan sponsor to make the contributions necessary to fund this plan. A determination regarding whether or not the plan sponsor is actually able to do so is outside our scope of expertise and was not performed.

The findings in this report are based on data and other information through December 31, 2019. The valuation was based upon information furnished by MERS concerning Retirement System 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 MERS.

The Municipal Employees' Retirement Act, PA 427 of 1984 and the MERS' Plan Document Article VI sec. 71 (1)(d), provides the MERS Board with the authority to set actuarial assumptions and methods after consultation with the actuary. As the fiduciary of the plan, MERS Retirement Board sets certain assumptions for funding and GASB purposes. These assumptions are checked regularly through a comprehensive study, called an Experience Study. A study was completed in 2015, as prepared by the prior actuary, and is the basis of the demographic assumptions and methods currently in place. At the February 28, 2019 board meeting, the MERS Retirement Board adopted new economic assumptions effective with the December 31, 2019 annual actuarial valuation, which will impact contributions beginning in 2021. **At the February 27, 2020 board meeting, the MERS Retirement Board adopted demographic assumptions effective with the December 31, 2020 annual actuarial valuation, which will impact contributions beginning in 2022.** An illustration of the potential impact is found in this report.

The Michigan Department of Treasury provides required assumptions to be used for purposes of Public Act 202 reporting. These assumptions are for reporting purposes only and do not impact required contributions. Please refer to the State Reporting page found at the end of this report for information for this filing.

For a full list of all the assumptions used, please refer to the division-specific assumptions described in table(s) in this report, and to the Appendix on the MERS website at:
http://www.mersofmich.com/Portals/0/Assets/Resources/AAV-Appendix/MERS-2019AnnualActuarialValuation-Appendix.pdf

The actuarial assumptions used for this valuation are reasonable for purposes of the measurement.

This report does not reflect the recent and still developing impact of COVID-19, which is likely to influence demographic and economic experience, at least in the short-term. We will continue to monitor these developments and their impact on the MERS Defined Benefit and Hybrid plans. Actual experience will be reflected in each subsequent annual valuation, as experience emerges.

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 Westland,City of 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.

David T. Kausch, Rebecca L. Stouffer, and Mark Buis 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. GRS maintains independent consulting agreements with certain local units of government for services unrelated to the actuarial consulting services provided in this report.

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 MERS 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). GRS is not responsible for the consequences of any unauthorized use. 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.

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,

David T Kausch

David T. Kausch, FSA, FCA, EA, MAAA

Rebecca L. Stouffer

Rebecca L. Stouffer, ASA, FCA, MAAA

Mark Buis

Mark Buis, FSA, FCA, EA, MAAA

Table of Contents

Executive Summary

Funded Ratio

The funded ratio of a plan is the percentage of the dollar value of the actuarial accrued liability that is covered by the actuarial value of assets. While funding ratio may be a useful plan measurement, understanding a plan's funding trend may be more important than a particular point in time. Refer to Table 7 to find a history of this information.

	12/31/2019	12/31/2018
Funded Ratio*	40%	42%

* Reflects assets from Surplus divisions, if any.

Throughout this report are references to valuation results generated prior to the 2018 valuation date. Results prior to 2018 were received directly from the prior actuary or extracted from the previous valuation system by MERS's technology service provider.

Required Employer Contributions:

Your required employer contributions are shown in the following table. Employee contributions, if any, are in addition to the employer contributions. Changes to the actuarial assumptions and methods based on the 2015 Experience Study are fully phased-in with this valuation.

Effective this valuation, the MERS Retirement Board has adopted a reduction in the investment rate of return assumption from 7.75% to 7.35% and a reduction in the rate of wage inflation from 3.75% to 3.00%. Changes to these assumptions are effective for contributions beginning in 2021 and may be phased-in. This valuation reflects the first year of phase-in.

By default, MERS will invoice you based on the amount in the “No Phase-in” columns. This amount will be considered the minimum required contribution unless you request to be billed the “Phase-in” rates. If you wish to be billed using the phased-in rates, please contact MERS, at which point the alternate minimum required contribution will be the amount in the “Phase-in” columns. Please note that this approach is different than in years past.

	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:	12/31/2019	12/31/2019	12/31/2018	12/31/2018	12/31/2019	12/31/2019	12/31/2018	12/31/2018
Fiscal Year Beginning:	July 1, 2021	July 1, 2021	July 1, 2020	July 1, 2020	July 1, 2021	July 1, 2021	July 1, 2020	July 1, 2020
Division								
10 - AFSCME	-	-	-	-	$ 237,009	$ 251,031	$ 218,483	$ 222,918
11 - Supervisory	-	-	-	-	118,078	124,666	108,349	110,336
12 - Mayor, Staff	-	-	-	-	202,499	211,889	206,250	206,545
13 - Judges,Crt.Super	-	-	-	-	55,467	58,605	48,848	49,765
14 - Court, Union	-	-	-	-	18,831	20,187	16,269	16,696
15 - AFSCME 6/21/99	-	-	-	-	8,193	10,704	8,390	9,071
17 - CrtUn Hired10/03	-	-	-	-	0	0	0	0
18 - Dispatchers hired bfr. 7/1/14	-	-	-	-	16,032	18,447	25,884	26,469
19 - Mayor Staff hired after 1/1/08	-	-	-	-	0	0	0	0
20 - Crt Admin & Union aft 7/1/10	-	-	-	-	0	0	0	0
21 - Dispatchers on/aft 7/1/14	0.00%	0.00%	1.57%	1.57%	0	0	493	493
22 - Supervisory aft 7/1/10	0.00%	0.00%	0.00%	0.00%	0	0	0	0
23 - UAW	-	-	-	-	9,295	9,724	7,816	7,936
90 - Eld HC Administration	-	-	-	-	2,592	2,733	2,007	2,058
91 - Eld HC General	-	-	-	-	1,384	1,795	428	428
Municipality Total					**$ 669,380**	**$ 709,781**	**$ 643,217**	**$ 652,715**

Employee contribution rates:

	Employee Contribution Rate	
Valuation Date:	12/31/2019	12/31/2018
Division		
10 - AFSCME	5.00%	5.00%
11 - Supervisory	6.00%	6.00%
12 - Mayor, Staff	5.00%	5.00%
13 - Judges,Crt.Super	5.00%	5.00%
14 - Court, Union	5.00%	5.00%
15 - AFSCME 6/21/99	5.00%	5.00%
17 - CrtUn Hired10/03	5.00%	5.00%
18 - Dispatchers hired bfr. 7/1/14	5.00%	5.00%
19 - Mayor Staff hired after 1/1/08	5.00%	5.00%
20 - Crt Admin & Union aft 7/1/10	5.00%	5.00%
21 - Dispatchers on/aft 7/1/14	3.00%	3.00%
22 - Supervisory aft 7/1/10	6.00%	6.00%
23 - UAW	6.00%	6.00%
90 - Eld HC Administration	5.00%	5.00%
91 - Eld HC General	5.00%	5.00%

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. Employers making contributions in excess of the minimum requirements may elect to apply the excess contribution immediately to a particular division, or segregate the excess into one or more of what MERS calls “Surplus” divisions. An election in the first case would immediately reduce any unfunded accrued liability and lower the amortization payments throughout the remaining amortization period. An election to set up Surplus divisions would not immediately lower future contributions, however the assets from the Surplus division could be transferred to an unfunded division in the future to reduce the unfunded liability in future years, or to be used to pay all or a portion of the minimum required contribution in a future year. For purposes of this report, the assets in any Surplus division have been included in the municipality’s total assets, unfunded accrued liability and funded status, however, these assets are not used in calculating the minimum required contribution.

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 fiscal year beginning in 2021 for the entire employer would be $954,518, instead of $709,781.

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.

Comments on Investment Rate of Return Assumption

A defined benefit plan is funded by employer contributions, participant contributions, and investment earnings. Investment earnings have historically provided a significant portion of the funding. The larger the share of benefits being provided from investment returns, the smaller the required contributions, and vice versa. Determining the contributions required to prefund the promised retirement benefits requires an assumption of what investment earnings are expected to add to the fund over a long period of time. This is called the **Investment Return Assumption**.

The MERS Investment Return Assumption is **7.35%** per year. This, along with all of our other actuarial assumptions, is reviewed at least every five years in an Experience Study that compares the assumptions used against actual experience and recommends adjustments if necessary. If your municipality would like to explore contributions at lower assumed investment return assumptions, please review the “what if” projection scenarios later in this report.

Assumption Change in 2019

At the February 28, 2019 board meeting, the MERS Retirement Board adjusted key economic assumptions. These assumptions, in particular the investment return assumption, have a significant effect on a plan’s required contribution and funding level. Historically low interest rates, along with high equity market valuations, have led to reductions in projected returns for most asset classes. This has resulted in a Board adopted reduction in the investment rate of return assumption from 7.75% to 7.35%, effective with the December 31, 2019 valuation, first impacting 2021 contributions. The Board also changed the assumed rate of wage inflation from 3.75% to 3.00%, with the same effective date.

Assumption Change in 2020

A 5-year experience study analyzing historical experience from 2013 through 2018 was completed in February 2020. In addition to changes to the economic assumptions which will take effect with the Fiscal year 2021 contribution rates, the experience study recommends updated demographic assumptions, including adjustments to the following actuarial assumptions: mortality, retirement, disability, and termination rates. A complete description of the proposed assumptions may be found in the Appendix to the valuation. Changes to the demographic assumptions resulting from the experience study have been approved by the MERS Retirement Board and are to be effective beginning with the December 31, 2020 actuarial valuation first impacting 2022 contributions. This report includes a “What If” scenario of the approved 2020 assumption changes in an effort to show employers the anticipated impact on contribution rates.

Comments on Asset Smoothing

To avoid dramatic spikes and dips in annual contribution requirements due to short term fluctuations in asset markets, MERS applies a technique called **asset smoothing**. This spreads out each year’s investment gains or losses over the prior year and the following four years. This smoothing method is used to determine your actuarial value of assets (valuation assets), which is then used to determine both your funded ratio and your required contributions. The (smoothed) **actuarial rate of return for 2019 was 4.77%, while the actual market rate of return was 13.41%.** To see historical details of the market rate of return, compared to the smoothed actuarial rate of return, refer to this report’s Appendix, or view the “How Smoothing Works” video on the Defined Benefit resource page of the MERS website.

As of December 31, 2019, the actuarial value of assets is 101% of market value due to asset smoothing. This means that meeting the actuarial assumption in the next few years will require average annual market returns that exceed the 7.35% investment return assumption, or contribution requirements will continue to increase.

If the December 31, 2019 valuation results were based on market value instead of actuarial value:

- The funded percent of your entire municipality would be 40% (instead of 40%); and
- Your total employer contribution requirement for the fiscal year starting July 1, 2021 would be $8,591,844 (instead of $8,517,372).

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.

Many assumptions are important in determining the required employer contributions. In the following table, we show the impact of varying the Investment Return assumption and the demographic assumptions. Lower investment returns would result in higher required employer contributions, and vice-versa. Alternate demographic assumptions may result in higher or lower employer contributions depending on the demographic characteristics of the plan participants.

The relative impact of the economic and demographic scenarios 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, 2019 valuation, and are for the municipality in total, not by division. These results do not reflect a phase in of the impact of the new actuarial assumptions.

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. Projections are not predictions. Future valuations will be based on actual future experience.

In addition to economic assumption changes effective with Fiscal Year 2021 contributions, the Retirement Board has also adopted a change to certain demographic and other assumptions effective for the December 31, 2020 valuation which will impact the Fiscal Year 2022 contributions. Please see the section labeled "Assumption Change in 2020" for more information. The scenario shown using these assumptions as of December 31, 2019 is illustrative only. The actual impact of this change when reflected in the 2020 Annual Actuarial Valuation report will be different.

	Assumed Future Annual Smoothed Rate of Investment Return		
12/31/2019 Valuation Results	**Lower Future Annual Returns[3]**	**2020 Adopted Demographic Assumptions**	**Valuation Assumptions**
Investment Return Assumption	**5.35%**	**7.35%**	**7.35%**
Wage Increase Assumption	**3.00%**	**3.00%**	**3.00%**
Accrued Liability	$ 181,291,117	$ 151,910,981	$ 146,243,837
Valuation Assets[1]	$ 58,770,551	$ 58,770,551	$ 58,770,551
Unfunded Accrued Liability	$ 122,520,566	$ 93,140,430	$ 87,473,286
Funded Ratio	32%	39%	40%
Monthly Normal Cost	$ 77,216	$ 40,114	$ 41,785
Monthly Amortization Payment	$ 817,348	$ 702,637	$ 653,110
Total Employer Contribution[2]	$ 898,836	$ 756,598	$ 709,781

[1] The Valuation Assets include assets from Surplus divisions, if any.

[2] If assets exceed accrued liabilities for a division, the division may have an overfunding credit 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.

[3] Based on current demographic assumptions.

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 economic and demographic assumption scenarios. All three projections take into account the past investment losses that will continue to affect the actuarial rate of return in the short term.

The 7.35%/3.00% scenario provides an estimate of computed employer contributions based on current actuarial assumptions, and a projected 7.35% 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 2020 adopted demographic assumption and 5.35%/3.00% projection scenarios provide an indication of the potential required employer contribution if these assumptions were met over the long-term.

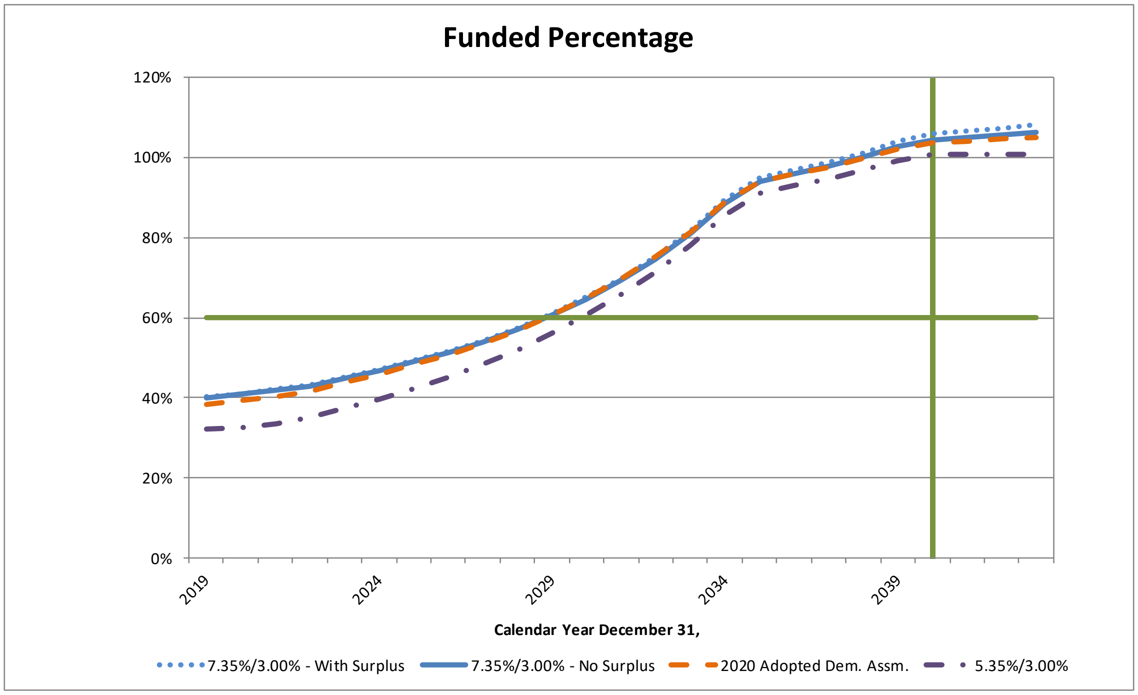
Your municipality includes one or more Surplus divisions. The assets in a Surplus division may be used to reduce future employer contributions or to accelerate the date by which the municipality becomes 100% funded. The timing and use of these Surplus assets is discretionary.

The Funded Percentage graph shows projections of funded status under the 7.35% investment return assumption, both including the Surplus assets (contributed as of the valuation date), and without the Surplus assets. The graph including the Surplus assets assumes these Surplus assets grow with interest and are not used to lower future employer contributions. We modeled the projections including the Surplus assets in this fashion because the use of these assets is discretionary by the employer and we do not know when and how the employer will use them. Once the employer uses these Surplus assets, any future employer contributions are expected to be lower than those shown in the projections.

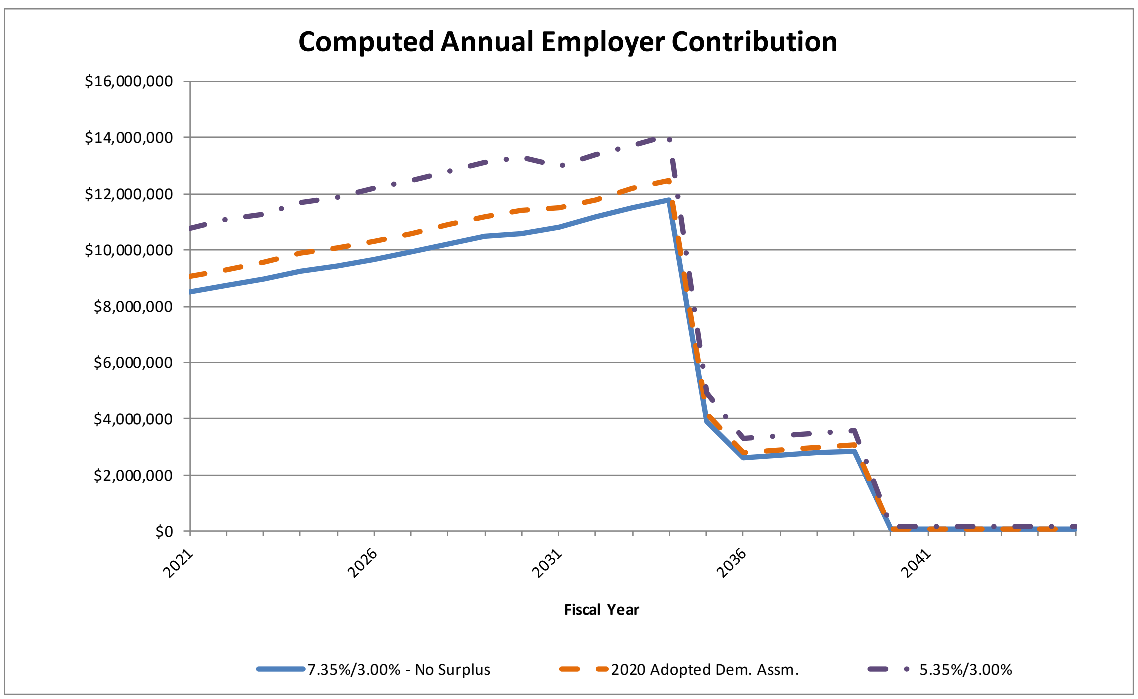
Valuation Year Ending 12/31	Fiscal Year Beginning 7/1	Actuarial Accrued Liability	Valuation Assets[2]	Funded Percentage	Computed Annual Employer Contribution
7.35%[1]/3.00% - Current Demographic Assumptions					
NO 5-YEAR PHASE-IN					
2019	2021	$ 146,243,837	$ 58,441,220	40%	$ 8,517,372
2020	2022	$ 147,500,000	$ 60,200,000	41%	$ 8,720,000
2021	2023	$ 148,400,000	$ 62,200,000	42%	$ 8,950,000
2022	2024	$ 148,900,000	$ 64,000,000	43%	$ 9,260,000
2023	2025	$ 149,000,000	$ 67,000,000	45%	$ 9,430,000
2024	2026	$ 148,600,000	$ 69,600,000	47%	$ 9,670,000
7.35%[1]/3.00% - Adopted 2020 Demographic Assumptions					
NO 5-YEAR PHASE-IN					
2019	2021	$ 151,910,981	$ 58,441,220	38%	$ 9,079,176
2020	2022	$ 153,500,000	$ 60,200,000	39%	$ 9,300,000
2021	2023	$ 154,900,000	$ 62,500,000	40%	$ 9,550,000
2022	2024	$ 155,800,000	$ 64,900,000	42%	$ 9,880,000
2023	2025	$ 156,300,000	$ 68,500,000	44%	$ 10,100,000
2024	2026	$ 156,400,000	$ 71,800,000	46%	$ 10,300,000
5.35%[1]/3.00% - Current Demographic Assumptions					
NO 5-YEAR PHASE-IN					
2019	2021	$ 181,291,117	$ 58,441,220	32%	$ 10,786,032
2020	2022	$ 182,100,000	$ 59,000,000	32%	$ 11,100,000
2021	2023	$ 182,400,000	$ 61,000,000	33%	$ 11,300,000
2022	2024	$ 182,300,000	$ 63,900,000	35%	$ 11,700,000
2023	2025	$ 181,700,000	$ 68,000,000	37%	$ 11,900,000
2024	2026	$ 180,500,000	$ 71,800,000	40%	$ 12,200,000

[1] Represents both the interest rate for discounting liabilities and the future investment return assumption on the Market Value of assets.

[2] Valuation Assets do not include assets from Surplus divisions, if any.



Notes:
All projected funded percentages are shown with no phase-in.
Assumes assets from Surplus divisions will not be used to lower employer contributions during the projection period.
The green indicator lines have been added at 60% funded and 21 years following the valuation date for PA 202 purposes.



Notes:
All projected contributions are shown with no phase-in.
Projected employer contributions do not reflect the use of any assets from the Surplus divisions.

Table 1: Employer Contribution Details For the Fiscal Year Beginning July 1, 2021

Division	Total Normal Cost	Employee Contribut. Rate	Employer Contributions[1] Employer Normal Cost	Payment of the Unfunded Accrued Liability[4]	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. Conversion Factor[2]
Percentage of Payroll									
10 - AFSCME	21.21%	5.00%	-	-	-	-			
11 - Supervisory	21.36%	6.00%	-	-	-	-	196.15%	185.55%	
12 - Mayor, Staff	23.23%	5.00%	-	-	-	-			
13 - Judges,Crt.Super	20.69%	5.00%	-	-	-	-			
14 - Court, Union	19.90%	5.00%	-	-	-	-			
15 - AFSCME 6/21/99	16.69%	5.00%	-	-	-	-			
17 - CrtUn Hired10/03	14.69%	5.00%	-	-	-	-			
18 - Dispatchers hired bfr. 7/1/14	18.39%	5.00%	-	-	-	-			
19 - Mayor Staff hired after 1/1/08	24.32%	5.00%	-	-	-	-			
20 - Crt Admin & Union aft 7/1/10	8.88%	5.00%	-	-	-	-			
21 - Dispatchers on/aft 7/1/14	0.00%	3.00%	-	-	-	-			
22 - Supervisory aft 7/1/10	8.71%	6.00%	2.71%	-11.73%	0.00%	0.00%	196.15%	185.55%	0.86%
23 - UAW	16.63%	6.00%	-	-	-	-			
90 - Eld HC Administration	0.00%	5.00%	-	-	-	-			
Estimated Monthly Contribution[3]									
10 - AFSCME			$ 5,399	$ 245,632	$ 251,031	$ 237,009			
11 - Supervisory			4,790	119,876	124,666	118,078			
12 - Mayor, Staff			5,152	206,737	211,889	202,499			
13 - Judges,Crt.Super			3,940	54,665	58,605	55,467			
14 - Court, Union			1,645	18,542	20,187	18,831			
15 - AFSCME 6/21/99			8,668	2,036	10,704	8,193			
17 - CrtUn Hired10/03			1,832	(3,362)	0	0			
18 - Dispatchers hired bfr. 7/1/14			852	17,595	18,447	16,032			
19 - Mayor Staff hired after 1/1/08			4,486	(9,598)	0	0			
20 - Crt Admin & Union aft 7/1/10			734	(4,584)	0	0			
21 - Dispatchers on/aft 7/1/14			0	(1,602)	0	0			
22 - Supervisory aft 7/1/10			839	(3,631)	0	0			
23 - UAW			3,448	6,276	9,724	9,295			
90 - Eld HC Administration			0	2,733	2,733	2,592			

Table 1 (continued)

Division	Total Normal Cost	Employee Contribut. Rate	Employer Contributions[1] Employer Normal Cost	Payment of the Unfunded Accrued Liability[4]	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. Conversion Factor[2]
Percentage of Payroll									
91 - Eld HC General	0.00%	5.00%	-	-	-	-			
Estimated Monthly Contribution[3]									
91 - Eld HC General			$ 0	$ 1,795	$ 1,795	$ 1,384			
Total Municipality			**$ 41,785**	**$ 653,110**	**$ 709,781**	**$ 669,380**			
Estimated Annual Contribution[3]			**$ 501,420**	**$ 7,837,320**	**$ 8,517,372**	**$ 8,032,560**			

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 (i.e., 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 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 No 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-MERS (6377).

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

Table 2: Benefit Provisions

10 - AFSCME: Closed to new hires

	2019 Valuation	2018 Valuation
Benefit Multiplier:	2.80% Multiplier for Svc < 25 yrs, 1.00% Multiplier for Svc > 25 yrs (80% max)	2.80% Multiplier for Svc < 25 yrs, 1.00% Multiplier for Svc > 25 yrs (80% max)
Normal Retirement Age:	60	60
Vesting:	8 years	8 years
Early Retirement (Unreduced):	55/15	55/15
	25 & Out	25 & Out
Early Retirement (Reduced):	-	-
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
COLA for Current Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	5.00%	5.00%
RS50% Percentage:	50%	50%
DC Plan for New Hires:	5/1/2015	5/1/2015
Act 88:	Yes (Adopted 12/18/1989)	Yes (Adopted 12/18/1989)

11 - Supervisory: Closed to new hires, linked to Division 22

	2019 Valuation	2018 Valuation
Benefit Multiplier:	2.80% Multiplier for Svc < 25 yrs, 1.00% Multiplier for Svc > 25 yrs (80% max)	2.80% Multiplier for Svc < 25 yrs, 1.00% Multiplier for Svc > 25 yrs (80% max)
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	55/15	55/15
	25 & Out	25 & Out
Early Retirement (Reduced):	-	-
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
COLA for Current Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	6.00%	6.00%
RS50% Percentage:	50%	50%
Act 88:	Yes (Adopted 12/18/1989)	Yes (Adopted 12/18/1989)

12 - Mayor, Staff: Closed to new hires

	2019 Valuation	2018 Valuation
Benefit Multiplier:	2.80% Multiplier for Svc < 30 yrs, 1.00% Multiplier for Svc > 30 yrs (no max)	2.80% Multiplier for Svc < 30 yrs, 1.00% Multiplier for Svc > 30 yrs (no max)
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	55/15	55/15
	25 & Out	25 & Out
Early Retirement (Reduced):	-	-
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
COLA for Current Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	5.00%	5.00%
RS50% Percentage:	50%	50%
DC Plan for New Hires:	5/1/2015	5/1/2015
Act 88:	Yes (Adopted 12/18/1989)	Yes (Adopted 12/18/1989)

13 - Judges,Crt.Super: Closed to new hires

	2019 Valuation	2018 Valuation
Benefit Multiplier:	2.80% Multiplier for Svc < 25 yrs, 1.00% Multiplier for Svc > 25 yrs (80% max)	2.80% Multiplier for Svc < 25 yrs, 1.00% Multiplier for Svc > 25 yrs (80% max)
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	55/15	55/15
	25 & Out	25 & Out
Early Retirement (Reduced):	-	-
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
COLA for Current Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	5.00%	5.00%
RS50% Percentage:	50%	50%
DC Plan for New Hires:	1/1/2017	1/1/2017
Act 88:	Yes (Adopted 12/18/1989)	Yes (Adopted 12/18/1989)

14 - Court, Union: Closed to new hires

	2019 Valuation	2018 Valuation
Benefit Multiplier:	2.80% Multiplier for Svc < 25 yrs, 1.00% Multiplier for Svc > 25 yrs (80% max)	2.80% Multiplier for Svc < 25 yrs, 1.00% Multiplier for Svc > 25 yrs (80% max)
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	55/15	55/15
	25 & Out	25 & Out
Early Retirement (Reduced):	-	-
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
COLA for Current Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	5.00%	5.00%
RS50% Percentage:	50%	50%
DC Plan for New Hires:	1/1/2017	1/1/2017
Act 88:	Yes (Adopted 12/18/1989)	Yes (Adopted 12/18/1989)

15 - AFSCME 6/21/99: Closed to new hires

	2019 Valuation	2018 Valuation
Benefit Multiplier:	2.25% Multiplier (80% max)	2.25% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	8 years	8 years
Early Retirement (Unreduced):	50/25	50/25
	55/15	55/15
Early Retirement (Reduced):	-	-
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	5.00%	5.00%
RS50% Percentage:	50%	50%
DC Plan for New Hires:	5/1/2015	5/1/2015
Act 88:	Yes (Adopted 12/18/1989)	Yes (Adopted 12/18/1989)

17 - CrtUn Hired10/03: Closed to new hires

	2019 Valuation	2018 Valuation
Benefit Multiplier:	2.00% Multiplier (no max)	2.00% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	8 years	8 years
Early Retirement (Unreduced):	50/25	50/25
	55/15	55/15
Early Retirement (Reduced):	-	-
Final Average Compensation:	5 years	5 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	5.00%	5.00%
RS50% Percentage:	50%	50%
DC Plan for New Hires:	1/1/2017	1/1/2017
Act 88:	Yes (Adopted 12/18/1989)	Yes (Adopted 12/18/1989)

18 - Dispatchers hired bfr. 7/1/14: Closed to new hires, linked to Division 21

	2019 Valuation	2018 Valuation
Benefit Multiplier:	2.50% Multiplier (80% max)	2.50% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	8 years	8 years
Early Retirement (Unreduced):	50/25	50/25
	55/15	55/15
Early Retirement (Reduced):	-	-
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	5.00%	5.00%
RS50% Percentage:	50%	50%
Act 88:	Yes (Adopted 7/1/2007)	Yes (Adopted 7/1/2007)

19 - Mayor Staff hired after 1/1/08: Closed to new hires

	2019 Valuation	2018 Valuation
Benefit Multiplier:	2.80% Multiplier for Svc < 30 yrs, 1.00% Multiplier for Svc > 30 yrs (no max)	2.80% Multiplier for Svc < 30 yrs, 1.00% Multiplier for Svc > 30 yrs (no max)
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	55/15	55/15
	25 & Out	25 & Out
Early Retirement (Reduced):	-	-
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	5.00%	5.00%
RS50% Percentage:	50%	50%
DC Plan for New Hires:	5/1/2015	5/1/2015
Act 88:	Yes (Adopted 1/1/2008)	Yes (Adopted 1/1/2008)

20 - Crt Admin & Union aft 7/1/10: Closed to new hires

	2019 Valuation	2018 Valuation
Benefit Multiplier:	1.50% Multiplier (no max)	1.50% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	8 years	8 years
Early Retirement (Unreduced):	-	-
Early Retirement (Reduced):	50/25	50/25
	55/15	55/15
Final Average Compensation:	5 years	5 years
Employee Contributions:	5.00%	5.00%
DC Plan for New Hires:	1/1/2017	1/1/2017
Act 88:	Yes (Adopted 12/18/1989)	Yes (Adopted 12/18/1989)

21 - Dispatchers on/aft 7/1/14: Open Division, linked to Division 18

	2019 Valuation	2018 Valuation
Benefit Multiplier:	1.75% Multiplier (no max)	1.75% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	10 years	10 years
Early Retirement (Unreduced):	-	-
Early Retirement (Reduced):	50/25	50/25
	55/15	55/15
Final Average Compensation:	5 years	5 years
Employee Contributions:	3.00%	3.00%
Act 88:	Yes (Adopted 7/1/2007)	Yes (Adopted 7/1/2007)

22 - Supervisory aft 7/1/10: Open Division, linked to Division 11

	2019 Valuation	2018 Valuation
Benefit Multiplier:	1.50% Multiplier (no max)	1.50% Multiplier (no max)
Normal Retirement Age:	60	60
Vesting:	10 years	10 years
Early Retirement (Unreduced):	-	-
Early Retirement (Reduced):	50/25	50/25
	55/15	55/15
Final Average Compensation:	5 years	5 years
Employee Contributions:	6.00%	6.00%
Act 88:	No	No

23 - UAW: Closed to new hires

	2019 Valuation	2018 Valuation
Benefit Multiplier:	2.25% Multiplier (80% max)	2.25% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	8 years	8 years
Early Retirement (Unreduced):	50/25	50/25
	55/15	55/15
Early Retirement (Reduced):	-	-
Final Average Compensation:	3 years	3 years
COLA for Future Retirees:	2.50% (Non-Compound)	2.50% (Non-Compound)
Employee Contributions:	6.00%	6.00%
RS50% Percentage:	50%	50%
DC Plan for New Hires:	8/1/2018	8/1/2018
Act 88:	Yes (Adopted 12/18/1989)	Yes (Adopted 12/18/1989)

90 - Eld HC Administration: Closed to new hires

	2019 Valuation	2018 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):	-	-
Early Retirement (Reduced):	50/25	50/25
	55/15	55/15
Final Average Compensation:	3 years	3 years
Employee Contributions:	5.00%	5.00%
RS50% Percentage:	50%	50%
Act 88:	No	No

91 - Eld HC General: Closed to new hires

	2019 Valuation	2018 Valuation
Benefit Multiplier:	2.25% Multiplier (80% max)	2.25% Multiplier (80% max)
Normal Retirement Age:	60	60
Vesting:	6 years	6 years
Early Retirement (Unreduced):	-	-
Early Retirement (Reduced):	50/25	50/25
	55/15	55/15
Final Average Compensation:	3 years	3 years
Employee Contributions:	5.00%	5.00%
RS50% Percentage:	50%	50%
Act 88:	No	No

Table 3: Participant Summary

Division	2019 Valuation Number	2019 Valuation Annual Payroll[1]	2018 Valuation Number	2018 Valuation Annual Payroll[1]	2019 Valuation Average Age	2019 Valuation Average Benefit Service[2]	2019 Valuation Average Eligibility Service[2]
10 - AFSCME							
Active Employees	12	$ 659,377	15	$ 828,919	57.3	22.4	22.4
Vested Former Employees	5	76,642	5	76,643	54.0	12.5	12.5
Retirees and Beneficiaries	127	3,727,024	126	3,601,311	70.0		
Pending Refunds	0		0				
11 - Supervisory							
Active Employees	6	$ 455,776	6	$ 430,656	50.2	20.4	20.4
Vested Former Employees	3	50,077	3	50,077	50.9	11.2	12.7
Retirees and Beneficiaries	42	1,756,421	43	1,727,727	69.8		
Pending Refunds	0		0				
12 - Mayor, Staff							
Active Employees	4	$ 418,406	4	$ 393,958	54.2	15.6	17.0
Vested Former Employees	6	144,632	8	159,109	51.5	10.1	13.5
Retirees and Beneficiaries	55	2,525,292	55	2,518,215	69.7		
Pending Refunds	0		0				
13 - Judges,Crt.Super							
Active Employees	6	$ 442,208	6	$ 429,913	54.1	21.6	21.6
Vested Former Employees	2	35,783	2	35,783	53.5	8.8	17.3
Retirees and Beneficiaries	20	684,847	20	671,689	71.0		
Pending Refunds	0		0				
14 - Court, Union							
Active Employees	3	$ 147,888	3	$ 146,257	48.6	20.8	20.8
Vested Former Employees	3	35,169	3	35,169	51.5	11.8	11.8
Retirees and Beneficiaries	15	354,744	15	346,184	69.6		
Pending Refunds	0		0				
15 - AFSCME 6/21/99							
Active Employees	19	$ 1,007,741	20	$ 1,085,063	52.5	16.1	16.5
Vested Former Employees	6	90,600	5	64,930	47.3	13.3	13.3
Retirees and Beneficiaries	10	163,739	10	160,082	64.7		
Pending Refunds	0		0				
17 - CrtUn Hired10/03							
Active Employees	5	$ 232,258	5	$ 225,620	43.4	13.1	13.1
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	1	7,321	2	16,755	73.1		
Pending Refunds	0		0				

Table 3 (continued)

Division	2019 Valuation Number	2019 Valuation Annual Payroll[1]	2018 Valuation Number	2018 Valuation Annual Payroll[1]	2019 Valuation Average Age	2019 Valuation Average Benefit Service[2]	2019 Valuation Average Eligibility Service[2]
18 - Dispatchers hired bfr. 7/1/14							
Active Employees	2	$ 128,894	12	$ 840,727	52.3	22.0	22.0
Vested Former Employees	12	252,815	4	29,708	48.1	12.5	17.0
Retirees and Beneficiaries	13	365,584	11	308,090	60.2		
Pending Refunds	1		1				
19 - Mayor Staff hired after 1/1/08							
Active Employees	3	$ 303,399	3	$ 260,180	39.6	8.5	11.0
Vested Former Employees	0	0	1	27,433	0.0	0.0	0.0
Retirees and Beneficiaries	3	51,222	3	50,021	62.3		
Pending Refunds	1		1				
20 - Crt Admin & Union aft 7/1/10							
Active Employees	4	$ 223,345	5	$ 268,159	46.7	5.9	9.5
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	0	0	0	0	0.0		
Pending Refunds	1		1				
21 - Dispatchers on/aft 7/1/14							
Active Employees	0	$ 0	6	$ 232,443	0.0	0.0	0.0
Vested Former Employees	2	4,340	0	0	38.1	3.0	12.9
Retirees and Beneficiaries	0	0	0	0	0.0		
Pending Refunds	14		11				
22 - Supervisory aft 7/1/10							
Active Employees	3	$ 236,617	4	$ 266,485	52.8	5.9	5.9
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	0	0	0	0	0.0		
Pending Refunds	1		0				
23 - UAW							
Active Employees	5	$ 379,335	5	$ 361,728	49.8	14.5	15.7
Vested Former Employees	0	0	0	0	0.0	0.0	0.0
Retirees and Beneficiaries	0	0	0	0	0.0		
Pending Refunds	0		0				
90 - Eld HC Administration							
Active Employees	0	$ 0	0	$ 0	0.0	0.0	0.0
Vested Former Employees	1	11,191	1	11,191	52.4	5.4	10.0
Retirees and Beneficiaries	2	75,842	2	75,842	78.8		
Pending Refunds	0		0				
91 - Eld HC General							
Active Employees	0	$ 0	0	$ 0	0.0	0.0	0.0
Vested Former Employees	5	16,092	6	19,232	38.3	4.1	6.6
Retirees and Beneficiaries	21	179,554	21	179,554	73.0		
Pending Refunds	1		1				
Total Municipality							
Active Employees	**72**	**$ 4,635,244**	**94**	**$ 5,770,108**	**51.5**	**16.7**	**17.2**
Vested Former Employees	**45**	**717,341**	**38**	**509,275**	**48.3**	**10.5**	**13.4**
Retirees and Beneficiaries	**309**	**9,891,588**	**308**	**9,655,470**	**69.6**		
Pending Refunds	**19**		**15**				
Total Participants	**445**		**455**				

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

[2] Descriptions can be found under Miscellaneous and Technical Assumptions in the Appendix.

Table 4: Reported Assets (Market Value)

Division	2019 Valuation		2018 Valuation	
	Employer and Retiree[1]	Employee[2]	Employer and Retiree[1]	Employee[2]
10 - AFSCME	$ 17,698,146	$ 260,232	$ 16,625,974	$ 283,559
11 - Supervisory	5,912,693	181,000	5,640,407	206,304
12 - Mayor, Staff	5,489,860	175,521	5,237,393	152,181
13 - Judges,Crt.Super	4,170,400	110,070	3,812,045	86,583
14 - Court, Union	2,846,085	30,987	2,658,601	23,224
15 - AFSCME 6/21/99	6,857,744	361,693	6,083,670	305,087
17 - CrtUn Hired10/03	971,986	40,519	865,050	28,454
18 - Dispatchers hired bfr. 7/1/14	5,855,469	176,443	5,118,801	196,909
19 - Mayor Staff hired after 1/1/08	2,261,840	121,412	2,025,553	149,749
20 - Crt Admin & Union aft 7/1/10	512,273	75,278	444,227	64,517
21 - Dispatchers on/aft 7/1/14	188,850	21,782	151,569	20,402
22 - Supervisory aft 7/1/10	508,469	46,764	444,272	29,726
23 - UAW	902,874	115,817	771,019	91,600
90 - Eld HC Administration	296,796	20,881	314,486	20,555
91 - Eld HC General	1,435,627	33,534	1,429,054	40,138
S1 - Surplus Unassociated	325,047	0	286,426	0
Municipality Total[3]	**$ 56,234,156**	**$ 1,771,934**	**$ 51,908,545**	**$ 1,698,988**
Combined Assets[3]	**$58,006,090**		**$53,607,532**	

1 Reserve for Employer Contributions and Benefit Payments.

2 Reserve for Employee Contributions.

3 Totals may not add due to rounding.

The December 31, 2019 valuation assets (actuarial value of assets) are equal to 1.013179 times the reported market value of assets (compared to 1.095342 as of December 31, 2018). Refer to the Appendix for a description of the valuation asset derivation and a detailed calculation of valuation assets.

Assets in the Surplus division(s) are employer assets that have been reserved to be used by the employer at some point in the future to stabilize increases in contributions. These assets are not used in calculating the employer contribution for the fiscal year beginning July 1, 2021.

Table 5: Flow of Valuation Assets

Year Ended 12/31	Employer Contributions Required	Employer Contributions Additional	Employee Contributions	Investment Income (Valuation Assets)	Benefit Payments	Employee Contribution Refunds	Net Transfers	Valuation Asset Balance
2009	$ 3,639,367		$ 14,943	$ 2,188,328	$ (5,565,064)	$ 0	$ 31,045	$ 56,913,144
2010	3,480,225		20,097	2,757,931	(6,180,543)	(653)	475,142	57,465,343
2011	3,297,691	$ 0	20,585	2,479,952	(6,883,884)	0	257,119	56,636,806
2012	3,410,979	0	21,448	2,172,479	(7,215,099)	0	423,543	55,450,156
2013	3,935,037	0	188,658	2,991,268	(7,392,674)	0	192,480	55,364,925
2014	4,403,242	1,220,132	299,758	3,198,143	(7,865,543)	0	1,560,374	58,181,031
2015	4,903,859	264,668	362,187	2,733,978	(8,332,862)	0	0	58,112,861
2016	5,133,653	182,413	343,428	2,764,401	(8,498,067)	0	0	58,038,689
2017	5,951,992	53,417	336,047	3,326,256	(8,818,642)	(8,903)	0	58,878,856
2018	6,246,611	469,049	323,168	2,130,498	(9,308,562)	(21,038)	0	58,718,582
2019	6,486,882	281,460	280,952	2,633,926	(9,573,429)	(58,443)	621	58,770,551

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.

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

The Valuation Asset balance includes assets from Surplus divisions, if any.

Years where historical information is not available, will be displayed with zero values.

Table 6: Actuarial Accrued Liabilities and Valuation Assets as of December 31, 2019

Division	Actuarial Accrued Liability					Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
	Active Employees	Vested Former Employees	Retirees and Beneficiaries	Pending Refunds	Total			
10 - AFSCME	$ 5,443,093	$ 867,937	$ 43,236,843	$ 0	$ 49,547,873	$ 18,195,051	36.7%	$ 31,352,822
11 - Supervisory	3,470,573	444,202	20,757,234	0	24,672,009	6,174,002	25.0%	18,498,007
12 - Mayor, Staff	2,246,954	1,184,062	28,926,378	0	32,357,394	5,740,045	17.7%	26,617,349
13 - Judges,Crt.Super	3,430,525	401,358	7,752,916	0	11,584,799	4,336,882	37.4%	7,247,917
14 - Court, Union	1,115,892	367,082	3,878,191	0	5,361,165	2,914,989	54.4%	2,446,176
15 - AFSCME 6/21/99	4,704,969	691,446	2,072,898	0	7,469,313	7,314,582	97.9%	154,731
17 - CrtUn Hired10/03	616,993	0	69,416	0	686,409	1,025,849	149.5%	(339,440)
18 - Dispatchers hired bfr. 7/1/14	1,094,943	2,600,198	5,143,106	4,608	8,842,855	6,111,407	69.1%	2,731,448
19 - Mayor Staff hired after 1/1/08	799,356	0	689,273	6,181	1,494,810	2,414,660	161.5%	(919,850)
20 - Crt Admin & Union aft 7/1/10	150,988	0	0	12,578	163,566	595,293	363.9%	(431,727)
21 - Dispatchers on/aft 7/1/14	0	9,325	0	14,396	23,721	213,407	899.7%	(189,686)
22 - Supervisory aft 7/1/10	165,613	0	0	5,188	170,801	562,550	329.4%	(391,749)
23 - UAW	1,593,554	0	0	0	1,593,554	1,032,116	64.8%	561,438
90 - Eld HC Administration	0	71,770	557,364	0	629,134	321,864	51.2%	307,270
91 - Eld HC General	0	50,244	1,595,953	237	1,646,434	1,488,523	90.4%	157,911
S1 - Surplus Unassociated	0	0	0	0	0	329,331		(329,331)
Total	**$ 24,833,453**	**$ 6,687,624**	**$ 114,679,572**	**$ 43,188**	**$ 146,243,837**	**$ 58,770,551**	**40.2%**	**$ 87,473,286**

The following results show the combined accrued liabilities and assets for each set of linked divisions. These results are already shown in the table on the prior page(s).

Table 6 (continued)

Division	Actuarial Accrued Liability: Active Employees	Actuarial Accrued Liability: Vested Former Employees	Actuarial Accrued Liability: Retirees and Beneficiaries	Actuarial Accrued Liability: Pending Refunds	Actuarial Accrued Liability: Total	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
Linked Divisions 21, 18	$ 1,094,943	$ 2,609,523	$ 5,143,106	$ 19,004	$ 8,866,576	$ 6,324,814	71.3%	$ 2,541,762
Linked Divisions 22, 11	3,636,186	444,202	20,757,234	5,188	24,842,810	6,736,552	27.1%	18,106,258

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

Table 7: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2005	$ 85,133,646	$ 49,394,852	58%	$ 35,738,794
2006	89,836,497	52,375,178	58%	37,461,319
2007	94,315,225	55,371,148	59%	38,944,077
2008	98,730,066	56,604,525	57%	42,125,541
2009	98,241,028	56,913,144	58%	41,327,884
2010	104,515,192	57,465,343	55%	47,049,849
2011	109,980,544	56,636,806	52%	53,343,738
2012	112,765,537	55,450,156	49%	57,315,381
2013	116,937,134	55,364,925	47%	61,572,209
2014	124,252,898	58,181,031	47%	66,071,867
2015	133,503,204	58,112,861	44%	75,390,343
2016	135,877,079	58,038,689	43%	77,838,390
2017	138,551,008	58,878,856	43%	79,672,152
2018	140,406,350	58,718,582	42%	81,687,768
2019	146,243,837	58,770,551	40%	87,473,286

Notes: Actuarial assumptions were revised for the 2008, 2009, 2010, 2011, 2012, 2015 and 2019 actuarial valuations.

The Valuation Assets include assets from Surplus divisions, if any.

Years where historical information is not available will be displayed with zero values.

Throughout this report are references to valuation results generated prior to the 2018 valuation date. Results prior to 2018 were received directly from the prior actuary or extracted from the previous valuation system by MERS's technology service provider.

Tables 8 and 9: Division-Based Comparative Schedules

Division 10 - AFSCME

Table 8-10: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2009	$ 37,723,120	$ 25,897,447	69%	$ 11,825,673
2010	41,161,682	25,310,384	61%	15,851,298
2011	43,501,978	24,082,892	55%	19,419,086
2012	43,671,476	22,514,449	52%	21,157,027
2013	44,138,105	21,226,299	48%	22,911,806
2014	45,652,918	21,353,018	47%	24,299,900
2015	47,820,990	20,292,751	42%	27,528,239
2016	48,456,382	19,715,088	41%	28,741,294
2017	48,849,190	19,325,874	40%	29,523,316
2018	47,889,798	18,521,722	39%	29,368,076
2019	49,547,873	18,195,051	37%	31,352,822

Notes: Actuarial assumptions were revised for the 2009, 2010, 2011, 2012, 2015 and 2019 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		
2009	60	$ 3,036,678	$ 98,111	0.00%
2010	39	1,999,220	$ 104,594	0.00%
2011	33	1,726,319	$ 121,970	0.00%
2012	31	1,624,572	$ 130,882	0.00%
2013	30	1,675,602	$ 136,981	5.00%
2014	27	1,609,707	$ 146,494	5.00%
2015	25	1,493,752	$ 182,990	5.00%
2016	22	1,257,026	$ 195,662	5.00%
2017	19	1,061,426	$ 210,067	5.00%
2018	15	828,919	$ 222,918	5.00%
2019	12	659,377	$ 251,031	5.00%

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.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available, will be displayed with zero values.

Table 8-11: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2009	$ 15,133,232	$ 8,167,959	54%	$ 6,965,273
2010	16,632,476	8,150,048	49%	8,482,428
2011	17,673,379	7,771,867	44%	9,901,512
2012	18,169,765	7,444,904	41%	10,724,861
2013	18,757,700	7,464,615	40%	11,293,085
2014	19,469,702	7,442,113	38%	12,027,589
2015	21,803,355	7,616,899	35%	14,186,456
2016	22,408,742	7,485,771	33%	14,922,971
2017	22,848,870	7,168,725	31%	15,680,145
2018	23,518,390	6,404,147	27%	17,114,243
2019	24,672,009	6,174,002	25%	18,498,007

Notes: Actuarial assumptions were revised for the 2009, 2010, 2011, 2012, 2015 and 2019 actuarial valuations.

Table 9-11: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution[1]	Employee Contribution Rate[2]
	Number	Annual Payroll		
2009	14	$ 896,075	59.03%	0.00%
2010	12	734,838	80.29%	0.00%
2011	12	748,325	91.04%	0.00%
2012	12	800,836	99.18%	0.00%
2013	13	886,764	94.63%	0.00%
2014	13	876,793	95.99%	5.00%
2015	12	902,306	$ 91,896	5.00%
2016	11	776,560	$ 95,733	5.00%
2017	7	484,454	$ 99,538	5.00%
2018	6	430,656	$ 110,336	6.00%
2019	6	455,776	$ 124,666	6.00%

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.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available, will be displayed with zero values.

Table 8-12: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2009	$ 27,501,883	$ 10,081,849	37%	$ 17,420,034
2010	27,749,055	9,417,997	34%	18,331,058
2011	28,277,400	8,707,405	31%	19,569,995
2012	29,126,900	7,891,129	27%	21,235,771
2013	30,051,798	7,033,112	23%	23,018,686
2014	30,313,776	6,739,462	22%	23,574,314
2015	31,590,826	5,887,609	19%	25,703,217
2016	31,268,603	5,333,780	17%	25,934,823
2017	31,196,657	5,560,088	18%	25,636,569
2018	31,453,203	5,903,427	19%	25,549,776
2019	32,357,394	5,740,045	18%	26,617,349

Notes: Actuarial assumptions were revised for the 2009, 2010, 2011, 2012, 2015 and 2019 actuarial valuations.

Table 9-12: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution[1]	Employee Contribution Rate[2]
	Number	Annual Payroll		
2009	16	$ 1,423,820	$ 105,252	0.00%
2010	14	1,264,697	$ 106,666	0.00%
2011	12	1,054,905	$ 112,654	0.00%
2012	11	966,046	$ 122,162	0.00%
2013	9	823,528	$ 129,048	5.00%
2014	8	740,275	$ 133,783	5.00%
2015	6	588,300	$ 248,168	5.00%
2016	5	490,049	$ 163,894	5.00%
2017	5	502,920	$ 176,057	5.00%
2018	4	393,958	$ 206,545	5.00%
2019	4	418,406	$ 211,889	5.00%

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.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available, will be displayed with zero values.

Table 8-13: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2009	$ 7,458,469	$ 4,376,669	59%	$ 3,081,800
2010	7,542,995	4,392,150	58%	3,150,845
2011	7,947,231	4,377,098	55%	3,570,133
2012	8,276,034	4,316,264	52%	3,959,770
2013	8,826,653	4,475,700	51%	4,350,953
2014	9,310,272	4,363,206	47%	4,947,066
2015	9,974,634	4,185,938	42%	5,788,696
2016	10,486,551	4,272,246	41%	6,214,305
2017	10,762,531	4,298,277	40%	6,464,254
2018	10,965,903	4,270,331	39%	6,695,572
2019	11,584,799	4,336,882	37%	7,247,917

Notes: Actuarial assumptions were revised for the 2009, 2010, 2011, 2012, 2015 and 2019 actuarial valuations.

Table 9-13: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution[1]	Employee Contribution Rate[2]
	Number	Annual Payroll		
2009	9	$ 613,899	44.87%	0.00%
2010	9	616,308	45.26%	0.00%
2011	8	547,893	54.59%	0.00%
2012	6	407,321	78.80%	0.00%
2013	7	483,998	72.83%	0.00%
2014	6	412,831	$ 30,860	5.00%
2015	6	426,936	$ 38,056	5.00%
2016	7	447,305	$ 41,207	5.00%
2017	6	422,749	$ 45,564	5.00%
2018	6	429,913	$ 49,765	5.00%
2019	6	442,208	$ 58,605	5.00%

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.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available, will be displayed with zero values.

Table 8-14: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2009	$ 3,671,874	$ 2,706,231	74%	$ 965,643
2010	4,191,537	3,155,327	75%	1,036,210
2011	4,313,574	3,165,096	73%	1,148,478
2012	4,447,797	3,250,962	73%	1,196,835
2013	4,616,231	3,064,068	66%	1,552,163
2014	4,729,501	3,091,828	65%	1,637,673
2015	5,117,024	3,039,569	59%	2,077,455
2016	5,248,105	2,976,178	57%	2,271,927
2017	5,042,322	2,984,759	59%	2,057,563
2018	5,131,169	2,937,515	57%	2,193,654
2019	5,361,165	2,914,989	54%	2,446,176

Notes: Actuarial assumptions were revised for the 2009, 2010, 2011, 2012, 2015 and 2019 actuarial valuations.

Table 9-14: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees Number	Active Employees Annual Payroll	Computed Employer Contribution[1]	Employee Contribution Rate[2]
2009	11	$ 466,161	$ 11,327	0.00%
2010	8	340,696	$ 9,882	0.00%
2011	8	331,832	$ 10,685	0.00%
2012	7	299,896	$ 10,482	0.00%
2013	5	213,707	$ 11,127	0.00%
2014	5	217,176	$ 11,953	0.00%
2015	5	226,205	$ 15,593	0.00%
2016	4	187,332	$ 15,638	5.00%
2017	4	185,283	$ 15,234	5.00%
2018	3	146,257	$ 16,696	5.00%
2019	3	147,888	$ 20,187	5.00%

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.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available, will be displayed with zero values.

Table 8-15: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2009	$ 3,095,761	$ 2,873,617	93%	$ 222,144
2010	3,120,823	3,552,535	114%	(431,712)
2011	3,555,009	4,180,874	118%	(625,865)
2012	3,845,372	4,862,218	126%	(1,016,846)
2013	4,471,259	5,827,586	130%	(1,356,327)
2014	5,312,661	5,869,892	111%	(557,231)
2015	6,280,239	6,605,257	105%	(325,018)
2016	6,593,812	6,980,777	106%	(386,965)
2017	7,156,792	7,445,152	104%	(288,360)
2018	6,903,904	6,997,874	101%	(93,970)
2019	7,469,313	7,314,582	98%	154,731

Notes: Actuarial assumptions were revised for the 2009, 2010, 2011, 2012, 2015 and 2019 actuarial valuations.

Table 9-15: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution[1]	Employee Contribution Rate[2]
	Number	Annual Payroll		
2009	43	$ 1,995,996	14.93%	0.00%
2010	31	1,406,641	10.67%	0.00%
2011	30	1,374,595	10.16%	0.00%
2012	28	1,307,104	5.84%	0.00%
2013	28	1,359,058	0.00%	5.00%
2014	30	1,485,798	7.92%	5.00%
2015	27	1,386,439	$ 10,843	5.00%
2016	25	1,280,621	$ 8,063	5.00%
2017	23	1,227,090	$ 8,586	5.00%
2018	20	1,085,063	$ 9,071	5.00%
2019	19	1,007,741	$ 10,704	5.00%

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.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available, will be displayed with zero values.

Table 8-17: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2009	$ 193,355	$ 142,689	74%	$ 50,666
2010	261,221	261,771	100%	(550)
2011	345,168	383,905	111%	(38,737)
2012	394,032	465,460	118%	(71,428)
2013	509,355	611,122	120%	(101,767)
2014	598,566	693,773	116%	(95,207)
2015	751,788	917,417	122%	(165,629)
2016	582,805	853,981	147%	(271,176)
2017	688,985	936,821	136%	(247,836)
2018	742,776	978,692	132%	(235,916)
2019	686,409	1,025,849	149%	(339,440)

Notes: Actuarial assumptions were revised for the 2009, 2010, 2011, 2012, 2015 and 2019 actuarial valuations.

Table 9-17: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution[1]	Employee Contribution Rate[2]
	Number	Annual Payroll		
2009	10	$ 346,940	13.23%	0.00%
2010	10	359,743	12.55%	0.00%
2011	10	375,088	12.10%	0.00%
2012	10	390,645	10.64%	0.00%
2013	12	463,879	$ 3,718	0.00%
2014	9	371,273	$ 2,675	0.00%
2015	8	346,077	$ 2,310	0.00%
2016	6	258,945	$ 0	5.00%
2017	5	226,874	$ 0	5.00%
2018	5	225,620	$ 0	5.00%
2019	5	232,258	$ 0	5.00%

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.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available, will be displayed with zero values.

Division 18 - Dispatchers hired bfr. 7/1/14

Table 8-18: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2009	$ 650	$ (1,203)	-185%	$ 1,853
2010	0	0	0%	0
2011	0	0	0%	0
2012	0	0	0%	0
2013	35,352	43,721	124%	(8,369)
2014	5,617,354	4,241,972	76%	1,375,382
2015	6,524,729	4,713,697	72%	1,811,032
2016	7,117,043	5,197,249	73%	1,919,794
2017	8,019,718	5,623,971	70%	2,395,747
2018	8,490,276	5,822,521	69%	2,667,755
2019	8,842,855	6,111,407	69%	2,731,448

Notes: Actuarial assumptions were revised for the 2009, 2010, 2011, 2012, 2015 and 2019 actuarial valuations.

Table 9-18: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution[1]	Employee Contribution Rate[2]
	Number	Annual Payroll		
2009	0	$ 0	0.00%	0.00%
2010	0	0	0.00%	0.00%
2011	0	0	$ 0	0.00%
2012	0	0	$ 0	0.00%
2013	7	284,781	20.32%	5.00%
2014	21	1,119,651	$ 21,884	5.00%
2015	18	1,067,422	$ 23,974	5.00%
2016	16	1,016,151	$ 22,855	5.00%
2017	13	890,751	$ 25,036	5.00%
2018	12	840,727	$ 26,469	5.00%
2019	2	128,894	$ 18,447	5.00%

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.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available, will be displayed with zero values.

Division 19 - Mayor Staff hired after 1/1/08

Table 8-19: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2009	$ 88,219	$ 73,579	83%	$ 14,640
2010	143,232	332,743	232%	(189,511)
2011	285,001	773,874	272%	(488,873)
2012	359,064	1,259,767	351%	(900,703)
2013	570,475	1,870,355	328%	(1,299,880)
2014	753,472	1,663,999	221%	(910,527)
2015	1,022,607	2,041,331	200%	(1,018,724)
2016	1,223,499	2,184,826	179%	(961,327)
2017	1,437,690	2,340,577	163%	(902,887)
2018	1,386,484	2,382,699	172%	(996,215)
2019	1,494,810	2,414,660	162%	(919,850)

Notes: Actuarial assumptions were revised for the 2009, 2010, 2011, 2012, 2015 and 2019 actuarial valuations.

Table 9-19: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution[1]	Employee Contribution Rate[2]
	Number	Annual Payroll		
2009	5	$ 362,871	16.55%	5.00%
2010	5	394,431	11.88%	5.00%
2011	5	425,324	6.72%	5.00%
2012	6	470,563	0.00%	5.00%
2013	7	565,300	0.00%	5.00%
2014	7	612,128	4.49%	5.00%
2015	6	543,033	$ 0	5.00%
2016	6	550,957	$ 0	5.00%
2017	5	453,863	$ 0	5.00%
2018	3	260,180	$ 0	5.00%
2019	3	303,399	$ 0	5.00%

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.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available, will be displayed with zero values.

Table 8-20: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2009	$ 0	$ 0	0%	$ 0
2010	0	0	0%	0
2011	0	0	0%	0
2012	0	0	0%	0
2013	0	0	0%	0
2014	25,511	116,082	455%	(90,571)
2015	57,297	280,653	490%	(223,356)
2016	89,620	484,832	541%	(395,212)
2017	114,198	530,682	465%	(416,484)
2018	138,300	557,249	403%	(418,949)
2019	163,566	595,293	364%	(431,727)

Notes: Actuarial assumptions were revised for the 2009, 2010, 2011, 2012, 2015 and 2019 actuarial valuations.

Table 9-20: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution[1]	Employee Contribution Rate[2]
	Number	Annual Payroll		
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%
2014	5	205,168	0.00%	5.00%
2015	6	279,949	0.00%	5.00%
2016	7	326,219	0.00%	5.00%
2017	5	260,317	$ 0	5.00%
2018	5	268,159	$ 0	5.00%
2019	4	223,345	$ 0	5.00%

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.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available, will be displayed with zero values.

Table 8-21: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2009	$ 0	$ 0	0%	$ 0
2010	0	0	0%	0
2011	0	0	0%	0
2012	0	0	0%	0
2013	0	0	0%	0
2014	0	0	0%	0
2015	4,996	29,260	586%	(24,264)
2016	12,814	65,547	512%	(52,733)
2017	27,896	133,855	480%	(105,959)
2018	52,343	188,367	360%	(136,024)
2019	23,721	213,407	900%	(189,686)

Notes: Actuarial assumptions were revised for the 2009, 2010, 2011, 2012, 2015 and 2019 actuarial valuations.

Table 9-21: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution[1]	Employee Contribution Rate[2]
	Number	Annual Payroll		
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%
2014	0	0	$ 0	0.00%
2015	2	71,131	3.68%	3.00%
2016	5	178,499	4.53%	3.00%
2017	8	260,974	3.01%	3.00%
2018	6	232,443	1.57%	3.00%
2019	0	0	0.00%	3.00%

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.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available, will be displayed with zero values.

Table 8-22: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2009	$ 0	$ 0	0%	$ 0
2010	0	0	0%	0
2011	0	0	0%	0
2012	0	0	0%	0
2013	0	0	0%	0
2014	0	0	0%	0
2015	8,908	58,110	652%	(49,202)
2016	20,637	204,247	990%	(183,610)
2017	90,703	379,222	418%	(288,519)
2018	120,821	519,189	430%	(398,368)
2019	170,801	562,550	329%	(391,749)

Notes: Actuarial assumptions were revised for the 2009, 2010, 2011, 2012, 2015 and 2019 actuarial valuations.

Table 9-22: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution[1]	Employee Contribution Rate[2]
	Number	Annual Payroll		
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%
2014	0	0	$ 0	0.00%
2015	2	119,585	1.50%	5.00%
2016	2	120,241	0.00%	5.00%
2017	3	165,831	0.00%	5.00%
2018	4	266,485	0.00%	6.00%
2019	3	236,617	0.00%	6.00%

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.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available, will be displayed with zero values.

Table 8-23: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2009	$ 0	$ 0	0%	$ 0
2010	0	0	0%	0
2011	0	0	0%	0
2012	0	0	0%	0
2013	0	0	0%	0
2014	0	0	0%	0
2015	0	0	0%	0
2016	0	0	0%	0
2017	0	0	0%	0
2018	1,344,278	944,863	70%	399,415
2019	1,593,554	1,032,116	65%	561,438

Notes: Actuarial assumptions were revised for the 2009, 2010, 2011, 2012, 2015 and 2019 actuarial valuations.

Table 9-23: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution[1]	Employee Contribution Rate[2]
	Number	Annual Payroll		
2009	0	$ 0	$0.00	0.00%
2010	0	0	$0.00	0.00%
2011	0	0	$0.00	0.00%
2012	0	0	$0.00	0.00%
2013	0	0	$0.00	0.00%
2014	0	0	$0.00	0.00%
2015	0	0	$0.00	0.00%
2016	0	0	$0.00	0.00%
2017	0	0	$0.00	0.00%
2018	5	361,728	$ 7,936	6.00%
2019	5	379,335	$ 9,724	6.00%

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.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available, will be displayed with zero values.

Table 8-90: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2009	$ 0	$ 0	0%	$ 0
2010	0	0	0%	0
2011	0	0	0%	0
2012	0	0	0%	0
2013	0	0	0%	0
2014	650,226	582,419	90%	67,807
2015	670,149	528,222	79%	141,927
2016	655,410	471,055	72%	184,355
2017	640,576	418,494	65%	222,082
2018	627,926	366,984	58%	260,942
2019	629,134	321,864	51%	307,270

Notes: Actuarial assumptions were revised for the 2009, 2010, 2011, 2012, 2015 and 2019 actuarial valuations.

Table 9-90: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution[1]	Employee Contribution Rate[2]
	Number	Annual Payroll		
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%
2014	0	0	$ 376	0.00%
2015	0	0	$ 918	0.00%
2016	0	0	$ 1,251	5.00%
2017	0	0	$ 1,605	5.00%
2018	0	0	$ 2,058	5.00%
2019	0	0	$ 2,733	5.00%

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.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available, will be displayed with zero values.

Table 8-91: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2009	$ 0	$ 0	0%	$ 0
2010	0	0	0%	0
2011	0	0	0%	0
2012	0	0	0%	0
2013	0	0	0%	0
2014	1,818,939	2,023,267	111%	(204,328)
2015	1,875,662	1,916,148	102%	(40,486)
2016	1,713,056	1,813,112	106%	(100,056)
2017	1,674,880	1,732,359	103%	(57,479)
2018	1,640,779	1,609,267	98%	31,512
2019	1,646,434	1,488,523	90%	157,911

Notes: Actuarial assumptions were revised for the 2009, 2010, 2011, 2012, 2015 and 2019 actuarial valuations.

Table 9-91: Computed Employer Contributions - Comparative Schedule

Valuation Date December 31	Active Employees		Computed Employer Contribution[1]	Employee Contribution Rate[2]
	Number	Annual Payroll		
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%
2014	0	0	$ 0	0.00%
2015	0	0	$ 0	0.00%
2016	0	0	$ 0	5.00%
2017	0	0	$ 0	5.00%
2018	0	0	$ 428	5.00%
2019	0	0	$ 1,795	5.00%

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.

See the Benefit Provision History, later in this report, for past benefit provision changes.

Years where historical information is not available, will be displayed with zero values.

Table 8-S1: Actuarial Accrued Liabilities - Comparative Schedule

Valuation Date December 31	Actuarial Accrued Liability	Valuation Assets	Percent Funded	Unfunded (Overfunded) Accrued Liabilities
2009	$ 0	$ 0		$ 0
2010	0	0		0
2011	0	0		0
2012	0	0		0
2013	0	0		0
2014	0	0		0
2015	0	0		0
2016	0	0		0
2017	0	0		0
2018	0	313,735		(313,735)
2019	0	329,331		(329,331)

Notes: Actuarial assumptions were revised for the 2009, 2010, 2011, 2012, 2015 and 2019 actuarial valuations.

Years where historical information is not available, will be displayed with zero values.

Table 10: Division-Based Layered Amortization Schedule

Division 10 - AFSCME

Table 10-10: Layered Amortization Schedule

				Amounts for Fiscal Year Beginning 7/1/2021		
Type of UAL	Date Established	Original Balance[1]	Original Amortization Period[2]	Outstanding UAL Balance[3]	Remaining Amortization Period[2]	Annual Amortization Payment
Initial	12/31/2015	$ 27,528,239	21	$ 27,933,611	14	$ 2,667,228
(Gain)/Loss	12/31/2016	595,607	19	651,441	14	62,208
(Gain)/Loss	12/31/2017	401,932	17	439,839	14	42,000
(Gain)/Loss	12/31/2018	(288,344)	15	(317,709)	14	(30,336)
(Gain)/Loss	12/31/2019	319,808	14	355,707	14	33,960
Assumption	12/31/2019	1,779,860	14	1,806,772	14	172,524
Total				**$ 30,869,661**		**$ 2,947,584**

[1] For each type of UAL (layer), this is the original balance as of the date the layer was established.

[2] According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

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

The unfunded accrued liability (UAL) as of December 31, 2019 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2019 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

Table 10-11: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance[1]	Original Amortization Period[2]	Amounts for Fiscal Year Beginning 7/1/2021: Outstanding UAL Balance[3]	Remaining Amortization Period[2]	Annual Amortization Payment
Initial	12/31/2015	$ 14,186,456	23	$ 15,086,478	19	$ 1,163,424
(Gain)/Loss	12/31/2016	360,455	22	408,572	19	31,512
(Gain)/Loss	12/31/2017	480,735	21	541,283	19	41,748
(Gain)/Loss	12/31/2018	1,249,208	20	1,400,185	19	107,976
Amendment	12/31/2018	7,087	20	7,943	19	612
(Gain)/Loss	12/31/2019	264,521	19	294,214	19	22,692
Assumption	12/31/2019	916,153	19	914,880	19	70,548
Total				**$ 18,653,555**		**$ 1,438,512**

[1] For each type of UAL (layer), this is the original balance as of the date the layer was established.

[2] According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

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

The unfunded accrued liability (UAL) as of December 31, 2019 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2019 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

Table 10-12: Layered Amortization Schedule

				Amounts for Fiscal Year Beginning 7/1/2021		
Type of UAL	Date Established	Original Balance[1]	Original Amortization Period[2]	Outstanding UAL Balance[3]	Remaining Amortization Period[2]	Annual Amortization Payment
Initial	12/31/2015	$ 25,703,217	21	$ 24,736,131	14	$ 2,361,912
(Gain)/Loss	12/31/2016	(237,076)	19	(259,295)	14	(24,756)
(Gain)/Loss	12/31/2017	(36,500)	17	(39,941)	14	(3,816)
(Gain)/Loss	12/31/2018	396,901	15	437,325	14	41,760
(Gain)/Loss	12/31/2019	2,445	14	2,720	14	264
Assumption	12/31/2019	1,126,959	14	1,104,719	14	105,480
Total				**$ 25,981,659**		**$ 2,480,844**

[1] For each type of UAL (layer), this is the original balance as of the date the layer was established.

[2] According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

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

The unfunded accrued liability (UAL) as of December 31, 2019 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2019 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

Table 10-13: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance[1]	Original Amortization Period[2]	Amounts for Fiscal Year Beginning 7/1/2021: Outstanding UAL Balance[3]	Amounts for Fiscal Year Beginning 7/1/2021: Remaining Amortization Period[2]	Amounts for Fiscal Year Beginning 7/1/2021: Annual Amortization Payment
Initial	12/31/2015	$ 5,788,696	23	$ 6,051,817	15	$ 549,468
(Gain)/Loss	12/31/2016	285,342	22	318,924	15	28,956
(Gain)/Loss	12/31/2017	131,599	19	146,102	15	13,260
(Gain)/Loss	12/31/2018	157,710	17	175,189	15	15,912
(Gain)/Loss	12/31/2019	103,429	15	115,039	15	10,440
Assumption	12/31/2019	411,856	15	417,862	15	37,944
Total				**$ 7,224,933**		**$ 655,980**

[1] For each type of UAL (layer), this is the original balance as of the date the layer was established.

[2] According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

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

The unfunded accrued liability (UAL) as of December 31, 2019 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2019 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

Table 10-14: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance[1]	Original Amortization Period[2]	Amounts for Fiscal Year Beginning 7/1/2021: Outstanding UAL Balance[3]	Remaining Amortization Period[2]	Annual Amortization Payment
Initial	12/31/2015	$ 2,077,455	23	$ 2,189,983	15	$ 198,840
(Gain)/Loss	12/31/2016	116,860	22	130,611	15	11,856
Amendment	12/31/2016	6,828	22	7,639	15	696
(Gain)/Loss	12/31/2017	(256,250)	19	(284,499)	15	(25,836)
(Gain)/Loss	12/31/2018	132,278	17	146,943	15	13,344
(Gain)/Loss	12/31/2019	58,265	15	64,805	15	5,880
Assumption	12/31/2019	187,420	15	195,143	15	17,724
Total				**$ 2,450,625**		**$ 222,504**

[1] For each type of UAL (layer), this is the original balance as of the date the layer was established.

[2] According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

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

The unfunded accrued liability (UAL) as of December 31, 2019 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2019 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

Table 10-15: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance[1]	Original Amortization Period[2]	Amounts for Fiscal Year Beginning 7/1/2021: Outstanding UAL Balance[3]	Remaining Amortization Period[2]	Annual Amortization Payment
(Gain)/Loss	12/31/2019	$ 177,256	10	$ 197,153	10	$ 24,432
Total				**$ 197,153**		**$ 24,432**

[1] For each type of UAL (layer), this is the original balance as of the date the layer was established.

[2] According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

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

The unfunded accrued liability (UAL) as of December 31, 2019 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2019 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

Table 10-17: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance[1]	Original Amortization Period[2]	Amounts for Fiscal Year Beginning 7/1/2021: Outstanding UAL Balance[3]	Remaining Amortization Period[2]	Annual Amortization Payment
Initial	12/31/2015	$ (165,629)	10	$ (136,184)	10	$ (16,872)
(Gain)/Loss	12/31/2016	(102,098)	15	(107,466)	12	(11,532)
Amendment	12/31/2016	(12,433)	10	(11,463)	7	(1,920)
(Gain)/Loss	12/31/2017	38,179	10	38,106	8	5,676
(Gain)/Loss	12/31/2018	966	10	1,028	9	144
(Gain)/Loss	12/31/2019	(135,209)	10	(150,386)	10	(18,636)
Assumption	12/31/2019	18,337	10	22,525	10	2,796
Total				**$ (343,840)**		**$ (40,344)**

[1] For each type of UAL (layer), this is the original balance as of the date the layer was established.

[2] According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

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

The unfunded accrued liability (UAL) as of December 31, 2019 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2019 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

Division 18 - Dispatchers hired bfr. 7/1/14

Table 10-18: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance[1]	Original Amortization Period[2]	Amounts for Fiscal Year Beginning 7/1/2021: Outstanding UAL Balance[3]	Remaining Amortization Period[2]	Annual Amortization Payment
Initial	12/31/2015	$ 1,811,032	23	$ 2,020,262	19	$ 155,796
(Gain)/Loss	12/31/2016	(38,360)	22	(43,483)	19	(3,348)
(Gain)/Loss	12/31/2017	453,908	21	511,075	19	39,408
(Gain)/Loss	12/31/2018	221,677	20	248,467	19	19,164
(Gain)/Loss	12/31/2019	(397,192)	19	(441,777)	19	(34,068)
Assumption	12/31/2019	410,755	19	443,247	19	34,188
Total				**$ 2,737,791**		**$ 211,140**

[1] For each type of UAL (layer), this is the original balance as of the date the layer was established.

[2] According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

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

The unfunded accrued liability (UAL) as of December 31, 2019 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2019 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

Division 19 - Mayor Staff hired after 1/1/08

Table 10-19: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance[1]	Original Amortization Period[2]	Amounts for Fiscal Year Beginning 7/1/2021: Outstanding UAL Balance[3]	Remaining Amortization Period[2]	Annual Amortization Payment
Initial	12/31/2015	$ (1,018,724)	10	$ (816,749)	10	$ (101,196)
(Gain)/Loss	12/31/2016	41,692	10	38,466	7	6,420
(Gain)/Loss	12/31/2017	27,928	10	27,886	8	4,152
(Gain)/Loss	12/31/2018	(150,999)	10	(160,535)	9	(21,684)
(Gain)/Loss	12/31/2019	(72,115)	10	(80,210)	10	(9,936)
Assumption	12/31/2019	46,104	10	57,008	10	7,068
Total				**$ (934,134)**		**$ (115,176)**

[1] For each type of UAL (layer), this is the original balance as of the date the layer was established.

[2] According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

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

The unfunded accrued liability (UAL) as of December 31, 2019 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2019 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

Table 10-20: Layered Amortization Schedule

				Amounts for Fiscal Year Beginning 7/1/2021		
Type of UAL	Date Established	Original Balance[1]	Original Amortization Period[2]	Outstanding UAL Balance[3]	Remaining Amortization Period[2]	Annual Amortization Payment
Initial	12/31/2015	$ (223,356)	10	$ (205,722)	10	$ (25,488)
(Gain)/Loss	12/31/2016	(161,838)	15	(170,340)	12	(18,276)
(Gain)/Loss	12/31/2017	(4,182)	10	(4,175)	8	(624)
(Gain)/Loss	12/31/2018	(1,019)	10	(1,079)	9	(144)
(Gain)/Loss	12/31/2019	(81,719)	10	(90,892)	10	(11,268)
Assumption	12/31/2019	3,308	10	6,346	10	792
Total				**$ (465,862)**		**$ (55,008)**

[1] For each type of UAL (layer), this is the original balance as of the date the layer was established.

[2] According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

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

The unfunded accrued liability (UAL) as of December 31, 2019 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2019 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

Table 10-21: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance[1]	Original Amortization Period[2]	Amounts for Fiscal Year Beginning 7/1/2021: Outstanding UAL Balance[3]	Remaining Amortization Period[2]	Annual Amortization Payment
Initial	12/31/2015	$ (24,264)	10	$ (22,179)	10	$ (2,748)
(Gain)/Loss	12/31/2016	(25,866)	15	(27,209)	12	(2,916)
(Gain)/Loss	12/31/2017	(51,660)	15	(55,792)	13	(5,628)
(Gain)/Loss	12/31/2018	(26,450)	15	(29,148)	14	(2,784)
(Gain)/Loss	12/31/2019	(52,361)	15	(58,239)	15	(5,292)
Assumption	12/31/2019	407	15	1,582	15	144
Total				**$ (190,985)**		**$ (19,224)**

[1] For each type of UAL (layer), this is the original balance as of the date the layer was established.

[2] According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

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

The unfunded accrued liability (UAL) as of December 31, 2019 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2019 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

Table 10-22: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance[1]	Original Amortization Period[2]	Amounts for Fiscal Year Beginning 7/1/2021: Outstanding UAL Balance[3]	Remaining Amortization Period[2]	Annual Amortization Payment
Initial	12/31/2015	$ (49,202)	10	$ (36,695)	10	$ (4,548)
(Gain)/Loss	12/31/2016	(138,881)	15	(146,165)	12	(15,684)
(Gain)/Loss	12/31/2017	(95,195)	15	(102,819)	13	(10,380)
(Gain)/Loss	12/31/2018	(97,663)	15	(107,608)	14	(10,272)
Amendment	12/31/2018	(2,239)	10	(2,374)	9	(324)
(Gain)/Loss	12/31/2019	(30,765)	15	(34,218)	15	(3,108)
Assumption	12/31/2019	5,224	15	8,241	15	744
Total				**$ (421,638)**		**$ (43,572)**

[1] For each type of UAL (layer), this is the original balance as of the date the layer was established.

[2] According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

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

The unfunded accrued liability (UAL) as of December 31, 2019 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2019 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

Table 10-23: Layered Amortization Schedule

				Amounts for Fiscal Year Beginning 7/1/2021		
Type of UAL	Date Established	Original Balance[1]	Original Amortization Period[2]	Outstanding UAL Balance[3]	Remaining Amortization Period[2]	Annual Amortization Payment
(Gain)/Loss	12/31/2018	$ 405,374	10	$ 430,964	9	$ 58,200
(Gain)/Loss	12/31/2019	78,961	10	87,825	10	10,884
Assumption	12/31/2019	47,934	10	50,218	10	6,228
Total				**$ 569,007**		**$ 75,312**

[1] For each type of UAL (layer), this is the original balance as of the date the layer was established.

[2] According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

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

The unfunded accrued liability (UAL) as of December 31, 2019 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2019 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

Table 10-90: Layered Amortization Schedule

				Amounts for Fiscal Year Beginning 7/1/2021		
Type of UAL	**Date Established**	**Original Balance**[1]	**Original Amortization Period**[2]	**Outstanding UAL Balance**[3]	**Remaining Amortization Period**[2]	**Annual Amortization Payment**
Initial	12/31/2015	$ 141,927	20	$ 146,911	12	$ 15,756
(Gain)/Loss	12/31/2016	36,132	18	39,051	12	4,188
(Gain)/Loss	12/31/2017	31,458	16	34,118	12	3,660
(Gain)/Loss	12/31/2018	34,962	14	38,334	12	4,116
(Gain)/Loss	12/31/2019	27,911	12	31,044	12	3,336
Assumption	12/31/2019	16,101	12	16,194	12	1,740
Total				**$ 305,652**		**$ 32,796**

[1] For each type of UAL (layer), this is the original balance as of the date the layer was established.

[2] According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

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

The unfunded accrued liability (UAL) as of December 31, 2019 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2019 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

Division 91 - Eld HC General

Table 10-91: Layered Amortization Schedule

Type of UAL	Date Established	Original Balance[1]	Original Amortization Period[2]	Amounts for Fiscal Year Beginning 7/1/2021: Outstanding UAL Balance[3]	Remaining Amortization Period[2]	Annual Amortization Payment
(Gain)/Loss	12/31/2018	$ 37,559	10	$ 39,932	9	$ 5,388
(Gain)/Loss	12/31/2019	70,806	10	78,754	10	9,756
Assumption	12/31/2019	47,030	10	51,629	10	6,396
Total				**$ 170,315**		**$ 21,540**

[1] For each type of UAL (layer), this is the original balance as of the date the layer was established.

[2] According to the MERS amortization policy, each type of UAL (layer) is amortized over a specific period (see Appendix on MERS website).

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

The unfunded accrued liability (UAL) as of December 31, 2019 (see Table 6) is projected to the beginning of the fiscal year for which the contributions are being calculated. This allows the 2019 valuation to take into account the expected future contributions that are based on past valuations. Each type of UAL (layer) is amortized over the appropriate period. Please see the Appendix on the MERS website for a detailed description of the amortization policy.

Note: The original balance and original amortization periods prior to 12/31/2018 were received from the prior actuary.

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 http://www.mersofmich.com/.

Actuarial Valuation Date:	12/31/2019
Measurement Date of the Total Pension Liability (TPL):	12/31/2019

At 12/31/2019, the following employees were covered by the benefit terms:

Inactive employees or beneficiaries currently receiving benefits:	309
Inactive employees entitled to but not yet receiving benefits (including refunds):	64
Active employees:	72
	445

Total Pension Liability as of 12/31/2018 measurement date:	$	137,013,116
Total Pension Liability as of 12/31/2019 measurement date:	$	142,672,169
Service Cost for the year ending on the 12/31/2019 measurement date:	$	803,087
Change in the Total Pension Liability due to:		
- Benefit changes[1]:	$	0
- Differences between expected and actual experience[2]:	$	(1,198,986)
- Changes in assumptions[2]:	$	5,078,924
Average expected remaining service lives of all employees (active and inactive):		1

[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.

Covered employee payroll: (Needed for Required Supplementary Information)	$	4,635,244

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

	1% Decrease (6.60%)	Current Discount Rate (7.60%)	1% Increase (8.60%)
Change in Net Pension Liability as of 12/31/2019:	$ 15,261,575	$ -	$ (12,887,566)

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.

Certain retired members receive a portion of their benefit from the MERS Qualified Excess Benefit Arrangement (QEBA). Please refer to the QEBA letter for additional detail related to the QEBA liability.

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.

10 - AFSCME	
4/1/2017	Service Credit Purchase Estimates - No
5/1/2015	Accelerated to 15-year Amortization
5/1/2015	DC Adoption Date 05-01-2015
4/1/2013	Member Contribution Rate 5.00%
6/1/2003	Temporary 18 Years & Out (06/01/2003 - 09/03/2003)
1/1/2001	25 Years & Out
1/1/2001	2.8% Mult. for Svc < 25 yrs , 1% for Svc > 25 yrs (80% max)
6/17/1997	Temporary 25 Years & Out (06/17/1997 - 10/03/1997)
6/17/1997	Temporary 2.8% Mult. for Svc < 25 yrs , 1% for Svc > 25 yrs (80% max) (06/17/1997 - 10/03/1997)
1/1/1997	Benefit RS 50 (50% Post-Ret. Spouse Benefits)
1/1/1997	8 Year Vesting
1/1/1997	Benefit B-4 (80% max)
1/1/1997	Benefit F50 (With 25 Years of Service)
9/1/1995	10 Year Vesting
8/1/1995	Temporary 25 Years & Out (08/01/1995 - 10/01/1995)
8/1/1995	Temporary Benefit RS 50 (50% Post-Ret. Spouse Benefits) (08/01/1995 - 10/01/1995)
8/1/1995	Temporary Benefit B-4 (80% max) (08/01/1995 - 10/01/1995)
8/1/1995	8 Year Vesting
9/1/1992	Temporary Benefit RS 50 (50% Post-Ret. Spouse Benefits) (09/01/1992 - 02/28/1993)
9/1/1992	Temporary Benefit B-4 (80% max) (09/01/1992 - 02/28/1993)
3/1/1991	Temporary Benefit RS 50 (50% Post-Ret. Spouse Benefits) (03/01/1991 - 07/03/1991)
3/1/1991	Temporary Benefit B-4 (80% max) (03/01/1991 - 07/03/1991)
7/1/1990	Benefit B-3 (80% max)
12/18/1989	Covered by Act 88
7/1/1987	Benefit FAC-3 (3 Year Final Average Compensation)
7/1/1987	Benefit B-2
7/1/1984	Benefit B-1
3/1/1981	Member Contribution Rate 0.00%
4/1/1980	Benefit F55 (With 15 Years of Service)
3/3/1975	Exclude Temporary Employees
11/27/1972	Blanket Resolution (All Service)
1/1/1972	Flexible E 2% COLA Adopted (01/01/1972)
1/1/1972	E2 2.5% COLA for future retirees (04/01/1971)
1/1/1972	E1 2.5% COLA for past retirees (04/01/1971)
6/1/1967	Benefit C-1 (Old)
10/1/1966	Benefit FAC-5 (5 Year Final Average Compensation)
10/1/1966	10 Year Vesting
10/1/1966	Benefit C (Old)
10/1/1966	Member Contribution Rate 3.00% Under $4,200.00 - Then 5.00%
	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

11 - Supervisory

7/1/2018	Participant Contribution Rate 6%
4/1/2017	Service Credit Purchase Estimates - No
7/1/2014	Participant Contribution Rate 5%
6/1/2003	Temporary 18 Years & Out (06/01/2003 - 09/03/2003)
1/1/2001	25 Years & Out
1/1/2001	2.8% Mult. for Svc < 25 yrs , 1% for Svc > 25 yrs (80% max)
2/1/2000	6 Year Vesting
10/3/1997	Benefit B-4 (80% max)
6/17/1997	Temporary 25 Years & Out (06/17/1997 - 10/02/1997)
6/17/1997	2.8% Mult. for Svc < 25 yrs , 1% for Svc > 25 yrs (80% max)
1/1/1997	Benefit RS 50 (50% Post-Ret. Spouse Benefits)
1/1/1997	Benefit B-4 (80% max)
1/1/1997	Benefit F50 (With 25 Years of Service)
7/1/1993	Member Contribution Rate 0.00%
9/1/1992	Temporary Benefit RS 50 (50% Post-Ret. Spouse Benefits) (09/01/1992 - 02/28/1993)
9/1/1992	Temporary Benefit B-4 (80% max) (09/01/1992 - 02/28/1993)
3/1/1991	Temporary Benefit RS 50 (50% Post-Ret. Spouse Benefits) (03/01/1991 - 07/03/1991)
3/1/1991	Temporary Benefit B-4 (80% max) (03/01/1991 - 07/03/1991)
1/1/1991	Benefit B-3 (80% max)
7/1/1990	8 Year Vesting
12/18/1989	Covered by Act 88
7/1/1987	Benefit FAC-3 (3 Year Final Average Compensation)
7/1/1987	2.25% Multiplier (no max)
7/1/1987	Member Contribution Rate 5.00%
7/1/1984	Benefit FAC-5 (5 Year Final Average Compensation)
7/1/1984	10 Year Vesting
7/1/1984	Benefit B-1
4/1/1980	Benefit F55 (With 15 Years of Service)
3/3/1975	Exclude Temporary Employees
11/27/1972	Blanket Resolution (All Service)
1/1/1972	Flexible E 2% COLA Adopted (01/01/1972)
1/1/1972	E2 2.5% COLA for future retirees (04/01/1971)
1/1/1972	E1 2.5% COLA for past retirees (04/01/1971)
	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

12 - Mayor, Staff

2/1/2018	Service Credit Purchase Estimates - Yes
4/1/2017	Service Credit Purchase Estimates - No
5/1/2015	Accelerated to 15-year Amortization
5/1/2015	DC Adoption Date 05-01-2015
1/1/2013	Member Contribution Rate 5.00%
6/1/2003	Temporary 18 Years & Out (06/01/2003 - 09/03/2003)
2/1/1999	2.8% Mult. for Svc < 30 yrs , 1% for Svc > 30 yrs
7/1/1997	Benefit B-3 (80% max)
7/2/1996	2.8% Mult. for Svc < 25 yrs , 1% for Svc > 25 yrs (80% max)
7/1/1996	25 Years & Out
7/1/1996	2.8% Multiplier (80% max)

12 - Mayor, Staff

1/1/1995	Benefit F50 (With 25 Years of Service)
9/1/1992	Temporary Benefit B-4 (80% max) (09/01/1992 - 02/28/1993)
4/1/1992	Benefit RS 50 (50% Post-Ret. Spouse Benefits)
4/1/1992	6 Year Vesting
4/1/1992	Benefit B-4 (80% max)
3/1/1991	Temporary 2.5% Multiplier (no max) (03/01/1991 - 07/03/1991)
12/18/1989	Covered by Act 88
7/1/1987	Benefit FAC-3 (3 Year Final Average Compensation)
7/1/1987	2.25% Multiplier (no max)
7/1/1984	Benefit FAC-5 (5 Year Final Average Compensation)
7/1/1984	Benefit B-1
7/1/1980	Member Contribution Rate 0.00%
4/1/1980	10 Year Vesting
4/1/1980	Benefit F55 (With 15 Years of Service)
11/27/1972	Blanket Resolution (All Service)
1/1/1972	Flexible E 2% COLA Adopted (01/01/1972)
1/1/1972	E2 2.5% COLA for future retirees (04/01/1971)
1/1/1972	E1 2.5% COLA for past retirees (04/01/1971)
	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

13 - Judges,Crt.Super

4/1/2017	Service Credit Purchase Estimates - No
1/1/2017	Accelerated to 15-year Amortization
1/1/2017	DC Adoption Date 01-01-2017
7/1/2014	Participant Contribution Rate 5%
7/2/1996	2.8% Mult. for Svc < 25 yrs , 1% for Svc > 25 yrs (80% max)
7/1/1996	25 Years & Out
7/1/1996	2.8% Multiplier (80% max)
11/1/1990	Benefit RS 50 (50% Post-Ret. Spouse Benefits)
11/1/1990	Benefit B-4 (80% max)
1/1/1990	6 Year Vesting
12/18/1989	Covered by Act 88
7/1/1987	Benefit FAC-3 (3 Year Final Average Compensation)
7/1/1987	Benefit B-3 (80% max)
7/1/1984	Benefit FAC-5 (5 Year Final Average Compensation)
7/1/1984	10 Year Vesting
7/1/1984	Benefit B-1
3/1/1981	Member Contribution Rate 0.00%
4/1/1980	Benefit F55 (With 15 Years of Service)
3/3/1975	Exclude Temporary Employees
11/27/1972	Blanket Resolution (All Service)
1/1/1972	Flexible E 2% COLA Adopted (01/01/1972)
1/1/1972	E2 2.5% COLA for future retirees (04/01/1971)
1/1/1972	E1 2.5% COLA for past retirees (04/01/1971)
	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

14 - Court, Union

4/1/2017	Service Credit Purchase Estimates - No
1/1/2017	Accelerated to 15-year Amortization
1/1/2017	DC Adoption Date 01-01-2017
7/1/2016	Participant Contribution Rate 5%
10/1/2003	2.8% Mult. for Svc < 25 yrs , 1% for Svc > 25 yrs (80% max)
7/1/1998	25 Years & Out
7/1/1998	Benefit RS 50 (50% Post-Ret. Spouse Benefits)
7/1/1998	6 Year Vesting
7/1/1998	Benefit B-4 (80% max)
9/1/1992	Temporary Benefit RS 50 (50% Post-Ret. Spouse Benefits) (09/01/1992 - 02/28/1993)
9/1/1992	Temporary Benefit B-4 (80% max) (09/01/1992 - 02/28/1993)
1/1/1990	8 Year Vesting
12/18/1989	Covered by Act 88
7/1/1987	Benefit FAC-3 (3 Year Final Average Compensation)
7/1/1987	Benefit B-2
7/1/1984	Benefit FAC-5 (5 Year Final Average Compensation)
7/1/1984	10 Year Vesting
7/1/1984	Benefit B-1
3/1/1981	Member Contribution Rate 0.00%
4/1/1980	Benefit F55 (With 15 Years of Service)
3/3/1975	Exclude Temporary Employees
11/27/1972	Blanket Resolution (All Service)
1/1/1972	Flexible E 2% COLA Adopted (01/01/1972)
1/1/1972	E2 2.5% COLA for future retirees (04/01/1971)
1/1/1972	E1 2.5% COLA for past retirees (04/01/1971)
	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

15 - AFSCME 6/21/99

4/1/2017	Service Credit Purchase Estimates - No
5/1/2015	DC Adoption Date 05-01-2015
4/1/2013	Member Contribution Rate 5.00%
7/1/1999	Benefit FAC-3 (3 Year Final Average Compensation)
7/1/1999	Benefit RS 50 (50% Post-Ret. Spouse Benefits)
7/1/1999	8 Year Vesting
7/1/1999	Benefit B-3 (80% max)
7/1/1999	Benefit F50 (With 25 Years of Service)
7/1/1999	Benefit F55 (With 15 Years of Service)
7/1/1999	Member Contribution Rate 0.00%
7/1/1999	E2 2.5% COLA for future retirees (07/01/1999)
12/18/1989	Covered by Act 88
3/3/1975	Exclude Temporary Employees
11/27/1972	Blanket Resolution (All Service)
	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

17 - CrtUn Hired10/03

4/1/2017	Service Credit Purchase Estimates - No
1/1/2017	DC Adoption Date 01-01-2017
7/1/2016	Participant Contribution Rate 5%
1/1/2004	E2 2.5% COLA for future retirees (10/01/2003)
10/1/2003	Benefit FAC-5 (5 Year Final Average Compensation)
10/1/2003	Benefit RS 50 (50% Post-Ret. Spouse Benefits)
10/1/2003	8 Year Vesting
10/1/2003	Benefit B-2
10/1/2003	Benefit F50 (With 25 Years of Service)
10/1/2003	Benefit F55 (With 15 Years of Service)
10/1/2003	Member Contribution Rate 0.00%
12/18/1989	Covered by Act 88
	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

18 - Dispatchers hired bfr. 7/1/14

4/1/2017	Service Credit Purchase Estimates - No
7/1/2014	Exclude Temporary Employees
1/1/2009	E2 2.5% COLA for future retirees (07/01/2008)
7/1/2007	Covered by Act 88
7/1/2007	Day of work defined as 8 Hours a Day for Group employees.
7/1/2007	Benefit FAC-3 (3 Year Final Average Compensation)
7/1/2007	Benefit RS 50 (50% Post-Ret. Spouse Benefits)
7/1/2007	8 Year Vesting
7/1/2007	Benefit B-4 (80% max)
7/1/2007	Benefit F50 (With 25 Years of Service)
7/1/2007	Benefit F55 (With 15 Years of Service)
7/1/2007	Member Contribution Rate 5.00%
	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

19 - Mayor Staff hired after 1/1/08

4/1/2017	Service Credit Purchase Estimates - No
5/1/2015	DC Adoption Date 05-01-2015
1/1/2008	Covered by Act 88
1/1/2008	Day of work defined as 7 Hours a Day for All employees.
1/1/2008	25 Years & Out
1/1/2008	Benefit FAC-3 (3 Year Final Average Compensation)
1/1/2008	Benefit RS 50 (50% Post-Ret. Spouse Benefits)
1/1/2008	6 Year Vesting
1/1/2008	2.8% Mult. for Svc < 30 yrs , 1% for Svc > 30 yrs
1/1/2008	Benefit F55 (With 15 Years of Service)
1/1/2008	Member Contribution Rate 5.00%
1/1/2008	E2 2.5% COLA for future retirees (01/01/2008)
	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

20 - Crt Admin & Union aft 7/1/10

4/1/2017	Service Credit Purchase Estimates - No
1/1/2017	DC Adoption Date 01-01-2017
8/1/2012	Day of work defined as 7 Hours a Day for All employees.
8/1/2012	Benefit FAC-5 (5 Year Final Average Compensation)
8/1/2012	Exclude Temporary Employees
8/1/2012	8 Year Vesting
8/1/2012	Benefit C-1 (New)
8/1/2012	Member Contribution Rate 5.00%
12/18/1989	Covered by Act 88
	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

21 - Dispatchers on/aft 7/1/14

4/1/2017	Service Credit Purchase Estimates - No
7/1/2014	Day of work defined as 8 Days a Day for All employees.
7/1/2014	Benefit FAC-5 (5 Year Final Average Compensation)
7/1/2014	Non Standard Compensation Definition
7/1/2014	Exclude Temporary Employees
7/1/2014	10 Year Vesting
7/1/2014	1.75% multiplier
7/1/2014	Participant Contribution Rate 3%
7/1/2007	Covered by Act 88
	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

22 - Supervisory aft 7/1/10

7/1/2018	Participant Contribution Rate 6%
4/1/2017	Service Credit Purchase Estimates - No
4/1/2015	Day of work defined as 8 Hours a Day for Full Time employees.
4/1/2015	Benefit FAC-5 (5 Year Final Average Compensation)
4/1/2015	Exclude Temporary Employees requiring less than 12 months
4/1/2015	10 Year Vesting
4/1/2015	Benefit C-1 (New)
4/1/2015	Participant Contribution Rate 5%
	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

23 - UAW

9/1/2018	Non Standard Compensation Definition
8/1/2018	Day of work is defined as 7 - 8 hours a day
8/1/2018	Benefit FAC-3 (3 Year Final Average Compensation)
8/1/2018	Benefit RS 50 (50% Post-Ret. Spouse Benefits)
8/1/2018	Exclude Temporary Employees requiring less than 12 months
8/1/2018	8 Year Vesting
8/1/2018	Defined Benefit Normal Retirement Age - 60
8/1/2018	Service Credit Purchase Estimates - No

23 - UAW

8/1/2018	Non-Accelerated Amortization
8/1/2018	Benefit B-3 (80% max)
8/1/2018	Benefit F50 (With 25 Years of Service)
8/1/2018	Benefit F55 (With 15 Years of Service)
8/1/2018	Participant Contribution Rate 6%
8/1/2018	E2 2.5% COLA for future retirees (8/1/2018)
8/1/2018	DC Adoption Date 08-01-2018
12/18/1989	Covered by Act 88
	Fiscal Month - July

90 - Eld HC Administration

12/31/2018	Accelerated to 5-year Amortization
4/1/2017	Service Credit Purchase Estimates - No
7/1/2014	Benefit FAC-3 (3 Year Final Average Compensation)
7/1/2014	Benefit RS 50 (50% Post-Ret. Spouse Benefits)
7/1/2014	Exclude Temporary Employees requiring less than 12 months
7/1/2014	10 Year Vesting
7/1/2014	Benefit B-4 (80% max)
7/1/2014	Member Contribution Rate 5.00%
	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

91 - Eld HC General

4/1/2017	Service Credit Purchase Estimates - No
7/1/2014	Benefit FAC-3 (3 Year Final Average Compensation)
7/1/2014	Benefit RS 50 (50% Post-Ret. Spouse Benefits)
7/1/2014	Exclude Temporary Employees requiring less than 12 months
7/1/2014	6 Year Vesting
7/1/2014	Benefit B-3 (80% max)
7/1/2014	Member Contribution Rate 5.00%
	Fiscal Month - July
	Defined Benefit Normal Retirement Age - 60
	Early Reduced (.5%) at Age 50 with 25 Years or Age 55 with 15 Years

S1 - Surplus Unassociated

	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
10 - AFSCME	3.00%
11 - Supervisory	3.00%
12 - Mayor, Staff	3.00%
13 - Judges,Crt.Super	3.00%
14 - Court, Union	3.00%
15 - AFSCME 6/21/99	3.00%
17 - CrtUn Hired10/03	3.00%
18 - Dispatchers hired bfr. 7/1/14	3.00%
19 - Mayor Staff hired after 1/1/08	3.00%
20 - Crt Admin & Union aft 7/1/10	3.00%
21 - Dispatchers on/aft 7/1/14	0.00%
22 - Supervisory aft 7/1/10	3.00%
23 - UAW	3.00%
90 - Eld HC Administration	0.00%
91 - Eld HC General	0.00%

Withdrawal Rate Scaling Factor

Division	Withdrawal Rate Scaling Factor
All Divisions	77%

Miscellaneous and Technical Assumptions

Loads – None.

Amortization Policy for Closed Divisions

Closed Division	Amortization Option
10 - AFSCME	Accelerated to 15-Year Amortization
12 - Mayor, Staff	Accelerated to 15-Year Amortization
13 - Judges,Crt.Super	Accelerated to 15-Year Amortization
14 - Court, Union	Accelerated to 15-Year Amortization
90 - Eld HC Administration	Accelerated to 5-Year Amortization

Please see the Appendix on MERS website for a detailed description of the amortization options available for closed divisions within an open municipality.

Risk Commentary

Determination of the accrued liability, the employer contribution, and the funded ratio requires the use of assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the accrued liability, the actuarially determined contribution and the funded ratio that result from the differences between actual experience and the actuarial assumptions.

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 due to changing conditions; 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.

Examples of risk that may reasonably be anticipated to significantly affect the plan's future financial condition include:

- **Investment Risk** – actual investment returns may differ from the expected returns;
- **Asset/Liability Mismatch** – changes in asset values may not match changes in liabilities, thereby altering the gap between the accrued liability and assets and consequently altering the funded status and contribution requirements;
- **Salary and Payroll Risk** – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
- **Longevity Risk** – members may live longer or shorter than expected and receive pensions for a period of time other than assumed; and
- **Other Demographic Risks –** members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future accrued liability and contributions differing from expected.

  The effects of certain trends in experience can generally be anticipated. For example, if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise, if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.

PLAN MATURITY MEASURES

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Generally accepted plan maturity measures include the following:

	12/31/2019	12/31/2018
1. Ratio of the market value of assets to total payroll	12.5	9.3
2. Ratio of actuarial accrued liability to payroll	31.6	24.3
3. Ratio of actives to retirees and beneficiaries	0.2	0.3
4. Ratio of market value of assets to benefit payments	6.0	5.7
5. Ratio of net cash flow to market value of assets (boy)	-4.8%	-3.9%

RATIO OF MARKET VALUE OF ASSETS TO TOTAL PAYROLL

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. For example, if the market value of assets is 2.0 times the payroll, a return on assets 5% different than assumed would equal 10% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in plan sponsor contributions as a percentage of payroll.

RATIO OF ACTUARIAL ACCRUED LIABILITY TO PAYROLL

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. A funding policy that targets a funded ratio of 100% is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time.

RATIO OF ACTIVES TO RETIREES AND BENEFICIARIES

A young plan with many active members and few retirees will have a high ratio of active to retirees. A mature open plan may have close to the same number of actives to retirees resulting in a ratio near 1.0. A super-mature or closed plan may have significantly more retirees than actives resulting in a ratio below 1.0.

RATIO OF MARKET VALUE OF ASSETS TO BENEFIT PAYMENTS

The MERS' Actuarial Policy requires a total minimum contribution equal to the excess (if any) of three times the expected annual benefit payments over the projected market value of assets as of the participating municipality or court's Fiscal Year for which the contribution applies. The ratio of market value of assets to benefit payments as of the valuation date provides an indication of whether the division is at risk for triggering the minimum contribution rule in the near term. If the division triggers this minimum contribution rule, the required employer contributions could increase dramatically relative to previous valuations.

RATIO OF NET CASH FLOW TO MARKET VALUE OF ASSETS

A positive net cash flow means contributions exceed benefits and expenses. A negative cash flow means existing funds are being used to make payments. A certain amount of negative net cash flow is generally expected to occur when benefits are prefunded through a qualified trust. Large negative net cash flows as a percent of assets may indicate a super-mature plan or a need for additional contributions.

State Reporting

The following information has been prepared to provide some of the information necessary to complete the pension reporting requirements for the State of Michigan's Local Government Retirement System Annual Report (Form No. 5572). Additional resources are available at www.mersofmich.com and on the State website.

Form 5572 Line Reference	Description	Result
10	**Membership as of December 31, 2019**	
11	Indicate number of active members	72
12	Indicate number of inactive members (excluding pending refunds)	45
13	Indicate number of retirees and beneficiaries	309
14	**Investment Performance for Calendar Year Ending December 31, 2019[1]**	
15	Enter actual rate of return - prior 1-year period	14.02%
16	Enter actual rate of return - prior 5-year period	6.39%
17	Enter actual rate of return - prior 10-year period	7.97%
18	**Actuarial Assumptions**	
19	Actuarial assumed rate of investment return[2]	7.35%
20	Amortization method utilized for funding the system's unfunded actuarial accrued liability, if any	Level Percent
21	Amortization period utilized for funding the system's unfunded actuarial accrued liability, if any[3]	19
22	Is each division within the system closed to new employees?[4]	No
23	**Uniform Assumptions**	
24	Enter retirement pension system's actuarial value of assets using uniform assumptions	$58,430,175
25	Enter retirement pension system's actuarial accrued liabilities using uniform assumptions	$157,665,998
27	Actuarially Determined Contribution (ADC) using uniform assumptions, Fiscal Year Ending June 30, 2020	$9,260,508

1. The Municipal Employees' Retirement System's investment performance has been provided to GRS from MERS Investment Staff and included here for reporting purposes. This investment performance figures reported are net of investment expenses on a rolling calendar-year basis for the previous 1-, 5-, and 10-year periods as required under PA 530.
2. Net of administrative and investment expenses.
3. Populated with the longest amortization period remaining in the amortization schedule, across all divisions in the plan. This is when each division and the plan in total is expected to reach 100% funded if all assumptions are met.
4. If all divisions within the employer are closed, "yes." If at least one division is open (including shadow divisions) indicate "no."

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Spring 2020

Westland, City of

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

Re: Westland, City of (8211) – December 31, 2019 Annual Actuarial Valuation QEBA Letter

The Municipal Employees' Retirement System of Michigan (MERS) administers several employee benefit plans for the benefit of its participating municipalities and their members. This includes both a Qualified Plan designed to provide defined benefits subject to the limits of Section 415 of the Internal Revenue Code, and a Qualified Excess Benefit Arrangement (QEBA), designed to pay participants amounts in excess of the Section 415 limits.

MERS provides their member municipalities with annual actuarial valuation reports. The annual actuarial valuations provide information on the contributions and liabilities associated with funding the Qualified Plan, as well as the accounting liabilities required to be disclosed under the Governmental Accounting Standards Board (GASB) Statement No. 68. An annual actuarial report was prepared with a valuation date of December 31, 2019. All the liabilities presented in the December 31, 2019 annual report were subject to the limits of Section 415, and as such, did not include QEBA liability.

As a result, we have prepared this letter in order to disclose certain information about the liabilities associated with the retired member(s) who are receiving benefit payments from the QEBA as of December 31, 2019.

Because the QEBA has no qualified assets and cannot be prefunded, the GASB Statement No. 68 discount rate for the QEBA is the municipal bond rate of 2.75% as of December 31, 2019. The total pension liability for the QEBA as of December 31, 2019 is $447,305. The change in TPL during the year as a result of assumption changes is $214,609. The average expected remaining service life of QEBA retirees is 1.

Additional information can be found in the December 31, 2019 annual actuarial valuation report.

David T. Kausch, Rebecca L. Stouffer, and Mark Buis are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. This communication shall not be construed to provide tax advice or legal advice.

Sincerely,

David T. Kausch

David T. Kausch, FSA, FCA, EA, MAAA

Rebecca L. Stouffer

Rebecca L. Stouffer, ASA, FCA, MAAA

Mark Buis

Mark Buis, FSA, FCA, EA, MAAA

Appendix B: GRS Supplemental Valuation – Amortization Payments Projection and Market Value Reports

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September 8, 2020

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

Re: Westland,City of (8211) – All Divisions – Projections of Amortization Payment of Unfunded Accrued Liability

The purpose of this letter is to illustrate the pattern of the annual amortization payments to fund the Unfunded Accrued Liability (UAL) as of December 31, 2019, under the amortization policy which would be followed. The results are calculated using a 7.35%, 6.35% and 5.35% return assumption, all with a 3.00% wage inflation assumption for analysis of application requests to issue Long-Term Securities under PA 575 of 2018. This legislation limits the amount of Unfunded Accrued Liability available for bonding. We recommend consultation with your bond consultant and legal counsel to ensure compliance with this legislation. The report shows these amortization payments of the UAL calculated using both the actuarial value and market value of assets. The report consists of separate sections containing the following additional detail.

- An executive summary that provides a brief explanation of the results.
- Results sections illustrating the pattern in annual amortization payments under the three alternate interest rate scenarios and both the market and actuarial valuation of assets.

This report was prepared at the request of MERS on behalf of the municipality and is intended for use by the municipality and those designated or approved by the municipality. **The report may be provided to parties other than the municipality only in its entirety.** GRS is not responsible for unauthorized use of this report.

This valuation assumed the continuing ability of the plan sponsor to make the contributions necessary to fund this plan. A determination regarding whether or not the plan sponsor is actually able to do so is outside our scope of expertise and was not performed.

The valuation was based upon information furnished by MERS staff, concerning Retirement System benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal reasonability, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by the municipality and MERS staff.

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

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.

This report does not reflect the recent and still developing impact of COVID-19, which is likely to influence demographic and economic experience, at least in the short-term. We will continue to monitor these developments and their impact on the MERS Defined Benefit and Hybrid plans. Actual experience will be reflected in each subsequent annual valuation, as experience emerges.

The Plan Document Article VI sec. 71 (1)(d), provides the MERS Board with the authority to set actuarial assumptions and methods after consultation with the actuary. This report was prepared using certain assumptions approved by the Board. The MERS Board adopted the actuarial assumptions based on the recommendations of the current and prior actuary. A description of these assumptions and methods can be found as follows:

- Plan Document, v04302020,
- Actuarial Policy, DOC 8062 (2020-06-25), and
- 2019 Appendix to the Annual Actuarial Valuation Report.

On February 27, 2020, the Board adopted new demographic assumptions for use beginning with the December 31, 2020 annual valuation report. These assumptions include a version of the Pub-2010 mortality tables and fully generational mortality improvements with scale MP-2019. Changes resulting from these studies will have an impact on the level of calculated employer contributions, which are not reflected in this report.

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

David T. Kausch and Kurt Dosson are Members of the American Academy of Actuaries (MAAA) and meet the Academy's Qualification Standards to render the actuarial opinions contained herein.

The signing actuaries are independent of the plan sponsor.

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

Sincerely,

David T. Kausch, FSA, EA, FCA, MAAA

Kurt Dosson, ASA, MAAA

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Executive Summary

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

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

This actuarial report was not developed for purposes of bond disclosures and may not be appropriate for that purpose. It is possible that we may have included material that is not appropriate to the situation, or that we may have omitted material that is appropriate or even required. We do not accept responsibility for errors in the bond disclosure even if such errors are directly related to the services we have performed. We are not registered municipal advisors with the SEC.

Our calculations were based on the following:

- Demographic information, financial information, benefit provisions and funding methods provided by MERS for the December 31, 2019 annual actuarial valuation, except where otherwise noted.
- Assumption sets, without any phase-in of the impact of assumption changes:
  - Investment Rate of Return/Wage Inflation/Demographic Assumptions:
    - 7.35%/3.00%/2019 Demographic Assumptions,
    - 6.35%/3.00%/2019 Demographic Assumptions, and
    - 5.35%/3.00%/2019 Demographic Assumptions.
- The employer contributions through June 30, 2021 are not affected, and are based on previous annual actuarial valuations.
- No bonding proceeds are incorporated as part of the calculations. As requested by MERS, the assets from all overfunded divisions (including the Surplus division) within the Employer were reallocated to Division 12 in this report in the amounts shown below. This reallocation was such that the overfunded divisions would be 100% funded on the assumption basis of an investment rate of return of 7.35% and 2020 Demographics.

Division(s)	Actuarial Value of Assets Reallocated From Division to Bring to 100% Funded
17	$ 290,006
19	864,303
20	419,680
21	189,096
22	380,413
Surplus Unassociated	329,331

- As requested by MERS, Divisions 10, 11, 12, 13, 14, 18, and 23 reflect recently approved amortization extensions. Analysis of the impact of these extensions was discussed in a previous report, dated August 3, 2020. Amortization lengths used in this report, as of the December 31, 2019 annual actuarial valuation date, are shown in the table below. Note that Division 90 was included in the Amortization Extension report, but was not granted an extension. For purposes of this analysis, the remaining amortization period for Division 90 was assumed to decrease by 1 each year. The impact on the aggregate results is negligible.

Division	Initial Amortization Period	Extension Allowed	New Period
10	14	Extend 10 Years	24
11	19	Extend 5 Years	24
12	14	Extend 5 Years	19
13	15	Extend 10 Years	25
14	15	Extend 10 Years	25
18	19	Extend to Maximum	30
23	9	Extend to Maximum	30

As always, the MERS actuaries will closely watch the funding progress of all divisions. 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.

Issuance of a POB may affect the risk profile of the Plan. Contribution of POB bond proceeds to the plan improves the funded status of the Plan, and also increases the potential for contribution volatility in future annual actuarial valuation reports. At this time, we do not believe additional risk assessment is necessary. Plan maturity risk metrics will be updated in future annual actuarial valuation reports.

We projected the annual amortization payments, starting with the amortization periods in effect for the calendar year beginning January 1, 2020, under the amortization policies available for each division as in effect for the December 31, 2019 annual actuarial valuation. **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.

SUPPLEMENTAL VALUATION RESULTS – ALL DIVISIONS

Westland,City of (8211) – All Divisions
Projected Amortization Payments
Based on December 31, 2019 Actuarial Valuation Data
Using 7.35% Interest Rate, 3.00% Wage Inflation, and 2019 Demographic Assumptions*

Calendar Year Beginning January 1,	Based on the Actuarial Value of Assets: Beginning of Year UAL Balance	Based on the Actuarial Value of Assets: Amortization Payment	Based on the Market Value of Assets: Beginning of Year UAL Balance	Based on the Market Value of Assets: Amortization Payment
2020	$87,500,000	$6,720,000	$88,200,000	$6,720,000
2021	86,900,000	6,590,000	87,800,000	6,620,000
2022	86,500,000	6,090,000	87,400,000	6,160,000
2023	86,500,000	6,280,000	87,400,000	6,350,000
2024	86,400,000	6,460,000	87,200,000	6,540,000
2025	86,100,000	6,660,000	86,900,000	6,730,000
2026	85,500,000	6,860,000	86,300,000	6,930,000
2027	84,700,000	7,060,000	85,400,000	7,140,000
2028	83,600,000	7,280,000	84,300,000	7,360,000
2029	82,200,000	7,490,000	82,900,000	7,580,000
2030	80,400,000	7,700,000	81,100,000	7,790,000
2031	78,400,000	7,900,000	79,000,000	7,970,000
2032	75,900,000	8,120,000	76,600,000	8,180,000
2033	73,100,000	8,340,000	73,700,000	8,400,000
2034	69,800,000	8,570,000	70,400,000	8,630,000
2035	66,100,000	8,820,000	66,700,000	8,890,000
2036	61,800,000	9,090,000	62,300,000	9,160,000
2037	56,900,000	9,360,000	57,400,000	9,430,000
2038	51,400,000	9,640,000	51,900,000	9,720,000
2039	45,200,000	9,930,000	45,600,000	10,000,000
2040	38,200,000	8,660,000	38,600,000	8,730,000
2041	32,100,000	7,350,000	32,400,000	7,410,000
2042	26,800,000	7,570,000	27,100,000	7,630,000
2043	20,900,000	7,790,000	21,200,000	7,860,000
2044	14,400,000	8,030,000	14,600,000	8,100,000
2045	7,130,000	4,910,000	7,240,000	4,960,000
2046	2,560,000	1,040,000	2,630,000	1,060,000
2047	1,670,000	415,000	1,720,000	428,000
2048	1,360,000	427,000	1,410,000	441,000
2049	1,020,000	440,000	1,050,000	454,000
2050	640,000	453,000	659,000	468,000
2051	217,000	230,000	223,000	237,000

* *The amortization schedules shown above assume all actuarial assumptions are met in future years, including actuarial and market rates of return at the stated interest rate.*

Westland,City of (8211) – All Divisions
Projected Amortization Payments
Based on December 31, 2019 Actuarial Valuation Data
Using 6.35% Interest Rate, 3.00% Wage Inflation, and 2019 Demographic Assumptions*

Calendar Year Beginning January 1,	Based on the Actuarial Value of Assets: Beginning of Year UAL Balance	Based on the Actuarial Value of Assets: Amortization Payment	Based on the Market Value of Assets: Beginning of Year UAL Balance	Based on the Market Value of Assets: Amortization Payment
2020	$103,400,000	$6,720,000	$104,200,000	$6,720,000
2021	103,100,000	6,880,000	103,900,000	6,910,000
2022	102,500,000	6,690,000	103,300,000	6,750,000
2023	102,100,000	6,890,000	102,900,000	6,950,000
2024	101,500,000	7,090,000	102,300,000	7,160,000
2025	100,600,000	7,310,000	101,400,000	7,370,000
2026	99,500,000	7,530,000	100,200,000	7,600,000
2027	98,000,000	7,750,000	98,800,000	7,820,000
2028	96,300,000	7,980,000	97,000,000	8,060,000
2029	94,100,000	8,220,000	94,800,000	8,300,000
2030	91,600,000	8,440,000	92,300,000	8,520,000
2031	88,700,000	8,520,000	89,400,000	8,590,000
2032	85,600,000	8,630,000	86,200,000	8,690,000
2033	82,100,000	8,860,000	82,700,000	8,920,000
2034	78,200,000	9,110,000	78,700,000	9,160,000
2035	73,800,000	9,380,000	74,300,000	9,440,000
2036	68,800,000	9,660,000	69,300,000	9,720,000
2037	63,200,000	9,950,000	63,600,000	10,000,000
2038	56,900,000	10,200,000	57,400,000	10,300,000
2039	50,000,000	10,600,000	50,400,000	10,600,000
2040	42,300,000	9,220,000	42,600,000	9,280,000
2041	35,400,000	7,840,000	35,700,000	7,900,000
2042	29,600,000	8,080,000	29,800,000	8,140,000
2043	23,100,000	8,320,000	23,300,000	8,380,000
2044	16,000,000	8,570,000	16,200,000	8,630,000
2045	8,210,000	5,300,000	8,310,000	5,340,000
2046	3,270,000	1,220,000	3,330,000	1,240,000
2047	2,220,000	541,000	2,270,000	553,000
2048	1,810,000	557,000	1,850,000	569,000
2049	1,350,000	574,000	1,380,000	586,000
2050	841,000	591,000	859,000	604,000
2051	285,000	300,000	290,000	306,000

* *The amortization schedules shown above assume all actuarial assumptions are met in future years, including actuarial and market rates of return at the stated interest rate.*

Westland,City of (8211) – All Divisions
Projected Amortization Payments
Based on December 31, 2019 Actuarial Valuation Data
Using 5.35% Interest Rate, 3.00% Wage Inflation, and 2019 Demographic Assumptions*

Calendar Year Beginning January 1,	Based on the Actuarial Value of Assets: Beginning of Year UAL Balance	Based on the Actuarial Value of Assets: Amortization Payment	Based on the Market Value of Assets: Beginning of Year UAL Balance	Based on the Market Value of Assets: Amortization Payment
2020	$122,500,000	$6,720,000	$123,300,000	$6,720,000
2021	122,200,000	7,190,000	123,000,000	7,210,000
2022	121,300,000	7,300,000	122,200,000	7,360,000
2023	120,300,000	7,520,000	121,100,000	7,580,000
2024	119,100,000	7,750,000	119,800,000	7,810,000
2025	117,500,000	7,980,000	118,200,000	8,040,000
2026	115,600,000	8,220,000	116,300,000	8,280,000
2027	113,300,000	8,460,000	114,000,000	8,530,000
2028	110,700,000	8,720,000	111,400,000	8,790,000
2029	107,700,000	8,980,000	108,300,000	9,050,000
2030	104,200,000	9,210,000	104,800,000	9,280,000
2031	100,300,000	9,160,000	100,900,000	9,220,000
2032	96,300,000	9,140,000	96,900,000	9,190,000
2033	92,100,000	9,390,000	92,600,000	9,440,000
2034	87,300,000	9,650,000	87,900,000	9,700,000
2035	82,100,000	9,930,000	82,600,000	9,990,000
2036	76,300,000	10,200,000	76,800,000	10,300,000
2037	69,900,000	10,500,000	70,300,000	10,600,000
2038	62,800,000	10,900,000	63,200,000	10,900,000
2039	55,000,000	11,200,000	55,400,000	11,200,000
2040	46,500,000	9,770,000	46,800,000	9,830,000
2041	38,900,000	8,320,000	39,200,000	8,380,000
2042	32,500,000	8,570,000	32,700,000	8,630,000
2043	25,400,000	8,830,000	25,600,000	8,890,000
2044	17,700,000	9,100,000	17,800,000	9,150,000
2045	9,310,000	5,670,000	9,400,000	5,710,000
2046	3,980,000	1,380,000	4,040,000	1,400,000
2047	2,770,000	661,000	2,820,000	671,000
2048	2,250,000	680,000	2,280,000	691,000
2049	1,670,000	701,000	1,690,000	711,000
2050	1,040,000	722,000	1,050,000	733,000
2051	351,000	366,000	357,000	372,000

* *The amortization schedules shown above assume all actuarial assumptions are met in future years, including actuarial and market rates of return at the stated interest rate.*

IMPORTANT COMMENTS

Important Comments

1. The actuarial value of assets used to determine both the funded ratio and the required employer contribution is based on a smoothed value of assets. Only a portion of each year's investment market gain or loss is recognized in the current actuarial value of assets; the remaining portions of gains and losses will be reflected in future years' actuarial value of assets. This reduces the asset volatility impact on the determined required employer contribution and funded ratio. The smoothed actuarial rate of return for 2019 was 4.77%.

   As of December 31, 2019, the actuarial value of assets is 101% of market value. This means that there is a net outstanding asset loss that is not yet recognized in the actuarial value of assets. Absent future asset gains offsetting the net outstanding asset loss, the net outstanding asset loss will be recognized in future actuarial valuations and is expected to decrease funded ratios and increase employer contribution requirements.

2. Unless otherwise indicated, a funded status measurement is based upon the actuarial accrued liability and the actuarial value of assets. The measurement is:

   a. Inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.
   b. Inappropriate for assessing benefit security for the membership.
   c. Dependent upon the actuarial cost method which, in combination with the amortization policy and asset valuation method, affects the timing and amounts of future contributions. The amounts of future contributions will differ from those assumed due to future actual experience differing from assumed.

   A funded status measurement of 100% is not synonymous with no required future contributions. If the funded status were 100%, the Plan would still require future normal cost contributions (i.e., the cost of the active membership accruing an additional year of service credit).

3. The results do not show the potential impact on other post-employment benefits (such as retiree health care insurance) or ancillary benefits (such as life insurance).

4. The results of separate actuarial valuations generally cannot be added together to produce a correct estimate of the employer contributions. The total can be considerably greater than the sum of the parts due to the interaction of various plan provisions and assumptions used.

5. 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 due to changing conditions; 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 this supplemental actuarial valuation does not include an analysis of the potential range of such future measurements.

800.521.0498 | P: 248.799.9000 | www.grsconsulting.com

September 8, 2020

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

Re: Westland,City of (8211) – All Divisions – Projections of Amortization Payment of Unfunded Accrued Liability

The purpose of this letter is to illustrate the pattern of the annual amortization payments to fund the Unfunded Accrued Liability (UAL) as of December 31, 2019, under the amortization policy which would be followed. The results are calculated using a 7.35%, 6.35% and 5.35% return assumption, all with a 3.00% wage inflation assumption for analysis of application requests to issue Long-Term Securities under PA 575 of 2018. This legislation limits the amount of Unfunded Accrued Liability available for bonding. We recommend consultation with your bond consultant and legal counsel to ensure compliance with this legislation. The report shows these amortization payments of the UAL calculated using both the actuarial value and market value of assets. The report consists of separate sections containing the following additional detail.

- An executive summary that provides a brief explanation of the results.
- Results sections illustrating the pattern in annual amortization payments under the three alternate interest rate scenarios and both the market and actuarial valuation of assets.

This report was prepared at the request of MERS on behalf of the municipality and is intended for use by the municipality and those designated or approved by the municipality. **The report may be provided to parties other than the municipality only in its entirety.** GRS is not responsible for unauthorized use of this report.

This valuation assumed the continuing ability of the plan sponsor to make the contributions necessary to fund this plan. A determination regarding whether or not the plan sponsor is actually able to do so is outside our scope of expertise and was not performed.

The valuation was based upon information furnished by MERS staff, concerning Retirement System benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal reasonability, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by the municipality and MERS staff.

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.

This report does not reflect the recent and still developing impact of COVID-19, which is likely to influence demographic and economic experience, at least in the short-term. We will continue to monitor these developments and their impact on the MERS Defined Benefit and Hybrid plans. Actual experience will be reflected in each subsequent annual valuation, as experience emerges.

The Plan Document Article VI sec. 71 (1)(d), provides the MERS Board with the authority to set actuarial assumptions and methods after consultation with the actuary. This report was prepared using certain assumptions approved by the Board. The MERS Board adopted the actuarial assumptions based on the recommendations of the current and prior actuary. A description of these assumptions and methods can be found as follows:

- Plan Document, v04302020,
- Actuarial Policy, DOC 8062 (2020-06-25), and
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On February 27, 2020, the Board adopted new demographic assumptions for use beginning with the December 31, 2020 annual valuation report. These assumptions include a version of the Pub-2010 mortality tables and fully generational mortality improvements with scale MP-2019. Changes resulting from these studies will have an impact on the level of calculated employer contributions, which are not reflected in this report.

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

David T. Kausch and Kurt Dosson are Members of the American Academy of Actuaries (MAAA) and meet the Academy's Qualification Standards to render the actuarial opinions contained herein.

The signing actuaries are independent of the plan sponsor.

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

Sincerely,

David T. Kausch, FSA, EA, FCA, MAAA

Kurt Dosson, ASA, MAAA

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

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

This actuarial report was not developed for purposes of bond disclosures and may not be appropriate for that purpose. It is possible that we may have included material that is not appropriate to the situation, or that we may have omitted material that is appropriate or even required. We do not accept responsibility for errors in the bond disclosure even if such errors are directly related to the services we have performed. We are not registered municipal advisors with the SEC.

Our calculations were based on the following:

- Demographic information, financial information, benefit provisions and funding methods provided by MERS for the December 31, 2019 annual actuarial valuation, except where otherwise noted.
- Assumption sets, without any phase-in of the impact of assumption changes:
  - Investment Rate of Return/Wage Inflation/Demographic Assumptions:
    - 7.35%/3.00%/2019 Demographic Assumptions,
    - 6.35%/3.00%/2019 Demographic Assumptions, and
    - 5.35%/3.00%/2019 Demographic Assumptions.
- The employer contributions through June 30, 2021 are not affected, and are based on previous annual actuarial valuations.
- As requested by MERS, bonding proceeds were reflected in this report.
  - A contribution in the amount of $80,161,194 was assumed to have been made as of November 1, 2020. This amount was discounted back to the valuation date of December 31, 2019 and the actuarial value of assets conversion factor was applied, resulting in $76,556,485 in additional assets.
  - Additionally, the assets from all overfunded divisions (including the Surplus Division) within the Employer were reallocated to non-overfunded divisions in this report in the amounts shown below. This reallocation was such that the overfunded divisions would be 100% funded on the assumption basis of an investment rate of return of 7.35% and 2020 Demographics.

Division(s)	Actuarial Value of Assets Reallocated From Division to Bring to 100% Funded
17	$ 290,006
19	864,303
20	419,680
21	189,096
22	380,413
Surplus Unassociated	329,331

- These additional assets were applied such that Divisions 10, 11, 12, 13, 14, 18, 23, and 90 would be equally funded on the assumption basis of an investment rate of return of 7.35% and 2020 Demographics. The amount of additional assets allocated to each division is illustrated below.

Division(s)	Additional Market Value of Assets Applied	Additional Actuarial Value of Assets Applied
10	$ 26,935,923	$ 27,290,912
11	16,265,427	16,479,789
12	23,658,101	23,969,891
13	6,266,584	6,349,171
14	2,078,498	2,105,891
18	2,079,434	2,106,839
23	481,172	487,513
90	236,195	239,308

- As requested by MERS, Divisions 10, 11, 12, 13, 14, 18, and 23 reflect recently approved amortization extensions. Analysis of the impact of these extensions was discussed in a previous report, dated August 3, 2020. Amortization lengths used in this report, as of the December 31, 2019 annual actuarial valuation date, are shown in the table below. Note that Division 90 was included in the Amortization Extension report, but was not granted an extension. For purposes of this analysis, the remaining amortization period for Division 90 was assumed to decrease by 1 each year. The impact on the aggregate results is negligible.

Division	Initial Amortization Period	Extension Allowed	New Period
10	14	Extend 10 Years	24
11	19	Extend 5 Years	24
12	14	Extend 5 Years	19
13	15	Extend 10 Years	25
14	15	Extend 10 Years	25
18	19	Extend to Maximum	30
23	9	Extend to Maximum	30

As always, the MERS actuaries will closely watch the funding progress of all divisions. 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.

Issuance of a POB may affect the risk profile of the Plan. Contribution of POB bond proceeds to the plan improves the funded status of the Plan, and also increases the potential for contribution volatility in future annual actuarial valuation reports. At this time, we do not believe additional risk assessment is necessary. Plan maturity risk metrics will be updated in future annual actuarial valuation reports.

We projected the annual amortization payments, starting with the amortization periods in effect for the calendar year beginning January 1, 2020, under the amortization policies available for each division as in effect for the December 31, 2019 annual actuarial valuation. **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.

SUPPLEMENTAL VALUATION RESULTS – ALL DIVISIONS

Westland,City of (8211) – All Divisions
Projected Amortization Payments
Based on December 31, 2019 Actuarial Valuation Data
Using 7.35% Interest Rate, 3.00% Wage Inflation, and 2019 Demographic Assumptions*

Calendar Year Beginning January 1,	Based on the Actuarial Value of Assets: Beginning of Year UAL Balance	Based on the Actuarial Value of Assets: Amortization Payment	Based on the Market Value of Assets: Beginning of Year UAL Balance	Based on the Market Value of Assets: Amortization Payment
2020	$10,900,000	$6,720,000	$12,700,000	$6,720,000
2021	4,760,000	3,640,000	6,650,000	3,710,000
2022	1,340,000	103,000	3,290,000	249,000
2023	1,330,000	106,000	3,280,000	256,000
2024	1,320,000	109,000	3,250,000	264,000
2025	1,300,000	112,000	3,220,000	272,000
2026	1,280,000	116,000	3,170,000	280,000
2027	1,260,000	119,000	3,120,000	288,000
2028	1,220,000	123,000	3,050,000	297,000
2029	1,190,000	126,000	2,960,000	306,000
2030	1,140,000	115,000	2,860,000	298,000
2031	1,110,000	84,900	2,770,000	259,000
2032	1,110,000	68,700	2,700,000	236,000
2033	1,120,000	67,800	2,660,000	240,000
2034	1,130,000	66,800	2,600,000	243,000
2035	1,140,000	68,800	2,540,000	251,000
2036	1,150,000	70,900	2,470,000	258,000
2037	1,160,000	73,000	2,380,000	266,000
2038	1,170,000	75,200	2,280,000	274,000
2039	1,180,000	77,400	2,170,000	282,000
2040	1,190,000	126,000	2,030,000	307,000
2041	1,070,000	175,000	1,790,000	333,000
2042	971,000	181,000	1,580,000	343,000
2043	855,000	186,000	1,340,000	354,000
2044	725,000	192,000	1,070,000	364,000
2045	580,000	140,000	773,000	252,000
2046	304,000	69,300	400,000	101,000
2047	221,000	52,900	291,000	70,500
2048	182,000	54,400	240,000	72,700
2049	139,000	56,100	182,000	74,800
2050	91,000	57,800	118,000	77,100
2051	37,800	39,200	46,500	48,200

* *The amortization schedules shown above assume all actuarial assumptions are met in future years, including actuarial and market rates of return at the stated interest rate.*

Westland,City of (8211) – All Divisions
Projected Amortization Payments
Based on December 31, 2019 Actuarial Valuation Data
Using 6.35% Interest Rate, 3.00% Wage Inflation, and 2019 Demographic Assumptions*

	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
2020	$26,900,000	$6,720,000	$28,600,000	$6,720,000
2021	21,600,000	4,230,000	23,500,000	4,290,000
2022	18,700,000	1,290,000	20,600,000	1,430,000
2023	18,500,000	1,330,000	20,400,000	1,470,000
2024	18,300,000	1,370,000	20,200,000	1,510,000
2025	18,000,000	1,420,000	19,900,000	1,560,000
2026	17,700,000	1,460,000	19,600,000	1,610,000
2027	17,400,000	1,500,000	19,200,000	1,650,000
2028	16,900,000	1,550,000	18,700,000	1,700,000
2029	16,400,000	1,590,000	18,100,000	1,760,000
2030	15,800,000	1,610,000	17,400,000	1,780,000
2031	15,100,000	1,490,000	16,700,000	1,650,000
2032	14,600,000	1,380,000	16,100,000	1,540,000
2033	14,000,000	1,420,000	15,500,000	1,570,000
2034	13,500,000	1,460,000	14,900,000	1,610,000
2035	12,800,000	1,500,000	14,100,000	1,660,000
2036	12,100,000	1,540,000	13,300,000	1,710,000
2037	11,300,000	1,590,000	12,400,000	1,760,000
2038	10,300,000	1,640,000	11,400,000	1,820,000
2039	9,310,000	1,690,000	10,200,000	1,870,000
2040	8,170,000	1,560,000	8,940,000	1,720,000
2041	7,030,000	1,420,000	7,690,000	1,570,000
2042	6,010,000	1,470,000	6,560,000	1,610,000
2043	4,870,000	1,510,000	5,320,000	1,660,000
2044	3,630,000	1,560,000	3,940,000	1,710,000
2045	2,250,000	1,030,000	2,430,000	1,130,000
2046	1,230,000	353,000	1,310,000	382,000
2047	920,000	223,000	984,000	238,000
2048	749,000	230,000	800,000	246,000
2049	559,000	237,000	598,000	253,000
2050	351,000	244,000	375,000	261,000
2051	122,000	124,000	130,000	132,000

* *The amortization schedules shown above assume all actuarial assumptions are met in future years, including actuarial and market rates of return at the stated interest rate.*

Westland,City of (8211) – All Divisions
Projected Amortization Payments
Based on December 31, 2019 Actuarial Valuation Data
Using 5.35% Interest Rate, 3.00% Wage Inflation, and 2019 Demographic Assumptions*

	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
2020	$46,000,000	$6,720,000	$47,700,000	$6,720,000
2021	41,500,000	4,810,000	43,400,000	4,870,000
2022	38,800,000	2,470,000	40,700,000	2,590,000
2023	38,400,000	2,550,000	40,200,000	2,670,000
2024	37,800,000	2,620,000	39,600,000	2,750,000
2025	37,100,000	2,700,000	38,900,000	2,830,000
2026	36,300,000	2,780,000	38,100,000	2,920,000
2027	35,400,000	2,860,000	37,200,000	3,000,000
2028	34,400,000	2,950,000	36,100,000	3,090,000
2029	33,200,000	3,040,000	34,800,000	3,190,000
2030	31,900,000	3,090,000	33,400,000	3,240,000
2031	30,400,000	2,860,000	31,900,000	3,000,000
2032	29,100,000	2,650,000	30,500,000	2,790,000
2033	27,900,000	2,720,000	29,300,000	2,860,000
2034	26,600,000	2,790,000	27,900,000	2,940,000
2035	25,200,000	2,880,000	26,400,000	3,020,000
2036	23,600,000	2,960,000	24,700,000	3,110,000
2037	21,800,000	3,050,000	22,800,000	3,210,000
2038	19,800,000	3,140,000	20,800,000	3,300,000
2039	17,600,000	3,240,000	18,500,000	3,400,000
2040	15,300,000	2,930,000	16,000,000	3,080,000
2041	13,000,000	2,620,000	13,600,000	2,740,000
2042	11,100,000	2,690,000	11,600,000	2,820,000
2043	8,880,000	2,770,000	9,280,000	2,910,000
2044	6,510,000	2,860,000	6,790,000	3,000,000
2045	3,930,000	1,880,000	4,080,000	1,970,000
2046	2,140,000	621,000	2,220,000	646,000
2047	1,610,000	383,000	1,670,000	397,000
2048	1,300,000	395,000	1,350,000	408,000
2049	969,000	406,000	1,000,000	421,000
2050	603,000	419,000	624,000	433,000
2051	206,000	212,000	213,000	220,000

* *The amortization schedules shown above assume all actuarial assumptions are met in future years, including actuarial and market rates of return at the stated interest rate.*

IMPORTANT COMMENTS

Important Comments

1. The actuarial value of assets used to determine both the funded ratio and the required employer contribution is based on a smoothed value of assets. Only a portion of each year’s investment market gain or loss is recognized in the current actuarial value of assets; the remaining portions of gains and losses will be reflected in future years’ actuarial value of assets. This reduces the asset volatility impact on the determined required employer contribution and funded ratio. The smoothed actuarial rate of return for 2019 was 4.77%.

   As of December 31, 2019, the actuarial value of assets is 101% of market value. This means that there is a net outstanding asset loss that is not yet recognized in the actuarial value of assets. Absent future asset gains offsetting the net outstanding asset loss, the net outstanding asset loss will be recognized in future actuarial valuations and is expected to decrease funded ratios and increase employer contribution requirements.

2. Unless otherwise indicated, a funded status measurement is based upon the actuarial accrued liability and the actuarial value of assets. The measurement is:

   a. Inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan’s benefit obligations.
   b. Inappropriate for assessing benefit security for the membership.
   c. Dependent upon the actuarial cost method which, in combination with the amortization policy and asset valuation method, affects the timing and amounts of future contributions. The amounts of future contributions will differ from those assumed due to future actual experience differing from assumed.

   A funded status measurement of 100% is not synonymous with no required future contributions. If the funded status were 100%, the Plan would still require future normal cost contributions (i.e., the cost of the active membership accruing an additional year of service credit).

3. The results do not show the potential impact on other post-employment benefits (such as retiree health care insurance) or ancillary benefits (such as life insurance).

4. The results of separate actuarial valuations generally cannot be added together to produce a correct estimate of the employer contributions. The total can be considerably greater than the sum of the parts due to the interaction of various plan provisions and assumptions used.

5. 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 due to changing conditions; 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 this supplemental actuarial valuation does not include an analysis of the potential range of such future measurements.

Westland, City of (8211) - Total of All Divisions
Prepared by Gabriel, Roeder, Smith & Company as an addendum to the report issued September 8, 2020
See report for additional discussion and important comments.

	Employer Normal Cost Contribution*		
Calendar Year Beginning January 1,	7.35% Investment Rate of Return 3.00% Wage Inflation Assumption 2019 Demographic Assumptions	6.35% Investment Rate of Return 3.00% Wage Inflation Assumption 2019 Demographic Assumptions	5.35% Investment Rate of Return 3.00% Wage Inflation Assumption 2019 Demographic Assumptions
2020	$696,000	$696,000	$696,000
2021	576,000	667,000	786,000
2022	470,000	642,000	867,000
2023	414,000	567,000	768,000
2024	360,000	494,000	671,000
2025	309,000	426,000	579,000
2026	265,000	366,000	499,000
2027	229,000	317,000	434,000
2028	199,000	277,000	380,000
2029	173,000	241,000	332,000
2030	150,000	211,000	291,000
2031	131,000	185,000	256,000
2032	115,000	162,000	226,000
2033	100,000	142,000	198,000
2034	88,100	125,000	175,000
2035	78,500	112,000	157,000
2036	70,400	101,000	141,000
2037	61,500	88,000	124,000
2038	50,000	71,700	101,000
2039	37,600	54,200	76,700
2040	27,000	39,200	55,700
2041	19,100	27,900	39,900
2042	13,200	19,500	28,200
2043	8,700	13,200	19,400
2044	5,600	8,900	13,300
2045	3,700	6,100	9,400
2046	2,600	4,400	7,000
2047	1,800	3,300	5,400
2048	1,300	2,600	4,400
2049	970	2,100	3,700

**All divisions are assumed to be closed not linked as of December 31, 2019. Actual employer normal cost contributions may extend past the last year of this exhibit.*

Appendix C: City of Westland Police and Fire Retirement System Actuarial Valuation Report for the Fiscal Year Ended June 30, 2019

nyhart

FuturePlan by Ascensus©

City of Westland Policemen and Firemen Retirement System

June 30, 2019

Actuarial Valuation Report

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Actuarial Certification

At the request of the plan sponsor, this report summarizes the City of Westland Policemen and Firemen Retirement System as of June 30, 2019. The purpose of this report is to communicate the following results of the valuation:

- Funded Status;
- and Determine Recommended Contribution;

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

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

The actuarial assumptions and methods were chosen by the Board. In our opinion, all actuarial assumptions and methods are individually reasonable and in combination represent our best estimate of anticipated experience of the plan. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following:

- plan experience differing from that anticipated by the economic or demographic assumptions;
- changes in economic or demographic assumptions;
- increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and
- changes in plan provisions or applicable law.

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

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

Actuarial Certification

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

Nyhart

Nick H. Meggos, EA, FCA
Enrolled Actuary No. 17-7406

Danielle Winegardner, FSA, EA, MAAA
Enrolled Actuary No. 17-8260

March 2, 2020
Date

Executive Summary

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

- Recommended Contribution
- Asset Performance
- Plan Demographics

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

Ultimate Pension Cost = Benefits Paid - Investment Income + Plan Expenses

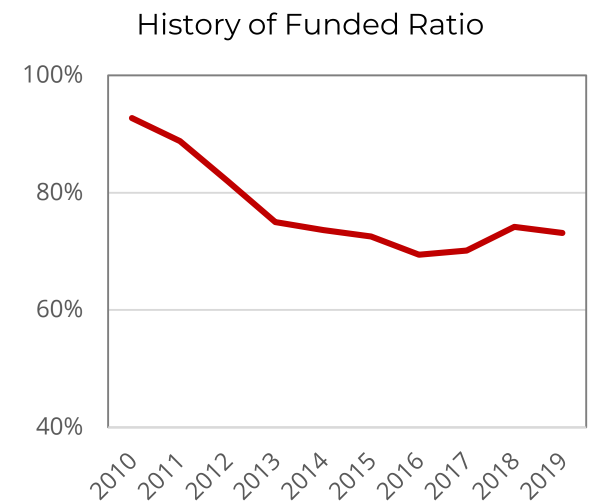
While the plan's liability and normal cost determine the current contribution recommendations, the true cost is controlled only by the “defined” benefit and investment income generated by the underlying assets. The actuarial process only controls the timing of costs.

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

Summary Results

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

	June 30, 2018	June 30, 2019
Funded Status Measures		
Accrued Liability	$227,215,316	$230,177,436
Actuarial Value of Assets	168,541,032	$167,124,682
Unfunded Actuarial Accrued Liability (UAAL)	$58,674,284	$63,052,754
Funded Percentage (AVA)	74.18%	72.61%
Funded Percentage (MVA)	73.26%	73.25%
Cost Measures		
Recommended Contribution for Next Fiscal Year	$6,930,726	$7,595,440
Recommended Contribution (as a percentage of payroll)	57.11%	63.58%
Asset Performance		
Market Value of Assets (MVA)	$166,449,954	$168,608,364
Actuarial Value of Assets (AVA)	$168,541,032	$167,124,682
Actuarial Value/Market Value	101.26%	99.12%
Market Value Rate of Return	6.14%	5.82%
Actuarial Value Rate of Return	7.73%	5.98%
Participant Information		
Active Participants	143	142
Terminated Vested Participants	1	3
Retirees and Beneficiaries	263	268
Disabled Participants	13	13
Total	420	426
Valuation Payroll	$11,383,779	$11,946,038



Changes since Prior Valuation and Key Notes

Effective June 30, 2019, there was a change in firm and enrolled actuary for the plan. The methods are substantially the same and the accrued liability, normal cost, and plan assets for the prior year are within 5%. Results from June 30, 2018 and prior plan years shown in this report were obtained from valuation results prepared by GRS Retirement Consulting.

The beginning of year Actuarial Value of Assets (AVA) as of June 30, 2018 used to determine the June 30, 2019 AVA was adjusted for the corrected contribution in the prior year AVA development. The June 30, 2018 AVA and results were not revised for this change. The impact only flows through the development of the current year AVA.

Historical Valuation Summary

	6/30/2015	6/30/2016	6/30/2017	6/30/2018	6/30/2019
Funding					
Accrued Liability	$213,099,595	$223,150,535	$226,893,469	$227,215,316	$230,177,436
Actuarial Value of Assets	$154,516,130	$154,907,025	$159,167,192	$168,541,032	$167,124,682
Unfunded Actuarial Accrued Liability	$58,583,465	$68,243,510	$67,726,277	$58,674,284	$63,052,754
Funded Percentage	72.51%	69.42%	70.15%	74.18%	72.61%
Actual Contribution	$6,693,504	$6,717,939	$6,879,391	$7,398,670	$7,597,694
Recommended Contribution	$6,693,504	$6,717,939	$6,841,964	$7,398,670	$7,597,694
Interest Rate	7.50%	7.50%	7.25%	7.25%	7.25%
Rate of Return					
Actuarial Value of Assets	8.25%	5.40%	7.97%	7.73% [1]	5.98%
Market Value of Assets	2.12%	-1.74%	15.24%	6.14% [1]	5.82%
Demographic Information					
Active Participants	139	149	149	143	142
Terminated Vested Participants	2	1	2	1	3
Retired Participants	258	259	257	260	258
Beneficiaries	3	3	3	3	10
Disabled Participants	12	13	13	13	13
Total Participants	414	425	424	420	426
Covered Payroll (prior year)	$10,114,775	$11,123,938	$11,787,821	$11,383,779	$ 11,946,038
Average Covered Pay	$72,768	$74,657	$79,113	$79,607	$84,127

[1] When corrected contributions were used, actual rates of return were 8.34% on the Actuarial Value of Assets basis and 9.13% on a Market Value of Assets basis

Identification of Risks

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

Type of Risk	Method to Assess Risk
Investment Return	Scenario Testing; Asset Liability Study
Participant Longevity	Projections and Contribution Strategy
Demographic	Projections and Contribution Strategy
Salary Growth	Review salary history and future budgets; scenario testing

Plan Maturity Measures - June 30, 2019

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

Duration of Liabilities: 10.3

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

Demographic Distribution - Ratio of Actively Accruing Participants to All Participants: 33.3%

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

Asset Leverage - Ratio of Payroll for Plan Participants to Market Value of Assets: 7.1%

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

Benefit Payment Percentage - Ratio of Annual Benefit Payments to Market Value of Assets: 9.2%

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

Assets and Liabilities

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

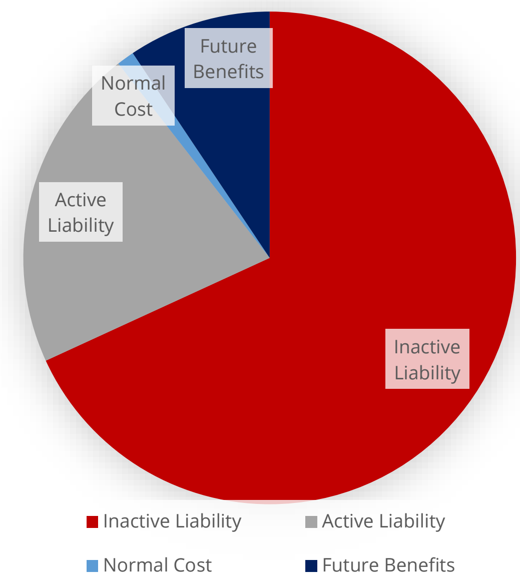
- Actuarial Accrued Liabilities
- Asset Information
- Reserve Allocation

Present Value of Future Benefits

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

	June 30, 2019
Present Value of Future Benefits	
Active participants	
Retirement	$73,294,035
Disability	5,618,751
Death	1,334,458
Termination	1,444,714
Refund of contributions	248,364
Total active	$81,940,322
Inactive participants	
Retired participants	$164,856,354
Beneficiaries	3,044,154
Disabled participants	5,372,274
Terminated vested participants	2,067,685
Total inactive	$175,340,467
Total	$257,280,789
Present value of future payrolls	$115,739,634

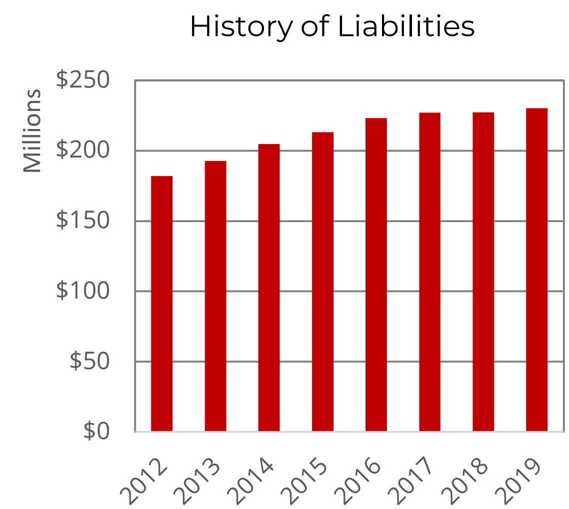
Breakdown of Present Value of Future Benefits



Actuarial Accrued Liability

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

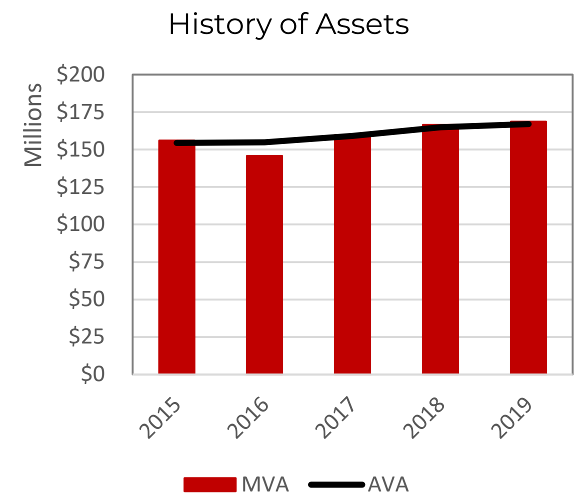
	June 30, 2019
Funding Liabilities – Entry Age Normal as Percent of Pay	
Active participants	
Retirement	$51,526,867
Disability	2,102,493
Death	606,879
Termination	497,576
Refund of contributions	103,154
Total Active	$54,836,969
Inactive participants	
Retired participants	$164,856,354
Beneficiaries	3,044,154
Disabled participants	5,372,274
Terminated vested participants	2,067,685
Total Inactive	$175,340,467
Total	$230,177,436
Normal Cost	$2,965,918
Interest Rate	7.25%



Asset Information

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

	June 30, 2019
Market Value Reconciliation	
Market value of assets, beginning of prior year	$166,449,954
Contributions	
Employer contributions	7,597,694
Employee contributions	670,772
Total	$8,268,466
Investment income	$9,476,694
Benefit payments	$(15,586,750)
Market value of assets, beginning of current year	$168,608,364
Return on Market Value	5.82%
Market value of assets available for pension benefits	$168,608,364
Actuarial Value of Assets	
Value at beginning of current year	$167,124,682



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

Asset Information (continued)

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

	June 30 , 2018[1]	June 30 , 2019
1. Expected Investment Income		
(a) Actuarial value of assets, beginning of prior year	$159,167,192	$168,541,032
(b) Actuarial value of assets, beginning of prior year, corrected value	$159,167,192	$164,800,644
(c) Employee Contributions	640,248	670,772
(d) Employer Contributions	7,398,670	7,597,694
(e) Benefit payments	(15,371,001)	(15,586,750)
(f) Expected Investment Income – end of year [7.25% x (b) + 7.25% x (1/2) x {(c)+(d)+(e)}]	11,273,833	11,682,759
(g) Expected actuarial value of assets	$163,108,942	$169,165,119
2. Actual Market Value Investment Income	$14,227,761	$9,476,694
3. Amount subject to phase in [(2) – (1f)]	$2,953,928	$(2,206,065)
4. Phase in of gain/(loss) [20% x (3)]	$590,786	$(441,213)
5. Phased-In Recognition of Investment Income		
(a) Current Year Phase in of gain/(loss) (4)	590,786	$(441,213)
(b) First Prior Year	2,132,568	590,786
(c) Second Prior Year	(2,788,958)	2,132,568
(d) Third Prior Year	(1,533,619)	(2,788,958)
(e) Fourth Prior Year	3,290,925	(1,533,620)
(f) Total	$1,691,702	$(2,040,437)
6. Preliminary actuarial value of assets, beginning of current year [(1g)+(5f)]	$164,800,644	$167,124,682
7. Market Value of Assets	$166,449,954	$168,608,364
8. 80% Market value of assets (.80*(7))	$133,159,963	$134,886,691
9. 120% Market value of assets (1.20*(7))	$199,739,945	$202,330,037
10. Final actuarial value of assets	$164,800,644	$167,124,682
11. Return on actuarial value of assets	8.34%	5.98%

[1] The development of the actuarial value of assets for June 30, 2018 in this exhibit uses the corrected contribution amount. The final AVA shown in the June 30, 2018 report was $168,541,032.

Reserve Allocation

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

Reserves For	
Employees' Contributions	$ 3,650,877
Employer Contributions	(11,765,233)
Retired Benefit Payments	176,722,720
Total	$168,608,364
Market Adjustment	(1,483,682)
Total Valuation Assets	$167,124,682

Recommendation: As of June 30, 2019, reserve assets exceeded the liability for Retired Benefit Payments by $3,449,938. We recommend transferring this amount to the Reserve for Employer Contributions.

Funding Results

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

- Reconciliation of Gain/Loss
- Recommended Contribution

Reconciliation of Gain/Loss

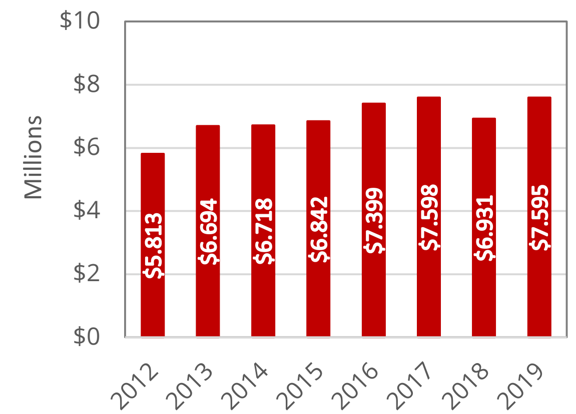
	June 30, 2019
Liability (Gain)/Loss	
1. Actuarial liability, beginning of prior year	$227,215,316
2. Normal cost for prior year	3,025,509
3. Benefit payments	(15,586,750)
4. Expected Interest	16,127,440
5. Change in Assumptions	0
6. Change in Plan Provisions	0
7. Expected actuarial liability, beginning of current year	230,781,515
8. Actual actuarial liability	230,177,436
9. Liability (Gain)/Loss, (8) – (7)	$(604,079)
Asset Gain/(Loss)	
10. Actuarial value of assets, beginning of prior year	$168,541,032
11. Adjustment for corrected contribution amount in prior year development	(3,740,388)
11. Contributions	8,268,466
12. Benefit payments	(15,586,750)
13. Expected Investment return	11,682,759
14. Expected actuarial value of assets, beginning of current year	$169,165,119
15. Actual actuarial value of assets, beginning of current year	167,124,682
16. Asset (Gain)/Loss, (14) – (15)	$2,040,437
Total (Gain)/ Loss, (9) + (16)	$1,436,358

Development of Recommended Contribution

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

	June 30, 2019
Funded Position	
1. Entry age accrued liability	$230,177,436
2. Actuarial value of assets	167,124,682
3. Unfunded actuarial accrued liability (UAAL)	$63,052,754
Employer Contributions[1]	
1. Normal Cost	
(a) Total normal cost	$2,965,918
(b) Expected participant contributions	(579,173)
(c) Net normal cost	$2,386,745
2. Administrative expenses	0
3. Amortization of UAAL (19 years)	4,572,407
4. Interest	636,288
5. Total recommended contribution for 2020	$7,595,440
6. Expected valuation payroll	$11,946,038
7. Total contribution as a percentage of valuation payroll	63.58%
8. Total normal cost as a percentage of valuation payroll	24.83%

History of Recommended Contributions



Michigan PA 202 Reporting Requirements

	June 30, 2019	
Funding Assumptions	**Plan Assumptions**	**State Treasury Uniform Assumptions**
Funded Ratio		
Interest Rate	7.25%	7.00%
Mortality	RP-2014 Blue Collar with SOA Scale MP 2016	No change
Accrued Liability	$229,770,309	$235,805,876
Market Value of Assets	$168,608,364	$168,608,364
Unfunded Accrued Liability, MVA Basis	$61,161,945	$67,197,512
Funded Percentage (MVA)	**73.38%**	**71.50%**
Underfunded Status	Not Underfunded	Not Underfunded
Actuarially Determined Contribution July 1, 2019 – June 30, 2020	$6,930,726	$7,171,010

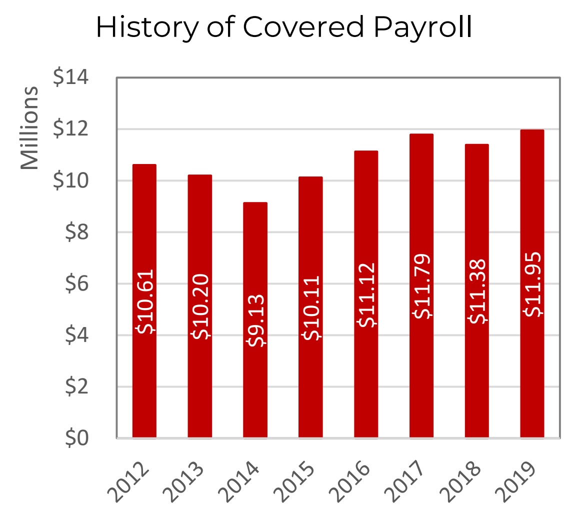
Data, Assumptions, and Plan Provisions

- Demographic Information
- Plan Provisions
- Assumptions and Methods

Demographic Information

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

	June 30, 2018	June 30, 2019
Participant Counts		
Active Participants	143	142
Retired Participants	260	258
Beneficiaries	3	10
Disabled Participants	13	13
Terminated Vested Participants	1	3
Total Participants	420	426
Active Participant Demographics (Ongoing)		
Average Age	40.1	40.0
Average Service	11.9	12.1
Average Compensation	$79,607	$84,127
Total Covered Payroll	$11,383,779	$11,946,038



Demographic Information (continued)

	June 30, 2018	June 30, 2019
Retiree Statistics		
Average Age	64.8	65.5
Average Monthly Benefit	$4,703	$4,773
Beneficiary Statistics		
Average Age	53.8	63.6
Average Monthly Benefit	$2,567	$2,269
Disabled Participant Statistics		
Average Age	64.0	65.0
Average Monthly Benefit	$3,168	$3,189
Terminated Vested Participant Statistics		
Average Age	49.8	49.5
Average Monthly Benefit	$3,096	$4,933

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

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

Participant Reconciliation

	Active	Terminated Vested	Disabled	Retired	Beneficiaries	Totals
Prior Year	143	1	13	260	3	420
Active						
To Retired	(3)			3		
To Terminated Vested	(2)	2				
To Terminated Non-Vested	(4)					(4)
Terminated Vested						
To Retired						
Retired						
To Death				(5)		(5)
Survivor						
To Death						
Additions	8				7	15
Departures						
Current Year	142	3	13	258	10	426

Active Participant Schedule

Active participant information grouped based on age and service.

	Years of Service										
Age Group	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total	Average Payroll
Under 25	4									4	$21,213
25 to 29	6	3								9	$42,407
30 to 34	4	21								25	$72,014
35 to 39	3	14	10	2						29	$77,302
40 to 44	1	11	6	4	5					27	$93,172
45 to 49	1	3	3	6	15	2				30	$102,902
50 to 54		1	1	1	9	4				16	$101,488
55 to 59					1		1			2	$105,452
60 to 64											
65 to 69											
70 & up											
Total	19	53	20	13	30	6	1			142	$84,127

Plan Status

Michigan Act 345 of the Public Act of 1937 and amended by Westland Police and Fire bargaining groups. The plan provides ongoing benefit accruals and participation is open to new entrants

Accrual of Benefits

A participant shall accumulate a benefit payable at normal retirement date based upon compensation and credited service earned as of the date of determination.

Benefits

Normal Retirement

Eligibility	See the *Plan Provision by Group* table for details.
Benefit	The benefit amounts attributable to service retirements and the conditions under which such benefits may be paid are described *Plan Provision by Group* table

Deferred Retirement

Eligibility	10 or more years of service
Benefit	Computed as service retirement but based upon service, AFC and benefit in effect at termination. Benefit begins at date retirement would have occurred had member remained in employment.

Non-Duty Death-In-Service

Eligibility	Payable to a surviving spouse, if any, upon the death of a member with 10 or more years of service.
Benefit	Accrued straight life pension actuarially reduced in accordance with an Option I election.

Duty Death-In-Service

Eligibility	Payable to a surviving spouse, if any, of a member who died in the line of duty. Payable for life of spouse.
Benefit	Accrued straight life pension, assuming the member had accrued (at least) 25 years of service prior to death. Pension computed using base pay of a 25-year employee for WLSA, WPOAM, and WWFF.

Non-Duty Disability

Eligibility	Payable upon the total and permanent disability of a member with 5 or more years of service.
Benefit	To Age 55: 1.5% of AFC times years of service. At Age 55: Same as Service Retirement pension.

Duty Disability

Eligibility	Payable upon the total and permanent disability of a member in the line of duty.
Benefit	Before Conversion: 85% of base pay for all Police Employees & 85% of the current gross wage for all Fire Employees. After Conversion: Same as Service Retirement pension. Conversion occurs at date regular retirement would have occurred had member remained in active employment. Service credit granted for period on disability retirement.

Post-Retirement Increase

Eligibility	Police Patrol Officers retiring after July 1, 1990, and hired before June 30, 2014. Police Command hired prior to July 1, 2014, and Firefighters prior to November 1, 2014.
Benefit	One-time adjustment of 5% of monthly pension after completion of 6 full years of retirement.

Credited Service

It is assumed that members accrue one year of service credit per year. Exact Fractional service is used to determine the amount of benefit payable.

Military service or police or fire service prior to employment may be purchased at one-year credit for three years' service, limited to three years' worth of pension service credit.

Payment Forms

Normal Form	A 60% automatic joint and survivor payment is the assumed normal form of benefit.
Optional Forms	50% and 100% Joint and Survivor Annuity The participant may also elect a combination of a Return of Employee Contributions with a residual annuity in any of the forms listed.

Actuarial Equivalence

7.25% interest and RP-2006 healthy annuitant mortality table with blue collar adjustment projected to 2020 with scale MP-2016.

Annuity Withdrawal Factor The reduction in the benefit resulting from a participant electing to receive a return of their contributions including interest and contributions made by the City

Plan Provisions Not Included We are not aware of any plan provisions not included in the valuation

Adjustments Made for Subsequent Events

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

Plan Provisions by Group

Group	Eligibility		Benefit Formula		AFC (Average Final Compensation)	Covered Comp in AFC	Member Contribution Rate	One-Time Adjustment
	Age	Service	Multiplier X Service	Multiplier X Service				
Police								
Tier 1: hired prior to 1/1/2010	-	25	2.80% first 30	+ 1.00% over 30	3 out of last 10	*	5.00%	5% after 6 full years of retirement
Tier 2: hired 1/1/2010 through 6/30/2014	-	25	2.80% first 30	+ 1.00% over 30	3 out of last 10	Base, Overtime	5.00%	5% after 6 full years of retirement
Tier 3: hired on or after 7/1/2014	50	25	1.75% for all years of service		5 out of last 10	Base	3.00%	Not Eligible
Police Command								
Tier 1: hired prior to 1/1/2010	-	25	2.80% first 30	+ 1.00% over 30	3 out of last 10	*	5.00%	5% after 6 full years of retirement
Tier 2: hired 1/1/2010 through 6/30/2014	-	25	2.80% first 30	+ 1.00% over 30	3 out of last 10	Base, Overtime	5.00%	5% after 6 full years of retirement
Tier 3: hired on or after 7/1/2014	50	25	1.75% for all years of service		5 out of last 10	Base	3.00%	Not Eligible
Fire								
Tier 1: hired prior to 1/1/2010	-	25	2.80% until 11/1/2014	+ 2.50% remaining years	3 out of last 10	*	5.00%	5% after 6 full years of retirement
Tier 2: hired 1/1/2010 through 11/1/2014	-	25	2.80% until 11/1/2014	+ 2.50% remaining years	3 out of last 10	**	5.00%	5% after 6 full years of retirement
Tier 3: hired after 11/1/2014	50	25	2.25% for all years of service		5 out of last 10	Base	3.00%	Not Eligible

**Base, pay in lieu of holiday, sick and/or vacation time, and other allowances may be included. See union contracts for specific allowances and limits.*

***Base, overtime, and 240 hours of unused sick and/or vacation time.*

Data, Assumptions, and Plan Provisions

Except where otherwise indicated, the following assumptions were selected by the plan sponsor with the concurrence of the actuary. The assumptions and methods are based, in part, on an assumption study dated August 4, 2016 and assumptions adopted by the Board October 11, 2016 and effective January 1, 2017 (res#12-16-110).

Actuarial Assumptions, Methods and Additional Information for Funding

Valuation Date	June 30, 2019
Participant Information as of	June 30, 2019
Asset Information as of	June 30, 2019
Cost Method	Entry Age Normal Cost Method
Amortization Method	Level percent of payroll
Remaining amortization period	19 years, reduced by 1 each year
Payroll Growth Assumptions	3.25%
Final Average Pay Adjustment	For those hired prior to January 1, 2010, age and service retirement present values were adjusted by 25% to account for the additional amount included in the average future compensation due to unused sick time and unused vacation time. No adjustment is made for Police and Police Command Employees hired after January 1, 2010. No adjustment is made for Fire Employees hired after November 1, 2014.
Asset Valuation Method	5-year adjusted market value
Interest Rates	7.25%, net of expenses
Investment Rate of Return	The interest rate is the long term rate of return on assets. This assumption is supported by the investment mix of the plan assets and long-term capital market return assumptions.
Expense Loading	None assumed
Marital Status and Ages	100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits. 90% of active members are assumed to be married at time of retirement. Male spouses are assumed to be three years older than female spouses.

Annual Pay Increases

If the number of active members remains constant, then the total active member payroll will increase 3.25% annually, the base portion of the individual salary increase assumptions. ***The rates of salary increase*** used for individual members are in accordance with the following table.

Annual Rate of Pay Increases of Sample Ages

Sample Ages	Base (Economic)	Merit and Longevity	Total
20	3.25%	4.0%	7.25%
25	3.25%	3.5%	6.75%
30	3.25%	2.9%	6.15%
35	3.25%	2.2%	5.45%
40	3.25%	1.3%	4.55%
45	3.25%	0.9%	4.15%
50	3.25%	0.6%	3.85%
55	3.25%	0.4%	3.65%
60	3.25%	0.0%	3.25%

Mortality Rates

Healthy

RP-2006 Blue Collar Mortality with generational improvements projected beginning in 2006 based on Scale MP-2016

Disabled

RP-2006 Disabled Mortality with generational improvements projected beginning in 2006 based on Scale MP-2016

50% of Pre-Retirement deaths are assumed to be duty related and 50% are assumed to be non-duty related.

As the plan is not large enough to have credible experience, mortality assumptions are set to reflect general population trends. Consistent with the processes described in the Society of Actuaries report accompanying the release of the RP-2006 mortality table, a blue collar adjustment is included based on the plan population.

Retirement Rates

Tier 1 and Tier 2 members (from Plan Provisions by Group table) are eligible for retirement at any age with 25 years of service. Members often purchase service when they near retirement and retire after 24 (or less) years of service with the System.

Tier 3 members are eligible for retirement upon attainment of age 50 with 25 or more years of service. The above rates are not utilized until a Tier 3 member satisfies the 50/25 requirement.

Years of Service	% of Active Members Retiring within Next Year
24	30%
25	30%
26	30%
27	30%
28	20%
29	20%
30	20%
31	20%
32	20%
33	15%
34	15%
35	15%
36	15%
37	15%
38	15%
39	25%
40	100%

Additionally, members age 60 who have not met the Tier 1, 2, or 3 retirement eligibility condition are assumed to retire with 100% probability.

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

Disability Rates

Disability rates vary by age and gender. This assumption measures the probability of members retiring with a disability benefit. 90% of disabilities are assumed to be duty disabilities and 10% not on duty.

Disability decrements are not assumed to occur during the first 5 years of service

	Probability of Becoming Disabled within Next Year	
Sample Age	MALE	FEMALE
20	0.15%	0.15%
25	0.18%	0.18%
30	0.20%	0.20%
35	0.29%	0.29%
40	0.42%	0.42%
45	0.65%	0.65%
50	1.05%	1.05%

Withdrawal Rates

Withdrawal rates vary by age. ***Rates of withdrawal from active membership*** were as shown below (rates do not apply to members eligible to retire and do not include separation on account of death or disability). This assumption measures the probabilities of members remaining in employment.

Sample Ages	% of Active Members Withdrawing within Next Year
20	0.75%
25	0.75%
30	0.75%
35	0.75%
40	0.75%
45	0.53%
50	0.38%
55	0.30%
60	0.30%

Changes Since the Prior Year

There are no changes from the prior year.

Appendix D: City of Westland Retiree Health Care Plan Actuarial Valuation Report for the Fiscal Year Ended June 30, 2019

GASB 74/75 ACTUARIAL VALUATION

Fiscal Year Ending June 30, 2019

CITY OF WESTLAND

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Table of Contents

December 17, 2019

Steven J. Smith
City of Westland
36300 Warren Road
Westland, MI 48185

This report summarizes the GASB actuarial valuation for the City of Westland 2018/19 fiscal year. To the best of our knowledge, the report presents a fair position of the funded status of the plan in accordance with GASB Statement No. 74 (Financial Reporting for Post-Employment Benefit Plans Other Than Pension Plans) and GASB Statement No. 75 (Accounting and Financial Reporting by Employers for Post-Employment Benefits Other Than Pensions).

The information presented herein is based on the actuarial assumptions and substantive plan provisions summarized in this report and participant information furnished to us by the Plan Sponsor. We have reviewed the employee census provided by the Plan Sponsor for reasonableness when compared to the prior information provided but have not audited the information at the source, and therefore do not accept responsibility for the accuracy or the completeness of the data on which the information is based. When relevant data may be missing, we may have made assumptions we feel are neutral or conservative to the purpose of the measurement. We are not aware of any significant issues with and have relied on the data provided.

The discount rate, other economic assumptions, and demographic assumptions have been selected by the Plan Sponsor with the concurrence of Nyhart. In our opinion, the actuarial assumptions are individually reasonable and in combination represent our estimate of anticipated experience of the Plan. All calculations have been made in accordance with generally accepted actuarial principles and practice.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following:

- plan experience differing from that anticipated by the economic or demographic assumptions;
- changes in economic or demographic assumptions;
- increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and
- changes in plan provisions or applicable law.

We did not perform an analysis of the potential range of future measurements due to the limited scope of our engagement.

To our knowledge, there have been no significant events prior to the current year's measurement date or as of the date of this report that could materially affect the results contained herein.

Neither Nyhart nor any of its employees has any relationship with the plan or its sponsor that could impair or appear to impair the objectivity of this report. Our professional work is in full compliance with the American Academy of Actuaries “Code of Professional Conduct” Precept 7 regarding conflict of interest. The undersigned meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Should you have any questions please do not hesitate to contact us.

Suraj M. Datta, ASA, MAAA
Consulting Actuary

Executive Summary

City of Westland GASB 74/75 Valuation for Fiscal Year Ending June 30, 2019

Summary of Results

Presented below is the summary of GASB 75 results for the fiscal year ending June 30, 2019 compared to the prior fiscal year as shown in the City's Notes to Financial Statement.

	As of June 30, 2018	As of June 30, 2019
Total OPEB Liability	$ 232,749,436	$ 165,751,057
Actuarial Value of Assets	$ 0	$ (504,234)
Net OPEB Liability	$ 232,749,436	$ 165,246,823
Funded Ratio	0.0%	0.3%

	FY 2017/18	FY 2018/19
OPEB Expense	$ 1,415,249	$ (14,750,196)
Annual Employer Contributions	$ 8,048,550	$ 8,570,396
Actuarially Determined Contribution	$ 20,158,127	$ 13,467,910

	As of June 30, 2018	As of June 30, 2019
Discount Rate	3.87%	5.38%
Expected Return on Assets		6.05%

	As of June 30, 2019
Total Active Participants	279
Total Retiree Participants	516

The active participants' number above may include active employees who currently have no health care coverage. Refer to Summary of Participants section for an accurate breakdown of active employees with and without coverage.

Executive Summary

City of Westland GASB 74/75 Valuation for Fiscal Year Ending June 30, 2019

Summary of Results

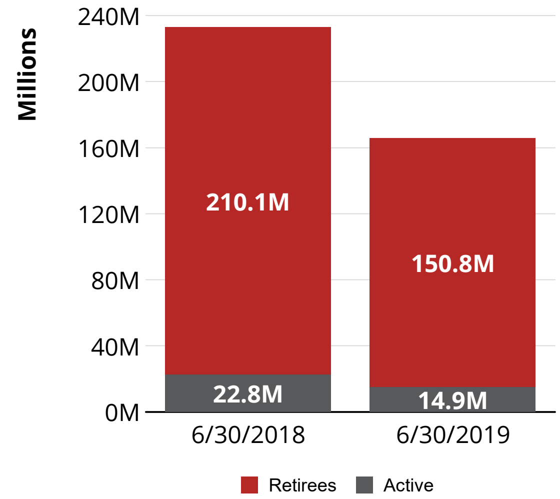
Below is a breakdown of total GASB 75 liabilities allocated to past and current service compared to the prior year. The table below also provides a breakdown of the Total OPEB Liability allocated to pre- and post- Medicare eligibility. The liability shown below includes explicit (if any) and implicit subsidies. Refer to the Substantive Plan Provisions section for complete information on the Plan Sponsor's GASB subsidies.

Present Value of Future Benefits	As of June 30, 2018	As of June 30, 2019
Active Employees	$ 52,653,530	$ 27,587,871
Retired Employees	210,054,252	150,821,992
Total Present Value of Future Benefits	$ **262,707,782**	$ **178,409,863**

Total OPEB Liability	As of June 30, 2018	As of June 30, 2019
Active Pre-Medicare	$ 8,444,001	$ 6,159,958
Active Post-Medicare	14,310,277	8,769,107
Active Liability	$ 22,754,278	$ 14,929,065
Retiree Pre-Medicare	$ 58,092,378	$ 52,046,355
Retiree Post-Medicare	151,961,874	98,775,637
Retiree Liability	$ 210,054,252	$ 150,821,992
Total OPEB Liability	$ **232,749,436**	$ **165,751,057**

	As of June 30, 2018	As of June 30, 2019
Discount Rate	3.87%	5.38%

Changes In Total OPEB Liability



Present Value of Future Benefits (PVFB) is the amount needed as of June 30, 2019 and June 30, 2018, to fully fund the City's retiree health care subsidies for existing and future retirees and their dependents assuming all actuarial assumptions are met.

Total OPEB Liability is the portion of PVFB considered to be accrued or earned as of June 30, 2019 and June 30, 2018. This amount is a required disclosure in the Required Supplementary Information section.

Schedule of Changes in Net OPEB Liability and Related Ratios

OPEB Liability	FY 2018/19	FY 2017/18	FY 2016/17
Total OPEB Liability			
Total OPEB Liability - beginning of year	$ 232,749,436	$ 251,953,877	$ 374,186,564
Service cost	1,586,539	1,655,744	3,169,520
Interest	8,975,503	8,886,490	10,787,150
Change of benefit terms	1,594,300	0	(114,832,278)
Changes in assumptions	(38,358,088)	(10,890,391)	(18,660,626)
Differences between expected and actual experience	(32,726,237)	(10,807,734)	6,899,895
Benefit payments	(8,070,396)	(8,048,550)	(9,596,348)
Net change in total OPEB liability	$ (66,998,379)	$ (19,204,441)	$ (122,232,687)
Total OPEB Liability - end of year	$ 165,751,057	$ 232,749,436	$ 251,953,877
Plan Fiduciary Net Position			
Plan fiduciary net position - beginning of year	$ 0	$ 0	$ 0
Contributions - employer	8,570,396	8,048,550	9,596,348
Contributions - active employees	0	0	0
Net investment income	4,376	0	0
Benefit payments	(8,070,396)	(8,048,550)	(9,596,348)
Trust administrative expenses	(141)	0	0
Net change in plan fiduciary net position	$ 504,234	$ 0	$ 0
Plan fiduciary net position - end of year	$ 504,234	$ 0	$ 0
Net OPEB Liability - end of year	**$ 165,246,823**	**$ 232,749,436**	**$ 251,953,877**
Plan fiduciary net position as % of total OPEB liability	0.3%	0.0%	0.0%
Covered employee payroll	$ 17,055,664	$ 15,083,255	$ 14,538,077
Net OPEB liability as % of covered payroll	968.9%	1,543.1%	1,733.1%

* Covered employee payroll amount shown does not include payroll for 10 Elderly Housing employees.

Schedule of Employer Contributions

The Actuarially Determined Contributions (ADC) shown below are based on the Annual Required Contribution (ARC) calculated in prior GASB 45 actuarial valuations as shown in the City's financial statements.

		FY 2018/19
Actuarially Determined Contribution (ADC)	$	13,467,910
Contributions in relation to the ADC		8,570,396
Contribution deficiency/(excess)	$	4,897,514
Covered employee payroll	$	17,055,664
Contribution as a % of covered payroll		50.2%

OPEB Expense

OPEB Expense		FY 2018/19		FY 2017/18
Discount Rate				
Beginning of year		3.87%		3.56%
End of year		5.38%		3.87%
Service cost	$	1,586,539	$	1,655,744
Interest		8,975,503		8,886,490
Change of benefit terms		1,594,300		0
Projected earnings on OPEB plan investments		(9,672)		0
Reduction for contributions from active employees		0		0
OPEB plan administrative expenses		141		0
Current period recognition of deferred outflows / (inflows) of resources				
Differences between expected and actual experience	$	(8,711,304)	$	(529,745)
Changes in assumptions		(18,186,762)		(8,597,240)
Net difference between projected and actual earnings on OPEB plan investments		1,059		0
Total current period recognition	$	(26,897,007)	$	(9,126,985)
Total OPEB expense	$	(14,750,196)	$	1,415,249

Deferred Outflows / (Inflows) of Resources

Deferred Outflows / (Inflows) of Resources represents the following items that have not been recognized in the OPEB Expense:

1. Differences between expected and actual experience of the OPEB plan
2. Changes of assumptions
3. Differences between projected and actual earnings in OPEB plan investments (for funded plans only)

The initial amortization period for the first two items noted above is based on expected future service lives while the difference between the projected and actual earnings in OPEB plan investment is amortized over five years. All balances are amortized linearly on a principal only basis and new bases will be created annually for each of the items above.

Differences between expected and actual experience for FYE	Initial Balance	Initial Amortization Period	Annual Recognition	Unamortized Balance as of June 30, 2019
June 30, 2017	$ 6,899,895	4	$ 2,172,189	$ 2,172,189
June 30, 2018	$ (10,807,734)	4	$ (2,701,934)	$ (5,403,866)
June 30, 2019	$ (32,726,237)	4	$ (8,181,559)	$ (24,544,678)

Changes in assumptions for FYE	Initial Balance	Initial Amortization Period	Annual Recognition	Unamortized Balance as of June 30, 2019
June 30, 2017	$ (18,660,626)	4	$ (5,874,642)	$ (5,874,641)
June 30, 2018	$ (10,890,391)	4	$ (2,722,598)	$ (5,445,195)
June 30, 2019	$ (38,358,088)	4	$ (9,589,522)	$ (28,768,566)

Net Difference between projected and actual earnings in OPEB plan investments for FYE	Initial Balance	Initial Amortization Period	Annual Recognition	Unamortized Balance as of June 30, 2019
June 30, 2017	$ 0	N/A	$ 0	$ 0
June 30, 2018	$ 0	N/A	$ 0	$ 0
June 30, 2019	$ 5,296	5	$ 1,059	$ 4,237

Deferred Outflows / (Inflows) of Resources (Continued)

As of fiscal year ending June 30, 2019	Deferred Outflows		Deferred Inflows	
Differences between expected and actual experience	$	2,172,189	$	(29,948,544)
Changes in assumptions		0		(40,088,402)
Net difference between projected and actual earnings in OPEB plan investments		4,237		0
Total	**$**	**2,176,426**	**$**	**(70,036,946)**

Annual Amortization of Deferred Outflows / (Inflows)

The balances as of June 30, 2019 of the deferred outflows / (inflows) of resources will be recognized in OPEB expense in the future fiscal years as noted below.

FYE	Balance	
2020	$	(26,897,006)
2021	$	(23,194,551)
2022	$	(17,770,023)
2023	$	1,060
2024	$	0
Thereafter	$	0

Sensitivity Results

The following presents the Net OPEB Liability as of June 30, 2019, calculated using the discount rate assumed and what it would be using a 1% higher and 1% lower discount rate.

- The current discount rate is 5.38%.
- The 1% decrease in discount rate would be 4.38%.
- The 1% increase in discount rate would be 6.38%.

As of June 30, 2019	Net OPEB Liability	
1% Decrease	$	189,408,502
Current Discount Rate	$	165,246,823
1% Increase	$	145,837,708

The following presents the Net OPEB Liability as of June 30, 2019, using the health care trend rates assumed and what it would be using 1% higher and 1% lower health care trend rates.

- The current health care trend rate starts at an initial rate of 8.00%, decreasing to an ultimate rate of 4.50%.
- The 1% decrease in health care trend rates would assume an initial rate of 7.00%, decreasing to an ultimate rate of 3.50%.
- The 1% increase in health care trend rates would assume an initial rate of 9.00%, decreasing to an ultimate rate of 5.50%.

As of June 30, 2019	Net OPEB Liability	
1% Decrease	$	146,290,521
Current Trend Rates	$	165,246,823
1% Increase	$	188,719,450

GASB Disclosures

City of Westland GASB 74/75 Valuation for Fiscal Year Ending June 30, 2019

Asset Information

Asset Breakdown		FY 2017/18		FY 2018/19
Assets				
Cash and cash equivalents	$	0	$	0
Securities lending cash collateral		0		0
Total cash	$	0	$	0
Receivables				
Contributions	$	0	$	0
Accrued interest		0		4,376
Total receivables	$	0	$	4,376
Investments				
Fixed income	$	0	$	150,000
Equities		0		350,000
Mutual Funds		0		0
Total investments	$	0	$	500,000
Total Assets	$	0	$	504,376
Liabilities				
Payables				
Investment management fees	$	0	$	141
Securities lending expense		0		0
Total liabilities	$	0	$	141
Net Position Restricted to OPEB	**$**	**0**	**$**	**504,234**

Asset Information (Continued)

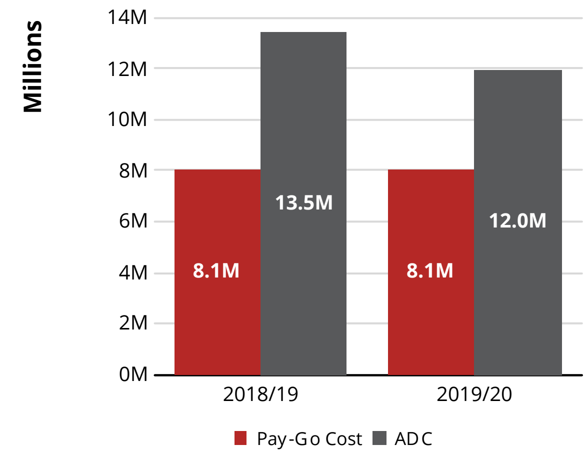
Asset Reconciliation		FY 2017/18		FY 2018/19
Additions				
Contributions Received				
Employer	$	8,048,550	$	8,570,396
Employee		0		0
Total contributions	$	8,048,550	$	8,570,396
Investment Income				
Net increase in fair value of investments	$	0	$	
Interest and Dividends		0		4,376
Investment expense, other than from securities lending		0		0
Securities lending income		0		0
Securities lending expense		0		0
Net investment income	$	0	$	4,376
Total additions	$	8,048,550	$	8,574,772
Deductions				
Benefit payments	$	8,048,550	$	8,070,396
Administrative expenses		0		141
Other		0		0
Total deductions	$	8,048,550	$	8,070,537
Net increase in net position	$	0	$	504,234
Net position restricted to OPEB				
Beginning of year	$	0	$	0
End of year	$	0	$	504,234

Actuarially Determined Contributions

City of Westland GASB 74/75 Valuation For Fiscal Year Ending June 30, 2019

		FY 2018/19		FY 2019/20
Discount rate (Funding)		6.05%		6.05%
Payroll growth factor used for amortization		N/A		N/A
Actuarial cost method		Entry Age Normal Level % of Salary		Entry Age Normal Level % of Salary
Amortization type		Level Dollar		Level Dollar
Amortization period (years)		30		29
Actuarial Accrued Liability (AAL) - beginning of year	$	171,356,389	$	152,300,021
Actuarial Value of Assets (AVA) - beginning of year		0		(504,234)
Unfunded AAL - beginning of year	$	171,356,389	$	151,795,787
Normal Cost	$	898,048	$	716,153
Amortization of Unfunded AAL		11,801,537		10,587,115
Total normal cost plus amortization	$	12,699,585	$	11,303,268
Interest to end of year		768,325		683,848
Actuarially Determined Contribution - Preliminary	$	13,467,910	$	11,987,116
Expected Benefit Payments		8,070,396		8,067,551
Actuarially Determined Contribution - Final	$	**13,467,910**	$	**11,987,116**

Cash Vs Accrual Accounting



Actuarially Determined Contribution (ADC) is the target or recommended contribution to a defined benefit OPEB plan, which if paid on an ongoing basis, will provide sufficient resources to fund future costs for services to be earned and liabilities attributed to past services. This is typically higher than the pay-as-you-go cost because it includes recognition of employer costs expected to be paid in future accounting periods.

Projection of GASB Disclosures

City of Westland GASB 74/75 Valuation for Fiscal Year Ending June 30, 2019

The Total OPEB Liability (TOL) is expected to change on an annual basis as a result of expected and unexpected events. Under normal circumstances, it is generally expected to have a net increase each year. Below is a list of the most common events affecting the total OPEB liability and whether they increase or decrease the liability.

Expected Events

- Increases in TOL due to additional benefit accruals as employees continue to earn service each year
- Increases in TOL due to interest as the employees and retirees age
- Decreases in TOL due to benefit payments

Unexpected Events

- Increases in TOL when actual premium rates increase more than expected. A liability decrease occurs when the reverse happens.
- Increases in TOL when more new retirements occur than expected or fewer terminations occur than anticipated. Liability decreases occur when the opposite outcomes happen.
- Increases or decreases in TOL depending on whether benefits are improved or reduced.

Projection of Total OPEB Liability (TOL)	FY 2018/19	FY 2019/20
TOL as of beginning of year	$ 232,749,436	$ 165,751,057
Normal cost as of beginning of year	1,586,539	857,027
Exp. benefit payments during the year	(8,070,396)	(8,067,551)
Interest adjustment to end of year	8,916,409	8,749,341
Exp. TOL as of end of year	$ 235,241,082	$ 167,289,874
Actuarial Loss / (Gain)	(69,490,025)	TBD
Actual TOL as of end of year	**$ 165,751,057**	**$ TBD**
Discount rate as of beginning of year	3.87%	5.38%
Discount rate as of end of year	5.38%	TBD

Projection of Actuarial Value of Assets (AVA)	FY 2018/19	FY 2019/20
AVA as of beginning of year	$ 0	$ 504,234
Exp. employer contributions during the year	8,570,396	8,567,551
Exp. benefit payments during the year	(8,070,396)	(8,067,551)
Expected investment income	9,672	45,439
Exp. Trust administrative expenses	(141)	1,008
Exp. AVA as of end of year	$ 509,531	$ 1,050,682
Differences between expected and actual experience	(5,297)	TBD
AVA as of end of year	**$ 504,234**	**$ TBD**
Expected asset return as of beginning of year		6.05%
Expected asset return as of end of year	6.05%	TBD

Cash Flow Projections

City of Westland GASB 74/75 Valuation for Fiscal Year Ending June 30, 2019

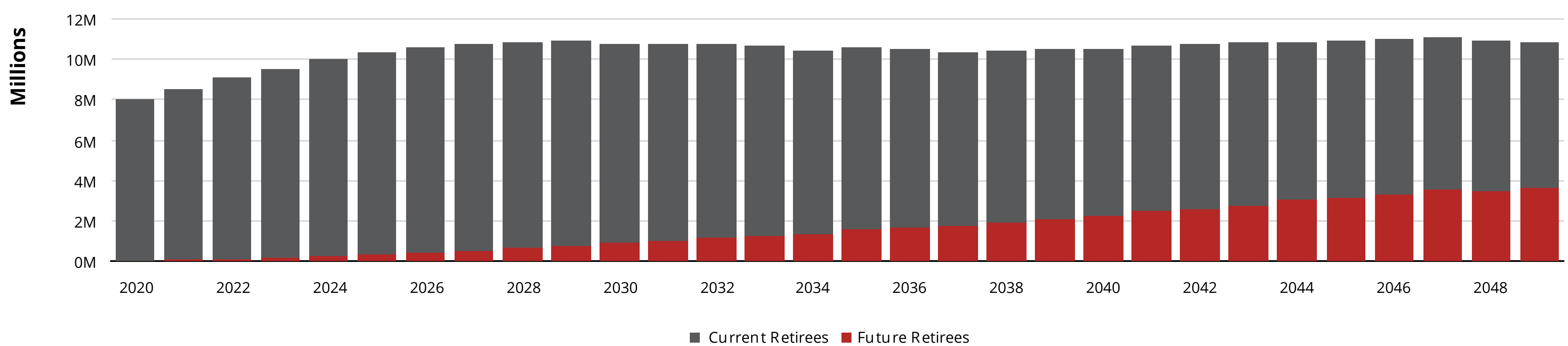
The below projections show the actuarially estimated employer-paid contributions for retiree health benefits for the next thirty years. Results are shown separately for a closed group of current/future retirees. These projections include explicit and implicit subsidies.

FYE	Current Retirees	Future Retirees*	Total
2020	$ 8,048,605	$ 18,947	$ 8,067,551
2021	$ 8,499,950	$ 54,751	$ 8,554,701
2022	$ 8,998,106	$ 94,384	$ 9,092,490
2023	$ 9,408,588	$ 144,195	$ 9,552,783
2024	$ 9,772,083	$ 207,143	$ 9,979,226
2025	$10,063,984	$ 292,017	$10,356,001
2026	$10,219,348	$ 397,512	$10,616,860
2027	$10,248,139	$ 511,991	$10,760,130
2028	$10,208,342	$ 633,798	$10,842,140
2029	$10,145,128	$ 758,246	$10,903,374

FYE	Current Retirees	Future Retirees*	Total
2030	$ 9,863,617	$ 869,491	$10,733,108
2031	$ 9,765,868	$ 985,771	$10,751,639
2032	$ 9,628,890	$ 1,125,126	$10,754,016
2033	$ 9,401,164	$ 1,237,538	$10,638,702
2034	$ 9,109,578	$ 1,351,835	$10,461,413
2035	$ 9,071,446	$ 1,534,160	$10,605,606
2036	$ 8,864,565	$ 1,686,945	$10,551,510
2037	$ 8,565,321	$ 1,750,890	$10,316,211
2038	$ 8,505,706	$ 1,943,600	$10,449,306
2039	$ 8,383,541	$ 2,087,533	$10,471,074

FYE	Current Retirees	Future Retirees*	Total
2040	$ 8,241,523	$ 2,249,946	$10,491,469
2041	$ 8,225,055	$ 2,455,159	$10,680,214
2042	$ 8,208,367	$ 2,537,176	$10,745,543
2043	$ 8,082,342	$ 2,761,567	$10,843,909
2044	$ 7,854,889	$ 3,023,339	$10,878,228
2045	$ 7,800,547	$ 3,159,363	$10,959,910
2046	$ 7,658,781	$ 3,329,341	$10,988,122
2047	$ 7,547,863	$ 3,542,618	$11,090,481
2048	$ 7,409,905	$ 3,505,269	$10,915,174
2049	$ 7,218,770	$ 3,603,985	$10,822,755

Projected Employer Pay-go Cost



* Projections for future retirees do not take into account future new hires.

Discussion of Discount Rates

City of Westland GASB 74/75 Valuation for Fiscal Year Ending June 30, 2019

Under GASB 74, the discount rate used in valuing OPEB liabilities for funded plans as of the Measurement Date must be based on the long-term expected rate of return on OPEB plan investments that are expected to be used to finance future benefit payments to the extent that (a) they are sufficient to pay for the projected benefit payments and (b) the OPEB plan assets are invested using a strategy that will achieve that return. When the OPEB plan investments are insufficient to cover future benefit payments, a yield for 20-year tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher (or equivalent quality on another rating scale) must be used.

For the current valuation:

1. The long-term expected rate of return on OPEB plan investment is assumed to be 6.05%. As of June 30, 2019, the rates of return of the MERS Capital Appreciation Portfolio and the MERS Established Market Portfolio, where the OPEB Trust is invested, are 5.40% and 6.70%, respectively. These expected future real rates of return are then combined to produce the long-term expected rate of return by weighting them based on the target portfolio allocation and includes expected inflation (2.50%). The target portfolio allocation of the OPEB Trust is 50% in each of the aforementioned MERS portfolios. The best estimates of arithmetic returns for each portfolio included in the OPEB Plan's target allocation as of June 30, 2019 are summarized in the following table.

Portfolio	Target Allocation	L/T Expected Real ROR
MERS Capital Appreciation Portfolio	50.0%	5.40%
MERS Established Market Portfolio	50.0%	6.70%
Total	100.0%	6.05%

2. The discount rate used when the OPEB plan investments are insufficient to pay for future benefit payments are selected from the range of indices as shown in the table below, where the range is given as the spread between the lowest and highest rate shown.

Yield as of	July 1, 2018	June 30, 2019
Bond Buyer Go 20-Bond Municipal Bond Index	3.87%	3.51%
S&P Municipal Bond 20-Year High Grade Rate Index	2.98%	2.79%
Fidelity 20-Year Go Municipal Bond Index	3.62%	3.13%
Bond Index Range	2.98% - 3.87%	2.79% - 3.51%

3. The final equivalent single discount rate used for this year's valuation is 5.38% for accounting disclosure purposes based on the following assumptions:
    a. The City will continue making $500,000 pre-funding contributions annually to the Trust.
    b. Pay-go costs will be fully paid by the City.

Summary of Plan Participants

City of Westland GASB 74/75 Valuation for Fiscal Year Ending June 30, 2019

Active Employees

Actives with coverage (eligible for retiree coverage)	Single	Non-Single[1]	Total	Avg. Age	Avg. Svc	Salary
AFSCME 1602	13	15	28	53.9	19.3	$ 1,381,325
Court Union	2	6	8	44.8	15.5	$ 364,455
Court Non-Union		7	7	53.2	21.2	$ 423,934
Director / Mayor's Office	3	5	8	45.9	15.0	$ 767,256
Dispatchers	1	2	3	52.5	22.5	$ 151,059
Elderly Housing	1	7	8	42.1	4.3	N/A[2]
Fire 1279	14	38	52	40.8	12.6	$ 3,850,537
Lieutenants and Sergeants	3	25	28	46.5	18.4	$ 2,444,719
Police Officers	6	14	20	36.2	8.0	$ 1,309,171
Supervisory 174	3	5	8	48.9	16.9	$ 460,249
Total actives with coverage	**46**	**124**	**170**	**44.9**	**14.7**	**$ 11,152,705**

Actives without coverage (eligible for retiree coverage)	Total	Avg. Age	Avg. Svc	Salary
Mutual Gains	23	46.8	16.5	$ 1,627,440
No Coverage	4	44.1	7.3	$ 91,227[3]
Total actives with coverage	**27**	**46.4**	**15.1**	**$ 1,718,667**

Enrollment information above is for full-time employees who are eligible for retiree health care benefits only. Employees in the Mutual Gains program are assumed to receive buyout benefits at retirement and have been included in this valuation. Employees who currently have no coverage are assumed to decline coverage with the City at retirement and thus there is no GASB liability.

In addition to the above active employees who are eligible for retiree health benefits, there are 82 employees (55 with coverage, 24 in the Mutual Gains program, and 3 with no coverage) who are not eligible for benefits because they were hired after the cut-off date. There is no GASB liability for these employees, and they have been excluded from the valuation.

[1] Non-single enrollment includes participants electing 2-person and Family coverage levels.
[2] Salary was not provided for Elderly Housing employees.
[3] Does not include salary for two Elderly Housing employees without coverage.

Summary of Plan Participants

City of Westland GASB 74/75 Valuation for Fiscal Year Ending June 30, 2019

Active Age-Service Distribution

Includes active employees eligible for retiree health benefits only.

Age	Years of Service										Total
	< 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	1										**1**
25 to 29		1	4								**5**
30 to 34		2	20	3							**25**
35 to 39		2	12	11	3						**28**
40 to 44		1	10	6	8	3					**28**
45 to 49	1	1	3	8	14	20	1				**48**
50 to 54			1	6	13	14	2				**36**
55 to 59				1	4	9	3				**17**
60 to 64		1		2	1	4		1			**9**
65 to 69											**0**
70 & up											**0**
Total	**2**	**8**	**50**	**37**	**43**	**50**	**6**	**1**	**0**	**0**	**197**

Summary of Plan Participants

City of Westland GASB 74/75 Valuation for Fiscal Year Ending June 30, 2019

Retirees

Retirees with coverage	Single	Non-Single[4]	Total	Avg. Age
AFSCME 1602	63	38	101	68.8
Court Union	6	3	9	65.7
Court Non-Union	6	8	14	71.8
Director / Mayor's Office	23	36	59	68.1
Dispatchers	2	5	7	60.2
Elderly Housing	10	2	12	75.5
Fire 1279	34	63	97	67.5
Lieutenants and Sergeants	29	59	88	63.8
Police Officers	16	24	40	67.8
Supervisory 174	19	12	31	70.7
Total retirees with coverage	**208**	**250**	**458**	**67.6**

Retirees without coverage	Total	Avg. Age
Mutual Gains	27	70.4
No Coverage	31	64.8
Total retirees without coverage	**58**	**67.4**

Retirees in the Mutual Gains program are receiving the buyout benefit and have been included in this valuation. Out of the 31 retirees who currently have no coverage, 24 are currently receiving life insurance benefits and have been included in this valuation.

Retiree Age Distribution

Age	Retirees
< 45	3
45 to 49	24
50 to 54	52
55 to 59	71
60 to 64	65
65 to 69	74
70 to 74	95
75 to 79	54
80 to 84	48
85 to 89	18
90 & up	12
Total	**516**

[4] Non-single enrollment includes participants electing 2-person and Family coverage levels.

Eligibility

Court Union	Court employees hired prior to July 1, 2010 are eligible for lifetime retiree health care benefits upon attainment of age 50 with 25 years of service, age 55 with 15 years of service, or age 60 with 8 years of service. Employees hired on/after July 1, 2010 will be enrolled in a Health Care Savings Program (HCSP) and required to purchase their own medical coverage at retirement (i.e. not from the City).
Court Non-Union	Non-Union Court employees hired prior to July 1, 2010 are eligible for retiree health care benefits for lifetime upon attainment of 25 years of service, age 55 with 15 years of service, or age 60 with 8 years of service. Employees hired on/after July 1, 2010 will be enrolled in a Health Care Savings Program (HCSP) and required to purchase their own medical coverage at retirement (i.e. not from the City).
Dispatchers	Dispatchers hired prior to July 1, 2014 are eligible for lifetime retiree health care benefits upon attainment of age 50 with 25 years of service, age 55 with 15 years of service, or age 60 with 8 years of service. Dispatchers hired on/after July 1, 2014 will be enrolled in a Health Care Savings Program (HCSP) and required to purchase their own medical coverage at retirement (i.e. not from the City).
Police and Fire	Police officers and firefighters who belong in the following unions are eligible for retiree health care benefits for lifetime upon attainment of 25 years of service or age 60 with 10 years of service: • Lieutenants and Sergeants • Police Officers Association • Firefighters Association Local 1279 Only police officers (including lieutenants and sergeants) hired prior to July 1, 2014 and firefighters hired prior to November 1, 2014 are eligible for retiree health benefits. Officers and firefighters hired after the cut-off date will be enrolled in a HCSP and required to purchase their own medical coverage at retirement (i.e. not from the City).
Supervisory 174	Supervisory 174 employees hired prior to July 1, 2010 are eligible for retiree health care benefits for lifetime at the earlier of: • 25 years of service • Age 55 with 15 years of service • Age 60 with 6 years of service Supervisory 174 employees hired on/after July 1, 2010 are not eligible for retiree health care benefits.

Eligibility – Continued

Mayor's Staff, City Clerk, Deputy Clerk	Employees belonging in the specified bargaining units are eligible for retiree health care benefits for lifetime at the earlier of: • 25 years of service • Age 55 with 15 years of service • Age 60 with 6 years of service Only employees hired prior to January 1, 2014 are eligible for retiree health benefits. Those hired on/after January 1, 2014 will be enrolled in a HCSP and required to purchase their own medical coverage at retirement (i.e. not from the City).
AFSCME 1602	AFSCME 1602 employees hired prior to March 19, 2010 are eligible for retiree health care benefits for lifetime upon attainment of: • Age 50 with 25 years of service • Age 55 with 15 years of service • Age 60 with 8 years of service AFSCME 1602 employees hired on/after March 19, 2010 are not eligible for retiree health care benefits.
Elderly Housing	Elderly Housing employees are eligible for retiree health care benefits for lifetime upon attainment of: • 20 years of service • Age 55 with 15 years of service • Age 60 with 10 years of service • Age 65 with 5 years of service
Spouse Benefit	Surviving spouses of retirees who die after retirement can continue health coverage with the City (for Non-Union Court, limited until the surviving spouse remarries). The same City explicit subsidy will continue to surviving spouses. If the surviving spouse of an active employee ends up drawing on the employee's pension, the surviving spouse will be treated as a retiree and is entitled to all benefits while drawing a pension.
Opt-out Benefit	Employees who retired prior to September 11, 2013 and opt-out coverage from the City at retirement are eligible for the following buyout benefits from the City: $1,200 for single coverage, $2,400 for 2-person coverage, and $3,600 for family coverage. Employees who retire after September 11, 2013 are not eligible for the opt-out benefit. The benefit amounts are assumed to increase with health care trend rates in the future.

Disability Benefit

Police and Fire	There is no age and service requirement for duty disabled retirement benefits for police officers and firefighters. This benefit will commence when member would have had 25 years of service (eligible for normal retirement). The City will pay 100% of premium for lifetime for duty disabled retirees. These provisions are applicable to police officers and firefighters belonging in the Lieutenants and Sergeants Union, Police Officers Association Union, and Firefighters Association Local 1279 Union.
All other groups	Not valued

Deferred Benefit

Court (Union and Non-Union)	Court employees are eligible for deferred health care benefits if they terminate employment with 8 years of service (coverage will start at age 60), 15 years of service (coverage will start at age 55), or 25 years of service (coverage will start at age 50). City will pay 100% of premium for lifetime.
Police and Fire	Police officers and firefighters are eligible for deferred health care benefits if they terminate employment with 10 years of service (coverage will start at 25 years of service). The City's subsidy follows regular retirement health care subsidy. These provisions are applicable to police officers and firefighters belonging in the Lieutenants and Sergeants Union, Police Officers Association Union, Firefighters Association Local 1279 Union, and Dispatchers.
Dispatchers and AFSCME 1602	Dispatchers and AFSCME 1602 employees are eligible for deferred health care benefits if they terminate employment with 8 years of service (coverage will start at age 60), 15 years of service (coverage will start at age 55), or 25 years of service (coverage will start at age 50). The City's subsidy follows regular retirement health care subsidy.
Supervisory 174	Supervisory 174 employees are eligible for deferred health care benefits if they terminate employment with 6 years of service (coverage will start at age 60), 15 years of service (coverage will start at age 55), or 25 years of service (coverage will start at age 50). The City's subsidy follows regular retirement health care subsidy.
Mayor's Staff	Mayor's staff are eligible for deferred health care benefits if they terminate employment with 8 years of service (coverage will start at age 60) or 15 years of service (coverage will start at age 55). The City's subsidy follows regular retirement health care subsidy.

Death Benefit

Court (Union and Non-Union)	No age and service requirement for duty and non-duty death. City will pay 100% premium for 1 year for Court Union and for 5 years for Court Non-Union.
Police and Fire	No age and service requirement for duty death, 10 years of service requirement for non-duty death. City will provide the same subsidized benefit as active employees. These provisions are applicable to police officers and firefighters belonging in the Lieutenants and Sergeants Union, Police Officers Association Union, Firefighters Association Local 1279 Union, and Dispatchers.
Supervisory 174	6 years of service requirement for duty and non-duty death. City will provide the same subsidized benefit as active employees for 1 year.
Mayor's Staff	No age and service requirement for duty and non-duty death. City will provide the same subsidized benefit as active employees for 1 year.
AFSCME 1602	No age and service requirement for duty death, 8 years of service requirement for non-duty death. City will pay 100% of premium for duty death for life. For non-duty death, the death benefits follow regular retirement health benefits.

City's Medical Explicit Subsidy for Future Retirees

Court Union	The City will pay 7% of premium per completed years of service for both pre and post-65 coverage for future retirees.
Court Non-Union	For future retirees, the City's subsidy is the same as that provided to active employees, which is based on the maximum legislated PA 152 contributions, for pre and post-65 coverage.
Supervisory 174	For future retirees hired prior to July 1, 2010, City's pre-65 subsidy is the same as that provided to active employees, which is based on the maximum legislated PA 152 contributions. Upon Medicare eligibility, as of January 1, 2019, employees will receive annual HRA contribution in the amount of $2,283 for single coverage and $4,565 for 2-person coverage in lieu of medical insurance. The HRA contribution is expected to increase by medical CPI in the future. There is no retiree healthcare benefit for future retirees hired after July 1, 2010.

City's Medical Explicit Subsidy for Future Retirees – Continued

Police and Fire	For future retirees of employees belonging in Lieutenants and Sergeants Union, police officers and firefighters belonging in the Police Officers Association Union, Firefighters Association Local 1279 Union, and Dispatchers, the City's pre-65 subsidy is the same as that provided to active employees, which is based on the maximum legislated PA 152 contributions. Upon Medicare eligibility, lieutenants and sergeants employees as of January 1, 2019 will receive annual HRA contribution in the amount of $2,232 for single coverage and $4,463 for 2-person coverage in lieu of medical insurance. Upon Medicare eligibility, police officers belonging in the Police Officers Association Union and Dispatcher employees as of January 1, 2019 will receive annual HRA contribution in the amount of $2,283 for single coverage and $4,565 for 2-person coverage in lieu of medical insurance. Upon Medicare eligibility, firefighters as of July 1, 2019, will receive annual HRA contribution in the amount of $3,809 for single coverage and $7,619 for 2-person coverage in lieu of medical insurance. The HRA contributions are expected to increase by medical CPI in the future. Future police officer retirees belonging in the Police Officers Association Union, hired after July 1, 2014, and with 10 year vesting will receive $2,000 annually in a HCSP for pre-65 coverage. Future firefighter retirees hired after November 1, 2014 and with 10 year vesting will receive $3,000 annually in a HCSP for pre-65 coverage.
AFSCME 1602	Employees who retire between April 4, 2017 and April 4, 2020 will pay contribution rates 14% higher than active employees for the first five years of retirement, then revert to paying the same rate as active employees. Upon Medicare eligibility, employees will receive an annual HRA contribution in the amount of $2,232 for single coverage and $4,463 for 2-person coverage effective on January 1, 2019. Starting in 2020, the annual HRA contribution will increase to $3,500 for single coverage and to $7,000 for 2-person coverage. The HRA contribution is expected to increase by medical CPI in the future.
Mayor's Staff, City Clerk, Deputy Clerk	For future retirees hired prior to January 1, 2014, the City's pre-65 subsidy is the same as that provided to active employees, which is based on the maximum legislated PA 152 contributions. Upon Medicare eligibility, employees as of January 1, 2019 will receive annual HRA contribution in the amount of $2,232 for single coverage and $4,463 for 2-person coverage in lieu of medical insurance. The HRA contribution is expected to increase by medical CPI in the future. Future retirees hired after January 1, 2014 and with 10 year vesting will receive $2,159 annually in a HCSP for pre-65 coverage.
Elderly Housing	The City will pay 90% of premium for both pre and post-65 coverage for future retirees.
All Groups	Existing retirees have varying retiree contribution requirements that are based on the collective bargaining agreement provisions that they retire under.

Retiree Cost Sharing

Retirees are responsible for the portion of the premium rates not covered by the City's explicit subsidy.

PA 152

The legislated PA 152 annual maximum employer contributions are as shown below:

- For plan year beginning on / after January 1, 2019: $6,685.17 for single coverage and $13,980.75 for 2-person coverage.
- For plan year beginning on / after January 1, 2020: $6,818.87 for single coverage and $14,260.37 for 2-person coverage.

These limits are adjusted annually on October 1 based on the change in the medical care component of the US CPI for the most recent 12-month period.

Part B Reimbursement

Lieutenants and Sergeants hired prior to January 1, 1986 and retired after January 1, 2004 are eligible for Part B reimbursement benefit (for retiree only).

Retirees belonging in Police Officers Association hired prior to January 1, 1986 are eligible for Part B reimbursement benefit (for retiree only).

Monthly Part B premium effective on January 1, 2019 is $135.50.

Excise Tax

Effective on January 1, 2022, the Plan Sponsor is liable for 40% of the difference between the plan costs and the cost threshold, when the plan costs are greater than the cost threshold. The 2022 annual cost thresholds for the excise tax are estimated to be the following:

- Pre-Medicare: $12,850 for single and $33,500 for family
- Medicare: $11,050 for single and $29,750 for family

The above thresholds are based on the 2018 amounts increased by 2% annually from 2018 to 2022. The excise tax thresholds are assumed to increase by 3.5% in 2022 and 2.5% for all years after 2022.
For the 2018/19 plan year, the Excise Tax constitutes 3.50% of the total liability as of the beginning of the year and 2.28% as of the end of the year.

Medical Plans

The BC/BS medical plans are self-insured while the BCN medical plans are fully-insured and experience rated. Only existing retirees are allowed to remain in the BCN medical plans. For active employees currently enrolled in BC/BS plans, the assumed division enrollment at retirement are as shown below:

Active Division	Retiree Division
0017	0043 / 0056 for HRA retirees
0044	0048 / 0057 for HRA retirees
0045	0049 / 0058 for HRA retirees
0046	0050 / 0059 for HRA retirees
0047	0051

The monthly premium equivalent rates effective January 1, 2019 are as shown below.

Retirees' Divisions	Pre-Medicare		Post-Medicare	
BC/BS Plans	**Single**	**Double**	**Single**	**Double**
0018	$ 947.46	$ 1,980.19	$ 618.42	$ 1,236.84
0020	$ 956.57	$ 1,999.23	$ 613.00	$ 1,226.00
0021	$ 938.35	$ 1,961.15	$ 602.18	$ 1,204.36
0025	$ 933.79	$ 1,951.63	$ 601.74	$ 1,203.48
0043	$ 911.02	$ 1,904.03	$ 593.87	$ 1,187.74
0048	$ 856.36	$ 1,789.79	$ 535.33	$ 1,070.66
0049	$ 801.70	$ 1,675.55	$ 442.00	$ 884.00
0050	$ 747.04	$ 1,561.30	$ 424.34	$ 848.68
0052	$ 988.65	$ 2,066.29	$ 850.24	$ 1,700.48
0056	$ 950.63	$ 1,986.81	$ 817.54	$ 1,635.08

	Pre-Medicare		Post-Medicare	
BCN Plans	**Single**	**Double**	**Single**	**Double**
BCN 05	$ 834.23	$ 2,002.15	$ 1,116.85	$ 2,233.70
BCN 07	$ 825.44	$ 1,981.05	$ 1,081.07	$ 2,162.14

Dental Benefit

Court Union	Court employees who retired prior to July 1, 1995 are eligible for free dental coverage. Employees who retired on/after July 1, 1995 are eligible for 7% of dental premium subsidy per completed years of service.
Supervisory 174	Supervisory 174 employees who retired after January 1, 1996 are eligible for 5% of dental premium subsidy per completed years of service.
AFSCME 1602	AFSCME 1602 employees who retired after July 1, 1990 are eligible for 5% of dental premium subsidy per completed years of service.
Police and Fire	There are no dental benefits for the following groups: Police Officers Association, Lieutenants and Sergeants Association, Firefighters Association Local 1279 Union, and Dispatchers.
Elderly Housing	Elderly Housing employees are eligible for 90% of dental premium subsidy.
All Others	Employees belonging in the following bargaining units are eligible for free dental coverage: • Non-Union Court • Mayor’s Staff • City Clerk • Deputy Clerk

Vision Benefit

Court Union	Retiree is eligible for a reimbursement on an eye exam cost for the retiree and his/her dependents every other fiscal year and up to $100 of family optical costs every other fiscal year.
Court Non-Union	Retiree is entitled to 100% reimbursement for annual eye examinations and up to $250 reimbursement toward family optical costs every budget year.
Police and Fire	There are no vision benefits for the following groups: Police Officers Association, Dispatchers, and Firefighters Association Local 1279 Union. Lieutenants and Sergeants hired prior to July 1, 2014, the City subsidy is 4% of premium per completed year of service.
Supervisory 174	For employees retiring prior to July 1, 2018, the City will reimburse retirees and his/her dependents for their regular eye examination plus optical expenses up to a maximum of $150 within a two-year period. For employees retiring after July 1, 2018, the City will provide retirees and his/her dependents with EyeMed Vision Insurance.
Mayor's Staff, City Clerk, Deputy Clerk	The City will reimburse up to a maximum of $250 per retiree and his/her dependents per year for the purchase of eye glasses or contact lenses, and will pay for an eye examination for such individuals once per year for those retired after January 1, 1997. For employees retiring after January 1, 1997, the City will reimburse up to a maximum of $100 per retiree and his/her dependents every two years for either the purchase of eye glasses or contact lenses or for an eye examination.
AFSCME 1602	For employees retiring after July 1, 1995, the City agrees to reimburse the retiree for an eye exam and a maximum of $100 dollars for the purchase of eye glasses or contact lenses for the retiree and spouse. For employees retiring between January 1, 1987 and July 1, 1994, the City agrees to reimburse the retiree up to a maximum of $85 for the purchase of corrective eyewear once every two years.
Elderly Housing	There are no vision benefits offered for Elderly Housing retirees.

Dental and Vision Plans

The monthly dental and vision premium rates are as shown below.

Eff. 1/1/2019 Dental	Single	Double
0005	$ 29.64	$ 55.09
0006	$ 15.59	$ 28.85
0008	$ 42.90	$ 79.67
0010	$ 40.77	$ 75.09
0012	$ 38.82	$ 74.26

Eff. 1/1/2019 Vision	Single	Double
0001	$ 3.00	$ 6.77

The above dental suffixes are being applied to the following groups:

- 0005 – AFSCME 1602 and Elderly Housing
- 0008 – Court Non-Union and Mayor's Staff
- 0010 – Supervisory 174
- 0012 – Court

Life Insurance

Life insurance benefits for the different groups are as shown below.

Union Group	Benefit
Court	$5,000 - $25,000
Non-Union Court	$100,000 - $150,000
Police and Fire	$ 5,000
Supervisory 174	$ 12,000
Mayor's Staff / City Clerk / Deputy Clerk	$ 30,000
AFSCME 1602	
Retired between 10/1/1982 and 12/31/1986	$ 5,000
Retired after 12/31/1986	$1,000/YOS, $12,000 max

Actuarial Methods and Assumptions

City of Westland GASB 74/75 Valuation for Fiscal Year Ending June 30, 2019

The actuarial assumptions used in this report represent a reasonable long-term expectation of future OPEB outcomes. As national economic and City experience change over time, the assumptions will be tested for ongoing reasonableness and, if necessary, updated.

There are changes to the actuarial methods and assumptions since the last GASB valuation, which was for the fiscal year ending June 30, 2017. Refer to Actuary's Notes section for complete information on these changes. For the current year GASB valuation, we have also updated the per capita costs. We expect to update discount rate, health care trend rates, mortality table, and per capita costs again in the next full GASB valuation, which will be for the fiscal year ending June 30, 2021.

Measurement Date

For fiscal year ending June 30, 2019, a June 30, 2019 measurement date was used.

Actuarial Valuation Date

June 30, 2019 with no adjustments to get to the June 30, 2019 measurement date. Liabilities as of July 1, 2018 are based on an actuarial valuation date of July 1, 2017 projected to July 1, 2018 on a "no loss / no gain" basis.

Discount Rate

3.87% as of July 1, 2018 and 5.38% as of June 30, 2019 for accounting disclosure purposes
6.05% for funding disclosure purposes (in calculating the Actuarially Determined Contribution)
Refer to the Discussion of Discount Rates section for more information on selection of the discount rate.

Payroll Growth

3.75% for wage inflation plus merit / productivity growth as shown in the table below. The payroll growth assumption is based on the MERS valuation as of December 31, 2015.

Age	Rates
30	3.10%
40	1.20%
50	0.52%
60+	0.00%

Inflation Rate

General wage inflation is 3.75%, with implicit inflation of 2.5% annually

Census Data

Census information was provided by the City in August 2019. We have reviewed it for reasonableness and no material modifications were made to the census data.

Experience Study

Best actuarial practices call for a periodic assumption review and Nyhart recommends completion of an actuarial assumption review (also referred to as an experience study).

Actuarial Methods and Assumptions

City of Westland GASB 74/75 Valuation for Fiscal Year Ending June 30, 2019

Cost Method

Allocation of Actuarial Present Value of Future Benefits for services prior and after the Measurement Date was determined using Entry Age Normal Level % of Salary method where:

- Service Cost for each individual participant, payable from date of employment to date of retirement, is sufficient to pay for the participant's benefit at retirement; and
- Annual Service Cost is a constant percentage of the participant's salary that is assumed to increase according to the Payroll Growth.

Asset Valuation Method

Market Value

Employer Funding Policy

Pay-as-you-go cash basis, plus $500,000 pre-funding contributions annually to a dedicated OPEB Trust

Mortality

Healthy retirees: RPH-2018 Total Dataset Mortality Table fully generational using Scale MP-2018
Disabled retirees: RHP-2018 Disabled Retiree Mortality Table fully generational using Scale MP-2018

Line of Duty Death

50% of death is assumed to be line-of-duty death

Disability

Sample annual rates for Police and Fire are as shown below. 90% of disabilities are assumed to be duty related.

Age	Rates
20	0.15%
30	0.20%
40	0.42%
50	1.05%
60	3.06%

Withdrawal Rate

Assumption used to project terminations (voluntary and involuntary) prior to meeting minimum retirement eligibility for retiree health coverage. Sample annual termination rates by group are as shown below.

	General Employees					Police and Fire
Age	**0 – 2 YOS**	**3 YOS**	**4 YOS**	**5 YOS**	**6+ YOS**	**All YOS**
25	18.0%	16.0%	12.0%	10.0%	9.0%	1.0%
35	18.0%	16.0%	12.0%	10.0%	7.0%	1.0%
45	18.0%	16.0%	12.0%	10.0%	4.0%	0.7%
55	18.0%	16.0%	12.0%	10.0%	3.0%	0.4%

Retirement Rate

Annual rates of retirement by group are as shown below.

YOS	Group A
25	10%
26	15%
27 – 28	2%
29 – 31	8%
32	10%
33 – 36	5%
37 – 39	10%
40+	100%

Age	Group B	Group C
50 – 53	2%	2%
54	2%	5%
55 – 57	8%	8%
58 – 59	5%	8%
60	5%	8%
61	8%	8%
62	8%	20%

Age	Group B	Group C
63	15%	10%
64	10%	10%
65	10%	20%
66 – 67	10%	15%
68 – 69	10%	20%
70+	100%	100%

Group A: Lieutenants and Sergeants, Police Officers Association, Firefighters Association Local 1279, and AFSCME Local 1602 hired prior to August 15, 2004.
Group B: AFSCME Local 1602 hired on/after August 15, 2004, Court (Union and Non-Union), and Dispatchers
Group C: Supervisor 174 and Mayor's Staff, Elderly Housing

100% of vested terminated employees are assumed to retire at the commencement of deferred health care benefits.

Health Care Trend Rates

FYE	Health	Part B	Dental	Vision
2020	8.00%	3.50%	4.00%	3.00%
2021	7.50%	4.00%	3.75%	3.00%
2022	7.00%	4.50%	3.50%	3.00%
2023	6.50%	5.00%	3.50%	3.00%
2024	6.00%	5.00%	3.50%	3.00%
2025	5.50%	5.00%	3.50%	3.00%
2026	5.00%	5.00%	3.50%	3.00%
2027+	4.50%	5.00%	3.50%	3.00%

The initial trend rate was based on a combination of employer history, national trend surveys, and professional judgment.

The ultimate trend rate was selected based on historical medical CPI information.

HRA contributions are assumed to increase 4.5% annually in the future. Note that the HRA contribution for AFSCME retirees will increase to $3,500 for single coverage and $7,000 for 2-person coverage in 2020.

Retiree Contributions

Retiree contributions are assumed to increase according to health care trend rates.

Health Care Coverage Election Rate

100% of active employees with current coverage are assumed to continue coverage at retirement.
100% of active employees currently receiving buyout benefits are assumed to receive buyout benefits at retirement.
0% of active employees without current coverage are assumed to continue coverage at retirement.

50% of terminated vested employees are assumed to elect coverage at normal retirement.

100% of retirees with current coverage are assumed to continue coverage.
100% of retirees currently receiving buyout benefits are assumed to continue receiving buyout benefits in the future.
0% of retirees without current coverage are assumed to elect coverage in the future.

Spousal Coverage

65% of male and 85% of female employees are assumed to be married at retirement. Husbands are assumed to be three years older than wives. Spousal coverage for retirees is based on actual data.

Dental/Vision Per Capita Costs

Dental and vision per capita costs are assumed to increase with dental and vision trend rates respectively.

Dental	Single
0005	$ 356
0006	$ 187
0008	$ 515
0010	$ 489
0012	$ 466

Vision	Single
0001	$ 36

Part B Per Capita Costs

Annual Part B per capita cost is $1,626 and is assumed to increase with Part B trend rates.

Medical / Rx Per Capita Costs

Annual per capita costs were calculated based on the 2019 premium rates by plan actuarially increased using health index factors and current enrollment. The costs are assumed to increase with health care trend rates. Annual per capita costs by plan are as shown below:

	BCN (05)		BCN (07)	
Age	**Male**	**Female**	**Male**	**Female**
< 50	$ 10,000	$ 10,000	$ 9,900	$ 9,900
50 – 54	$ 10,100	$ 11,400	$ 10,000	$ 11,300
55 – 59	$ 13,600	$ 13,100	$ 13,400	$ 13,000
60 – 64	$ 18,400	$ 16,200	$ 18,200	$ 16,000
65 – 69	$ 10,400	$ 10,400	$ 10,100	$ 10,100
70 – 74	$ 13,000	$ 13,000	$ 12,600	$ 12,600
75+	$ 15,200	$ 15,200	$ 14,700	$ 14,700

The per capita costs represent the cost of coverage for a retiree-only population.

Actuarial standards require the recognition of higher inherent costs for a retired population versus an active population.

Medical / Rx Per Capita Costs - Continued

Active employees currently enrolled in BC/BS active divisions are mapped to retiree divisions as follows:

Active Division	Retiree Division
0017	0043
0044	0048
0045	0049
0046	0050
0047	0051

	BC/BS 0043		BC/BS 0048		BC/BS 0049	
Age	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
< 50	$ 10,900	$ 10,900	$ 10,300	$ 10,300	$ 9,600	$ 9,600
50 – 54	$ 11,000	$ 12,400	$ 10,300	$ 11,700	$ 9,700	$ 10,900
55 – 59	$ 14,800	$ 14,400	$ 13,900	$ 13,500	$ 13,100	$ 12,600
60 – 64	$ 20,100	$ 17,700	$ 18,900	$ 16,600	$ 17,700	$ 15,600
65 – 69	$ 5,600	$ 5,600	$ 5,000	$ 5,000	$ 4,100	$ 4,100
70 – 74	$ 6,900	$ 6,900	$ 6,200	$ 6,200	$ 5,100	$ 5,100
75+	$ 8,100	$ 8,100	$ 7,300	$ 7,300	$ 6,000	$ 6,000

	BC/BS 0050		BC/BS 0018, 0020, 0021, 0025, 0052, 0056	
Age	**Male**	**Female**	**Male**	**Female**
< 50	$ 9,000	$ 9,000	$ 11,300	$ 11,300
50 – 54	$ 9,000	$ 10,200	$ 11,400	$ 12,900
55 – 59	$ 12,200	$ 11,800	$ 15,300	$ 14,800
60 – 64	$ 16,500	$ 14,500	$ 20,800	$ 18,300
65 – 69	$ 4,000	$ 4,000	$ 6,000	$ 6,000
70-74	$ 4,900	$ 4,900	$ 7,500	$ 7,500
75+	$ 5,800	$ 5,800	$ 8,800	$ 8,800

Explicit Subsidy

The difference between (a) the premium rate and (b) the retiree contribution. Below is an example of the monthly explicit subsidies for a retired Firefighter and spouse enrolled in Plan BC/BS 0043.

	Premium Rate	Retiree Contribution	Explicit Subsidy
	A	B	C = A – B
Retiree	$ 911.02	$ 353.92	$ 557.10
Spouse	$ 993.01	$ 385.05	$ 607.97

Implicit Subsidy

The difference between (a) the per capita cost and (b) the premium rate. Below is an example of the monthly implicit subsidies for a male retiree age 64 with spouse of the same age enrolled in Plan BC/BS 0043.

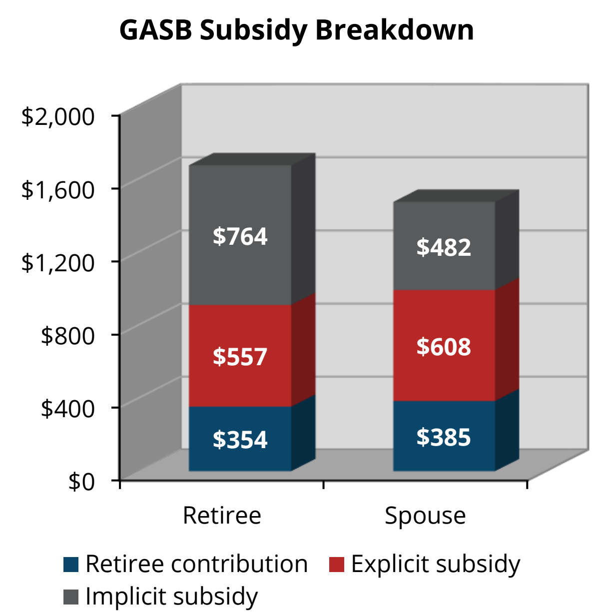
	Per Capita Cost	Premium Rate	Implicit Subsidy
	A	B	C = A – B
Retiree	$ 1,675.00	$ 911.02	$ 763.98
Spouse	$ 1,475.00	$ 993.01	$ 481.99

All employers that utilize premium rates based on blended active/retiree claims experience will have an implicit subsidy. There is an exception for Medicare plans using a true community-rated premium rate.

GASB Subsidy Breakdown

Below is a breakdown of the GASB 45 monthly total cost for a male retired Firefighter age 64 and spouse of the same age enrolled in Plan BC/BS 0043.

	Retiree		Spouse	
Retiree contribution	$	353.92	$	385.05
Explicit subsidy	$	557.10	$	607.97
Implicit subsidy	$	763.98	$	481.99
Total monthly cost	$	1,675.00	$	1,475.00



APPENDIX

Comparison of Participant Demographic Information

The active participants' number below may include active employees who currently have no health care coverage. Refer to Summary of Participants section for an accurate breakdown of active employees with and without coverage.

	As of June 30, 2017	As of June 30, 2019
Active Participants	225	197
Retired Participants	441	516
Averages for Active		
Age	44.7	45.1
Service	13.9	14.8
Averages for Retired		
Age	66.4	67.6

Detailed Actuary's Notes

There have been no substantive plan provision changes since the last full valuation, which was for the fiscal year ending June 30, 2017. However, the Elderly Housing group, which was previously excluded from the GASB valuation, has now been included. This change caused a slight increase in liabilities.

The following assumptions have been updated since the last full valuation:

1. Mortality assumption has been updated as follows for this year's valuation. This change caused a slight decrease in the City's liabilities.
    a. Healthy Retirees: RPH-2017 Total Dataset Mortality Table fully generational using Scale SSA to RPH-2018 Total Dataset Mortality Table fully generational using Scale MP-2018.
    b. Disabled Retirees: RPH-2017 Disabled Retiree Mortality Table fully generational using Scale SSA to RPH-2018 Disabled Retiree Mortality Table fully generational using Scale MP-2018.

2. Trend rates have been updated as follows:
    a. Medical / Rx trend rates have been set to an initial rate of 8.0% decreasing by 0.5% annually to an ultimate rate of 4.5%.
    b. Dental trend rates have been set to an initial rate of 4.0% decreasing by 0.25% annually to an ultimate rate of 3.5%.
    c. Part B trend rates have been reset to an initial rate of 3.5% increasing by 0.5% annually to an ultimate rate of 5.0%.

    These changes caused a slight increase in liabilities.

3. In the prior valuation, per GASB 75, the discount rate used in valuing the OPEB liability was based on a yield for 20-year tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher (equivalent quality on another rating scale) as of the Measurement Date. The discount rate used in the prior valuation was 3.87% as of July 1, 2018 (measurement date). Because the City now has a dedicated OPEB Trust, the discount rate is set per GASB 74. Under GASB 74, the discount rate used in valuing OPEB liabilities for funded plans as of the Measurement Date must be based on the long-term expected rate of return on OPEB plan investments that are expected to be used to finance future benefit payments to the extent that (a) they are sufficient to pay for the projected benefit payments and (b) the OPEB plan assets are invested using a strategy that will achieve that return. When the OPEB plan investments are insufficient to cover future benefit payments, a yield for 20-year tax-exempt general obligation municipal bonds with an average rating of AA /Aa or higher (or equivalent quality on another rating scale) must be used. The accounting discount rate will be evaluated annually. For funding purposes, the expected Trust rate of return of 6.05% has been used in calculating the Actuarially Determined Contribution. Refer to the Discussion of Discount Rates section for additional information in the discount rate selection. The prior valuation used a discount rate of 3.87% for accounting disclosure purposes as of July 1, 2018. The current valuation uses a discount rate of 5.38% as of June 30, 2019 for accounting disclosure purposes. This change caused a significant decrease in liabilities.

GASB Results by Group

Below is the summary of the GASB results for fiscal year ending June 30, 2019 based on the Entry Age Normal Level % of Pay cost method with a discount rate of 5.38%.

Union Groups		Total OPEB Liability As of June 30, 2019		Plan Fiduciary Net Position As of June 30, 2019		Net OPEB Liability As of June 30, 2019
AFSCME 1602	$	25,284,408	$	76,918	$	25,207,490
Court Union	$	3,944,488	$	12,000	$	3,932,488
Court Non-Union	$	5,886,880	$	17,909	$	5,868,971
Director / Mayor's Office	$	20,221,462	$	61,516	$	20,159,946
Dispatchers	$	3,181,661	$	9,679	$	3,171,982
Elderly Housing	$	2,362,191	$	7,186	$	2,355,005
Fire 1279	$	38,263,754	$	116,403	$	38,147,351
Lieutenants and Sergeants	$	40,440,478	$	123,025	$	40,317,453
Police Officers	$	14,123,587	$	42,966	$	14,080,621
Supervisory 174	$	7,793,774	$	23,710	$	7,770,064
Water / Sewer	$	4,248,374	$	12,924	$	4,235,450
Total	**$**	**165,751,057**	**$**	**504,234**	**$**	**165,246,823**

City of Westland GASB 74/75 Valuation for Fiscal Year Ending June 30, 2019

PA 202 Uniform Assumption Disclosures

The information presented below is for the purposes of filing Form No. 5572 under PA 202 uniform assumption requirements. Per regulation, Form No. 5572 must be filed no later than six months after the end of the fiscal year. Governmental fund revenues are not shown below and should not be determined by the City. Refer to the Michigan Department of Treasury website for additional information.

Form 5572 Line	Description	City of Westland
Line 28	Actuarial Value of Assets	$ 504,234
Line 29	Actuarial Accrued Liability	$ 170,181,626
Line 31	Actuarially Determined Contribution for FY 2018/19	$ 13,808,994

Line 31 (Actuarially Determined Contribution) was calculated using level dollar amortization with a 6.05% discount rate. The amortization period is a closed, 30-year period with 30 years remaining in FY 2018/19.

Under PA 202 requirements, uniform assumption setting is mandated in reporting of liabilities, assets, and ADC. The following is a description of the PA 202 uniform assumption guidance and final assumption used for the City for purposes of calculating the figures above.

Assumption	Uniform Assumption Guidance	City Assumption
Investment Rate of Return	Maximum of 7.00%	6.05% (for funding/ADC purposes)
Discount Rate	Blended discount rate calculated per GASB 74/75: • Maximum of 7.0% where plan assets are sufficient to make projected benefit payments • Maximum of 3.0% for periods where assets are insufficient to make projected benefit payments	5.38% (for calculation of the OPEB liability)
Salary Increase	Minimum of 3.50% or based on actuarial experience study within the past 5 years	Same as the GASB 74/75 valuation
Mortality Table	A version of RP-2014 or based on actuarial experience study within the past 5 year	Same as the GASB 74/75 valuation
Amortization Period	Maximum closed period of 30 years for Retiree Health Systems	For FY 2018/19, 30 years on a closed period basis
Asset Valuation	Market Value as reported on Financial Statements	Same as the GASB 74/75 valuation
Healthcare Inflation	Non-Medicare: 8.50% decreasing 0.25% per year to a 4.50% long-term rate Medicare: 7.00% decreasing 0.25% per year to a 4.50% long-term rate	Same as PA 202 uniform assumption

GLOSSARY

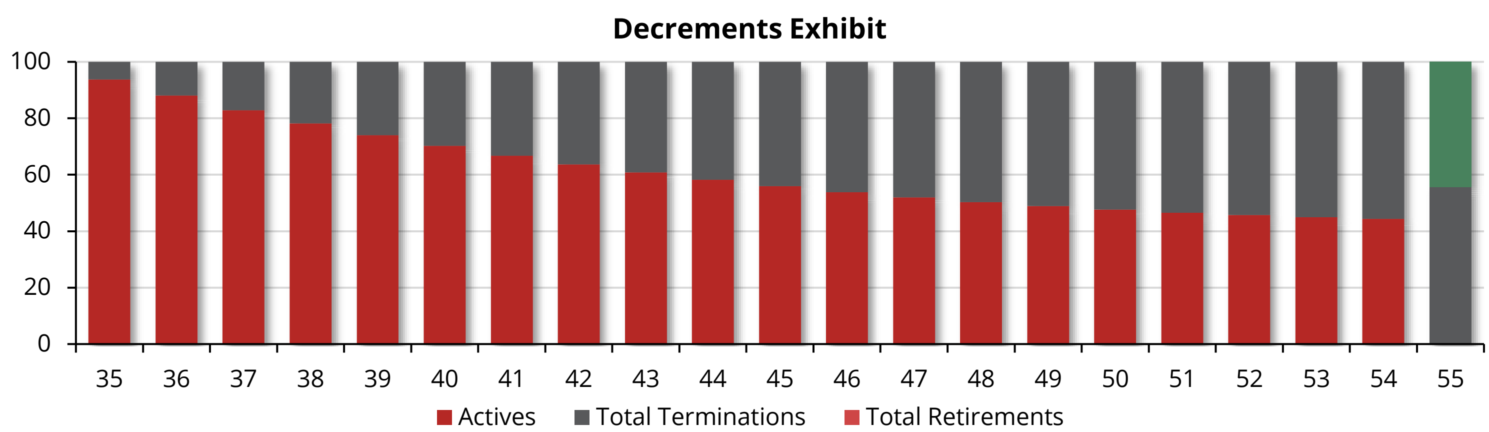
Glossary – Decrements Exhibit

City of Westland GASB 74/75 Valuation for Fiscal Year Ending June 30, 2019

The table below illustrates how actuarial assumptions can affect a long-term projection of future liabilities. Starting with 100 employees at age 35, the illustrated actuarial assumptions show that 44.43 employees out of the original 100 are expected to retire and could elect retiree health benefits at age 55.

Age	# Remaining Employees	# of Terminations per Year[5]	# of Retirements per Year	Total Decrements
35	100.000	6.276	0.000	6.276
36	93.724	5.677	0.000	5.677
37	88.047	5.136	0.000	5.136
38	82.911	4.648	0.000	4.648
39	78.262	4.209	0.000	4.209
40	74.053	3.814	0.000	3.814
41	70.239	3.456	0.000	3.456
42	66.783	3.131	0.000	3.131
43	63.652	2.835	0.000	2.835
44	60.817	2.564	0.000	2.564
45	58.253	2.316	0.000	2.316

Age	# Remaining Employees	# of Terminations per Year	# of Retirements per Year	Total Decrements
46	55.938	2.085	0.000	2.085
47	53.853	1.866	0.000	1.866
48	51.987	1.656	0.000	1.656
49	50.331	1.452	0.000	1.452
50	48.880	1.253	0.000	1.253
51	47.627	1.060	0.000	1.060
52	46.567	0.877	0.000	0.877
53	45.690	0.707	0.000	0.707
54	44.983	0.553	0.000	0.553
55	44.430	0.000	44.430	44.430



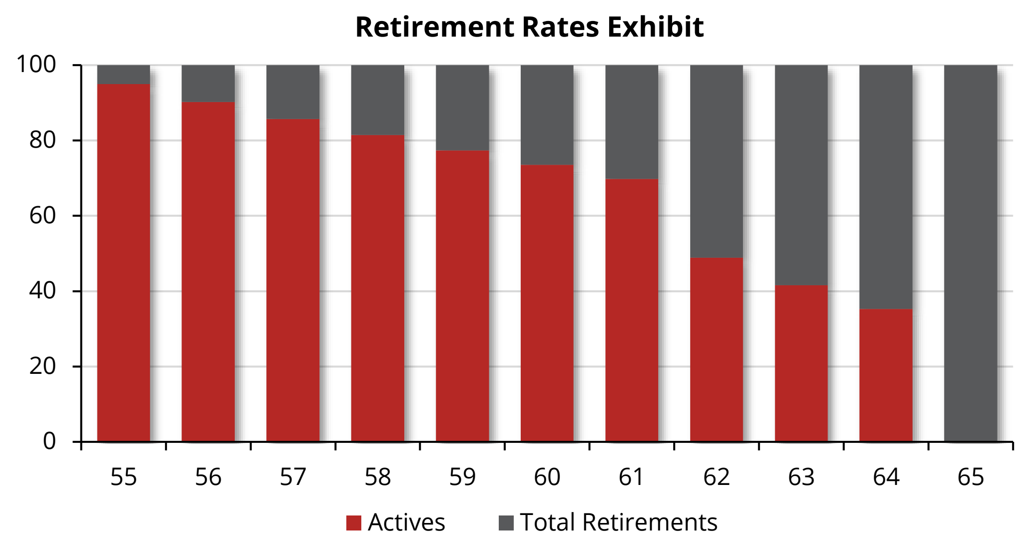
[5] The above rates are illustrative rates and are not used in our GASB calculations.

Glossary – Retirement Rates Exhibit

City of Westland GASB 74/75 Valuation for Fiscal Year Ending June 30, 2019

The table below illustrates how actuarial assumptions can affect a long-term projection of future liabilities. The illustrated retirement rates show the number of employees who are assumed to retire annually based on 100 employees age 55 who are eligible for retiree health care coverage. The average age at retirement is 62.0.

Age	Active Employees BOY	Annual Retirement Rates*	# Retirements per Year	Active Employees EOY
55	100.000	5.0%	5.000	95.000
56	95.000	5.0%	4.750	90.250
57	90.250	5.0%	4.513	85.738
58	85.738	5.0%	4.287	81.451
59	81.451	5.0%	4.073	77.378
60	77.378	5.0%	3.869	73.509
61	73.509	5.0%	3.675	69.834
62	69.834	30.0%	20.950	48.884
63	48.884	15.0%	7.333	41.551
64	41.551	15.0%	6.233	35.318
65	35.318	100.0%	35.318	0.000



* The above rates are illustrative rates and are not used in our GASB calculations.

GASB 75 defines several unique terms not commonly employed in the funding of pension and retiree health plans. The definitions of the terms used in the GASB actuarial valuations are noted below.

1. **Actuarial Assumptions** – Assumptions as to the occurrence of future events affecting health care costs, such as: mortality, withdrawal, disablement and retirement; changes in compensation and Government provided health care benefits; rates of investment earnings and asset appreciation or depreciation; procedures used to determine the Actuarial Value of Assets; characteristics of future entrants for Open Group Actuarial Cost Methods; and other relevant items.

2. **Actuarial Cost Method** – A procedure for determining the Actuarial Present Value of Future Benefits and expenses and for developing an actuarially equivalent allocation of such value to time periods, usually in the form of a Service Cost and a Total OPEB Liability.

3. **Actuarially Determined Contribution** - A target or recommended contribution to a defined benefit OPEB plan for the reporting period, determined in accordance with the parameters and in conformity with Actuarial Standards of Practice.

4. **Actuarial Present Value** – The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. For purposes of this standard, each such amount or series of amounts is:
   a. adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, Social Security, marital status, etc.);
   b. multiplied by the probability of the occurrence of an event (such as survival, death, disability, termination of employment, etc.) on which the payment is conditioned; and
   c. discounted according to an assumed rate (or rates) of return to reflect the time value of money.

5. **Deferred Outflow / (Inflow) of Resources** – represents the following items that have not been recognized in the OPEB Expense:
   a. Differences between expected and actual experience of the OPEB plan
   b. Changes in assumptions
   c. Differences between projected and actual earnings in OPEB plan investments (for funded plans only)

6. **Explicit Subsidy** – The difference between (a) the amounts required to be contributed by the retirees based on the premium rates and (b) actual cash contribution made by the employer.

7. **Funded Ratio** – The actuarial value of assets expressed as a percentage of the Total OPEB Liability.

Glossary – Definitions

City of Westland GASB 74/75 Valuation for Fiscal Year Ending June 30, 2019

8. **Healthcare Cost Trend Rate** – The rate of change in the per capita health claims costs over time as a result of factors such as medical inflation, utilization of healthcare services, plan design, and technological developments.

9. **Implicit Subsidy** – In an experience-rated healthcare plan that includes both active employees and retirees with blended premium rates for all plan members, the difference between (a) the age-adjusted premiums approximating claim costs for retirees in the group (which, because of the effect of age on claim costs, generally will be higher than the blended premium rates for all group members) and (b) the amounts required to be contributed by the retirees.

10. **OPEB** – Benefits (such as death benefits, life insurance, disability, and long-term care) that are paid in the period after employment and that are provided separately from a pension plan, as well as healthcare benefits paid in the period after employment, regardless of the manner in which they are provided. OPEB does not include termination benefits or termination payments for sick leave.

11. **OPEB Expense** – Changes in the Net OPEB Liability in the current reporting period, which includes Service Cost, interest cost, changes of benefit terms, expected earnings on OPEB Plan investments, reduction of active employees' contributions, OPEB plan administrative expenses, and current period recognition of Deferred Outflows / (Inflows) of Resources.

12. **Pay-as-you-go** – A method of financing a benefit plan under which the contributions to the plan are generally made at about the same time and in about the same amount as benefit payments and expenses becoming due.

13. **Per Capita Costs** – The current cost of providing postretirement health care benefits for one year at each age from the youngest age to the oldest age at which plan participants are expected to receive benefits under the plan.

14. **Present Value of Future Benefits** – Total projected benefits include all benefits estimated to be payable to plan members (retirees and beneficiaries, terminated employees entitled to benefits but not yet receiving them, and current active members) as a result of their service through the valuation date and their expected future service. The actuarial present value of total projected benefits as of the valuation date is the present value of the cost to finance benefits payable in the future, discounted to reflect the expected effects of the time value (present value) of money and the probabilities of payment. Expressed another way, it is the amount that would have to be invested on the valuation date so that the amount invested plus investment earnings will provide sufficient assets to pay total projected benefits when due.

15. **Real Rate of Return** – the rate of return on an investment after adjustment to eliminate inflation.

16. **Select and Ultimate Rates** – Actuarial assumptions that contemplate different rates for successive years. Instead of a single assumed rate with respect to, for example, the investment return assumption, the actuary may apply different rates for the early years of a projection and a single rate for all subsequent years. For example, if an actuary applies an assumed investment return of 8% for year 20W0, then 7.5% for 20W1, and 7% for 20W2 and thereafter, then 8% and 7.5% select rates, and 7% is the ultimate rate.

17. **Service Cost** – The portion of the Actuarial Present Value of projected benefit payments that are attributed to a valuation year by the Actuarial Cost Method.

18. **Substantive Plan** – The terms of an OPEB plan as understood by the employer(s) and plan members.

19. **Total OPEB Liability** – That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of Future Benefits which is attributed to past periods of employee service (or not provided for by the future Service Costs).

Appendix E: City of Westland Credit Rating Reports

MOODY'S
INVESTORS SERVICE

ISSUER COMMENT
25 August 2020

RATING

General Obligation (or GO Related) [1]

A3	Negative

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City of Westland, MI

Annual Comment on Westland

Issuer Profile

The City of Westland is located in Wayne County in the southeastern region of Michigan's Lower Peninsula. The city lies within the Detroit metro area, approximately 20 miles west of the city center. The county has a population of 1,761,382 and a high population density of 2,868 people per square mile. The county's median family income is $58,061 (3rd quartile) and the June 2020 unemployment rate was 20.7% (4th quartile) [2] . The largest industry sectors that drive the local economy are health services, manufacturing and retail trade.

We regard the coronavirus outbreak as a social risk under our environmental, social and governance framework, given the substantial implications for public health and safety and the economy. We do not see any material immediate credit risks for Westland. However, the situation surrounding coronavirus is rapidly evolving and the longer term impact will depend on both the severity and duration of the crisis. If our view of the credit quality of Westland changes, we will update our opinion at that time.

Credit Overview

Westland's credit position is moderate. However, its A3 rating is well under the median rating of Aa3 for cities nationwide. Key credit factors include a sound financial position, a negligible debt burden, a sizable tax base, a fairly healthy wealth and income profile, but very burdensome pension and other post employment benefits (OPEB) liabilities.

Finances: Westland has a satisfactory financial position, which is a strength with respect to the assigned rating of A3. The city's cash balance as a percent of operating revenues (18.5%) is materially below the US median, but remained flat from 2015 to 2019. Additionally, the fund balance as a percent of operating revenues (13.9%) is materially lower than the US median.

Debt and Pensions: The debt burden of Westland is extremely small and is a credit strength when compared to city's A3 rating. The net direct debt to full value (0.4%) is below the US median, and fell slightly between 2015 and 2019. Yet, Westland has unfavorably elevated pension and OPEB liabilities and is slightly weak relative to the assigned rating of A3. The Moody's-adjusted net pension liability to operating revenues (4.2x) unfavorably far surpasses the US median.

Economy and Tax Base: The coronavirus pandemic is driving an unprecedented economic slowdown. We currently forecast real US GDP to decline significantly over the first and second quarters of 2020, but a more moderate decline for the full year. Local governments with the highest exposure to the tourism, health care, consumer and international trade sectors could suffer particularly severe impacts.

The economy and tax base of the city are satisfactory and are sound when compared to its A3 rating. The full value ($4.7 billion) is above the US median, and saw an impressive increase between 2015 and 2019. Additionally, the median family income equals 87.9% of the US level. Lastly, Westland's full value per capita ($57,065) is below other Moody's-rated cities nationwide.

Management and Governance: Michigan cities have an institutional framework score [3] of "A," or moderate. Cities rely on property tax and state aid revenues, which are moderately predictable. Revenue-raising ability is moderate as cities are subject to limits on taxable valuation growth (Proposal A) and revenue growth (Headlee Amendment). The Headlee Amendment restriction creates a permanent reduction in the millage rate, although voters can approve an override. Expenditures are moderately predictable and cities have moderate flexibility to reduce them, but many have cut to minimum service levels. While Michigan's constitution protects accrued pension benefits, changes can be made to future benefits.

Sector Trends - Michigan Cities

Michigan cities will face pressure from likely state aid reductions as the coronavirus outbreak has adversely affected state finances. Leading up to the coronavirus outbreak, the financial position of many cities benefited from strategic budget decisions and improvements in key revenues that will help to provide a buffer against state aid declines. Cities rely on two primary sources of revenue: property taxes, which makes up the largest revenue source for most cities, and state aid. Taxable values have improved in recent years, but this trend may slow given broader economic trends, which may in turn weaken property tax revenue growth. The biggest expenditure pressure for many cities is unfunded pension and retiree healthcare benefits, which have resulted in growing fixed costs. Rising retirement benefit costs coupled with revenue pressure and unfavorable population trends will likely result in crowding out other spending priorities for many Michigan cities.

EXHIBIT 1

Key Indicators [4] [5] Westland

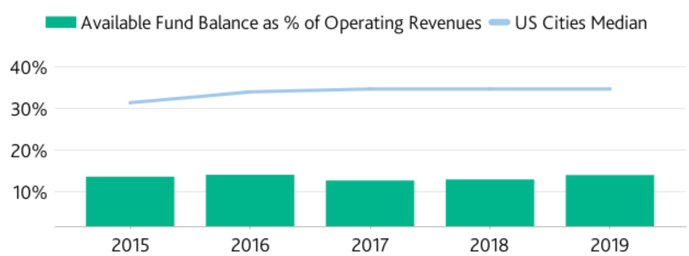
	2015	2016	2017	2018	2019	US Median	Credit Trend
Economy / Tax Base							
Total Full Value	$3,595M	$3,829M	$4,072M	$4,231M	$4,686M	$1,904M	Improved
Full Value Per Capita	$43,507	$46,573	$49,556	$51,532	$57,065	$94,106	Improved
Median Family Income (% of US Median)	90%	89%	86%	88%	88%	111%	Stable
Finances							
Available Fund Balance as % of Operating Revenues	13.5%	14.0%	12.6%	12.9%	13.9%	34.6%	Stable
Net Cash Balance as % of Operating Revenues	20.1%	17.0%	12.2%	13.6%	18.5%	39.6%	Stable
Debt / Pensions							
Net Direct Debt / Full Value	0.7%	0.7%	0.6%	0.5%	0.4%	1.1%	Stable
Net Direct Debt / Operating Revenues	0.43x	0.40x	0.36x	0.32x	0.29x	0.84x	Stable
Moody's-adjusted Net Pension Liability (3-yr average) to Full Value	6.1%	6.2%	6.4%	6.5%	6.2%	1.9%	Stable
Moody's-adjusted Net Pension Liability (3-yr average) to Operating Revenues	3.51x	3.75x	4.10x	4.05x	4.19x	1.56x	Weakened

	2015	2016	2017	2018	2019	US Median
Debt and Financial Data						
Population	82,642	82,218	82,172	82,120	82,120	N/A
Available Fund Balance ($000s)	$8,400	$8,912	$8,069	$8,819	$9,630	$8,028
Net Cash Balance ($000s)	$12,444	$10,811	$7,781	$9,323	$12,799	$9,530
Operating Revenues ($000s)	$62,040	$63,694	$63,931	$68,494	$69,146	$23,172
Net Direct Debt ($000s)	$26,835	$25,326	$23,232	$21,944	$19,953	$19,139
Moody's Adjusted Net Pension Liability (3-yr average) ($000s)	$217,898	$238,770	$262,336	$277,128	$289,942	$35,448

Source: Moody's Investors Service

EXHIBIT 2

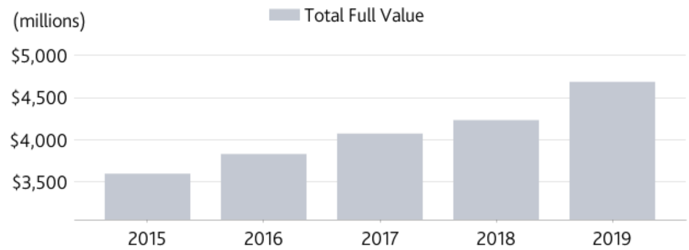
Available fund balance as a percent of operating revenues increased from 2015 to 2019



Source: Issuer financial statements; Moody's Investors Service

EXHIBIT 3

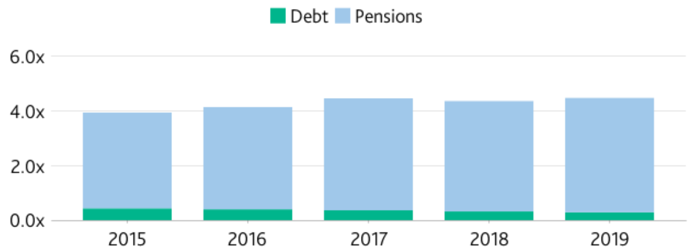
Full value of the property tax base increased from 2015 to 2019



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 2015 to 2019



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 (September 2019) 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 underpins sector strength, while pension challenges remain (May 2019) 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 1225133

CLIENT SERVICES

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

Summary:

Westland, Michigan; General Obligation

14-Mar-2017

Credit Profile		Current Ratings
Westland GO (AGM)		
Unenhanced Rating	A+(SPUR)/Stable	Upgraded
Westland GO (BAM)		
Unenhanced Rating	A+(SPUR)/Stable	Upgraded
Westland GO (BAM)		
Unenhanced Rating	A+(SPUR)/Stable	Upgraded
Westland Tax Incre Fin Auth, Michigan		
Westland, Michigan		
Westland Tax Incre Fin Auth (Westland) GO tax incre (BAM)		
Unenhanced Rating	A+(SPUR)/Stable	Upgraded

Many issues are enhanced by bond insurance.

Rationale

S&P Global Ratings has raised its long-term debt rating on **Westland**, Mich.'s existing general obligation (GO) bonds to 'A+' from 'A'. This includes bonds issued for the city by the **Westland Building Authority** and the **Westland Tax Increment Finance Authority** (TIFA). The rating outlook is stable.

The upgrade reflects the city's strong budgetary performance, which has built and maintained reserves to a level we feel is strong, as well as an improvement in the city's economic indicators that included a decline in the unemployment rate for the county in which the city resides.

A pledge of the city's full-faith-credit-and-resources and an agreement to levy ad valorem property taxes within state limitations secure the bonds.

We do not differentiate between a full faith-credit-and-resources GO pledge to levy ad valorem property taxes on an unlimited and limited basis because we believe that the city possessed the financial stability and flexibility to sustain identical ratings on its unlimited-and limited-tax GO bonds. (It is our understanding that the city has no unlimited-tax GO bonds).

There is a series 2013 bonds issued for the city by TIFA whereby the security for those bonds are payable first by certain tax increment revenues expected and also by the city's full faith and credit limited-tax GO pledge. The rating is based on the limited-tax GO pledge of the city, which we view as the stronger security per our multiple revenue stream criteria.

The long-term ratings reflect our view of the city's:

- Weak economy, with significant population decline, but access to a broad and diverse metropolitan statistical area (MSA);
- Strong management, with good financial policies and practices under our Financial Management Assessment methodology;
- Strong budgetary performance, with balanced operating results in the general fund and an operating surplus at the total governmental fund level in fiscal 2016;
- Strong budgetary flexibility, with an available fund balance in fiscal 2016 of 10.8% of operating expenditures;
- Very strong liquidity, with total government available cash at 43.6% of total governmental fund expenditures and 26.6x governmental debt service, and access to external liquidity we consider strong;
- Adequate debt and contingent liability position, with debt service carrying charges at 1.6% of expenditures and net direct debt that is 51.6% of total governmental fund revenue, as well as low overall net debt at less than 3% of market value, but a large pension and other postemployment benefit (OPEB) obligation and the lack of a plan to sufficiently address the obligation; and
- Strong institutional framework score.

Weak economy

We consider Westland's economy weak. The city, with an estimated population of 81,930, is located in Wayne County in the Detroit-Warren-Dearborn, Mich. MSA, which we consider to be broad and diverse. The city has a projected per capita effective buying income of 85.3% of the national level and per capita market value of $46,737. Overall, the city's market value grew by 6.5% over the past year to $3.8 billion in 2017. Weakening Westland's economy is its demographic profile, which includes significant population decline of negative 6%. The county unemployment rate was 7.3% in 2015.

The city is mostly a bedroom community with the leading local employers mostly retail-related, which includes a large shopping mall. Management has indicated that there has been some recent residential home building activity and more to come. The tax base is approximately 65% residential and 25% commercial and officials are projecting taxable value increases of 3% for 2017 and 2% for 2018.

Strong management

We view the city's management as strong, with good financial policies and practices under our Financial Management Assessment methodology, indicating financial practices exist in most areas, but that governance officials might not formalize or monitor all of them on a regular basis.

Highlights of the city's policies and practices include the use of three years of historical data when forming revenue and expenditure assumptions and quarterly budget-to-actual and investment holdings and earnings reports to the city council. The city has its own investment policy that mirrors state guidelines. It has a long-term five-year financial plan that includes projected revenues, expenditures, and ending fund balances. The city has a five-year capital plan that includes cost estimates and funding sources, updated annually, and is shared with the council. The city lacks a formal fund balance policy but has a management target to maintain 15% of expenditures in reserves, a level it does not currently meet. The city does not have a formal debt management policy but adheres to state guidelines.

Strong budgetary performance

Westland's budgetary performance is strong in our opinion. The city had balanced operating results in the general fund of 0.4% of expenditures, and surplus results across all governmental funds of 1.6% in fiscal 2016.

We expect the city's budgetary performance to remain strong as officials are expecting to adopt a balanced budget for fiscal 2018 (June 30) for the general fund and despite a budgeted deficit of 2% of operating expenses for 2017, city officials project a deficit of less than 1%.

Management cites some higher expenses as a result of a settlement of contracts with some of its bargaining units as the main reason for expected use of reserves in 2017.

The city was able to post general fund surpluses in fiscal 2016 and 2015 as it was able to lower sanitation costs through a combination of purchasing trucks and lowering expenses through negotiations with its provider. In addition, rising pension costs for the safety forces have been aided by an increase to the existing millage rate, which will be able to cover 100% of the costs.

Property taxes are the leading general fund revenue source at 43%, followed by state sources (16%), charges for services (12%), and court fines and fees (9%) in fiscal 2016. We expect these revenue streams to remain stable over the next two years.

We expect the results for the total governmental funds to be similar to those of prior years.

Strong budgetary flexibility

Westland's budgetary flexibility is strong, in our view, with an available fund balance in fiscal 2016 of 10.8% of operating expenditures, or $6.4 million.

We expect the city's budgetary flexibility to remain strong over the next two years as a balanced budget is projected for fiscal 2018 and a slight use of reserves for fiscal 2017. We adjusted general fund expenditures for recurring transfers out to nonmajor funds to support operations and debt service in those funds. The city does not have any taxing flexibility under the Headlee limit.

Very strong liquidity

In our opinion, Westland's liquidity is very strong, with total government available cash at 43.6% of total governmental fund expenditures and 26.6x governmental debt service in 2016. In our view, the city has strong access to external liquidity if necessary.

The city issues GO debt frequently and has demonstrated strong access to the capital markets. We expect its liquidity profile will remain very strong.

Adequate debt and contingent liability profile

In our view, Westland's debt and contingent liability profile is adequate. Total governmental fund debt service is 1.6% of total governmental fund expenditures, and net direct debt is 51.6% of total governmental fund revenue. Overall net debt is low at 2.6% of market value, which is in our view a positive credit factor.

The city does not have any plans to issue additional new money debt in the medium term. It also does not have any direct-purchase or variable-rate debt.

In our opinion, a credit weakness is Westland's large pension and OPEB obligation, without a plan in place that we think will sufficiently address the obligation. Westland's combined required pension and actual OPEB contributions totaled 27.1% of total governmental fund expenditures in 2016. Of that amount, 16.2% represented required contributions to pension obligations, and 10.9% represented OPEB payments. The city made 101% of its annual required pension contribution in 2016. The funded ratio of the largest pension plan is 67.2%.

We consider Westland to have large pension and retiree health care obligations, which prove to be a large, inflexible portion of annual spending.

The city participates in the Municipal Employees' Retirement System of Michigan (MERS), an agent multiemployer defined-benefit plan. The city has closed the defined-benefit pension plan for new non-safety employees and those employees are part of a defined-contribution plan.

The city also sponsors a single-employer defined-benefit pension plan for its police and fire employees, which is its largest plan. The city's total net pension liability for its safety forces is $70.9 million, and the net position is 67.25% of total pension liability. The city has been able to lower the multiplier in its formula for pension benefits for new employees of both the police and fire departments. In addition the police benefit calculation is now calculated on a base salary only with no other additions.

The city sponsors a single-employer retiree health care plan, which it currently only contributes to on a pay-as-you-go basis. As of the last actuarial date, June 30, 2015, the plan has an unfunded actuarial liability of $279.6 million. We understand it no longer offers retiree health care to new hires.

The high fixed cost limits the city's overall flexibility and is likely to remain a long-term budget obstacle. Management is always seeking alternatives to lower these costs and will continue to do so in the near future.

Strong institutional framework

The **institutional framework score** is strong.

Outlook

The stable outlook reflects our anticipation that the city will maintain its very strong budget flexibility and liquidity position as well as its strong budget performance position and as such we don't expect to change the rating within our two-year outlook period.

Upside scenario

If the city's economic indicators increase to a level that we feel is on par with higher rated peers, and as long as the city's debt profile does not decline to a level we feel is weak, the rating could be raised.

Downside scenario

If the budgetary performance falls to a level we feel is adequate or weak and the city's budgetary flexibility falls to a level that we feel is adequate, the rating could be pressured. In addition, if pension and OPEB costs increase materially, the rating could be pressured.

Certain terms used in this report, particularly certain adjectives used to express our view on rating relevant factors, have specific meanings ascribed to them in our criteria, and should therefore be read in conjunction with such criteria. Please see Ratings Criteria at www.standardandpoors.com for further information. Complete ratings information is available to subscribers of RatingsDirect at www.globalcreditportal.com. All ratings affected by this rating action can be found on the S&P Global Ratings' public website at www.standardandpoors.com. Use the Ratings search box located in the left column.

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Appendix F: Pension Obligation Bond Financial Analysis

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City of Westland
County of Wayne, State of Michigan
Limited Tax General Obligation Bonds, Series 2021
(Federally Taxable)
Estimated Payment Schedule - Actuarial Value of Assets

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SOURCES AND USES OF FUNDS

City of Westland
County of Wayne, State of Michigan
Limited Tax General Obligation Bonds, Series 2021
(Federally Taxable)
Estimated Payment Schedule - Actuarial Value of Assets

Sources:	
Bond Proceeds:	
Par Amount	81,270,000.00
	81,270,000.00

Uses:	
Project Fund Deposits:	
Project Fund	80,161,094.00
Delivery Date Expenses:	
Cost of Issuance	1,108,906.00
	81,270,000.00

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BOND DEBT SERVICE

City of Westland
County of Wayne, State of Michigan
Limited Tax General Obligation Bonds, Series 2021
(Federally Taxable)
Estimated Payment Schedule - Actuarial Value of Assets

Period Ending	Principal	Coupon	Interest	Debt Service	Annual Debt Service
11/01/2021	1,770,000	1.027%	1,702,143.45	3,472,143.45	
05/01/2022			1,129,891.80	1,129,891.80	
06/30/2022					4,602,035.25
11/01/2022	2,355,000	1.127%	1,129,891.80	3,484,891.80	
05/01/2023			1,116,621.38	1,116,621.38	
06/30/2023					4,601,513.18
11/01/2023	2,385,000	1.249%	1,116,621.38	3,501,621.38	
05/01/2024			1,101,727.05	1,101,727.05	
06/30/2024					4,603,348.43
11/01/2024	2,415,000	1.402%	1,101,727.05	3,516,727.05	
05/01/2025			1,084,797.90	1,084,797.90	
06/30/2025					4,601,524.95
11/01/2025	2,450,000	1.552%	1,084,797.90	3,534,797.90	
05/01/2026			1,065,785.90	1,065,785.90	
06/30/2026					4,600,583.80
11/01/2026	2,495,000	1.846%	1,065,785.90	3,560,785.90	
05/01/2027			1,042,757.05	1,042,757.05	
06/30/2027					4,603,542.95
11/01/2027	2,545,000	1.996%	1,042,757.05	3,587,757.05	
05/01/2028			1,017,357.95	1,017,357.95	
06/30/2028					4,605,115.00
11/01/2028	2,595,000	2.266%	1,017,357.95	3,612,357.95	
05/01/2029			987,956.60	987,956.60	
06/30/2029					4,600,314.55
11/01/2029	2,660,000	2.366%	987,956.60	3,647,956.60	
05/01/2030			956,488.80	956,488.80	
06/30/2030					4,604,445.40
11/01/2030	2,725,000	2.466%	956,488.80	3,681,488.80	
05/01/2031			922,889.55	922,889.55	
06/30/2031					4,604,378.35
11/01/2031	2,795,000	2.616%	922,889.55	3,717,889.55	
05/01/2032			886,330.95	886,330.95	
06/30/2032					4,604,220.50
11/01/2032	2,870,000	2.766%	886,330.95	3,756,330.95	
05/01/2033			846,638.85	846,638.85	
06/30/2033					4,602,969.80
11/01/2033	2,950,000	2.866%	846,638.85	3,796,638.85	
05/01/2034			804,365.35	804,365.35	
06/30/2034					4,601,004.20
11/01/2034	3,040,000	2.916%	804,365.35	3,844,365.35	
05/01/2035			760,042.15	760,042.15	
06/30/2035					4,604,407.50
11/01/2035	3,130,000	3.016%	760,042.15	3,890,042.15	
05/01/2036			712,841.75	712,841.75	
06/30/2036					4,602,883.90
11/01/2036	3,225,000	3.115%	712,841.75	3,937,841.75	
05/01/2037			662,612.38	662,612.38	
06/30/2037					4,600,454.13
11/01/2037	3,330,000	3.165%	662,612.38	3,992,612.38	
05/01/2038			609,915.13	609,915.13	
06/30/2038					4,602,527.51
11/01/2038	3,440,000	3.215%	609,915.13	4,049,915.13	
05/01/2039			554,617.13	554,617.13	
06/30/2039					4,604,532.26
11/01/2039	3,550,000	3.265%	554,617.13	4,104,617.13	
05/01/2040			496,663.38	496,663.38	
06/30/2040					4,601,280.51
11/01/2040	3,670,000	3.315%	496,663.38	4,166,663.38	
05/01/2041			435,833.13	435,833.13	
06/30/2041					4,602,496.51
11/01/2041	3,795,000	3.365%	435,833.13	4,230,833.13	
05/01/2042			371,982.25	371,982.25	
06/30/2042					4,602,815.38
11/01/2042	3,925,000	3.415%	371,982.25	4,296,982.25	
05/01/2043			304,962.88	304,962.88	
06/30/2043					4,601,945.13
11/01/2043	4,065,000	3.465%	304,962.88	4,369,962.88	
05/01/2044			234,536.75	234,536.75	

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BOND DEBT SERVICE

City of Westland
County of Wayne, State of Michigan
Limited Tax General Obligation Bonds, Series 2021
(Federally Taxable)
Estimated Payment Schedule - Actuarial Value of Assets

Period Ending	Principal	Coupon	Interest	Debt Service	Annual Debt Service
06/30/2044					4,604,499.63
11/01/2044	4,210,000	3.515%	234,536.75	4,444,536.75	
05/01/2045			160,546.00	160,546.00	
06/30/2045					4,605,082.75
11/01/2045	4,360,000	3.565%	160,546.00	4,520,546.00	
05/01/2046			82,829.00	82,829.00	
06/30/2046					4,603,375.00
11/01/2046	4,520,000	3.665%	82,829.00	4,602,829.00	
06/30/2047					4,602,829.00
	81,270,000		38,404,125.57	119,674,125.57	119,674,125.57

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BOND SUMMARY STATISTICS

City of Westland
County of Wayne, State of Michigan
Limited Tax General Obligation Bonds, Series 2021
(Federally Taxable)
Estimated Payment Schedule - Actuarial Value of Assets

Dated Date	02/02/2021
Delivery Date	02/02/2021
Last Maturity	11/01/2046
Arbitrage Yield	3.129259%
True Interest Cost (TIC)	3.129259%
Net Interest Cost (NIC)	3.171636%
All-In TIC	3.249798%
Average Coupon	3.171636%
Average Life (years)	14.899
Duration of Issue (years)	11.612
Par Amount	81,270,000.00
Bond Proceeds	81,270,000.00
Total Interest	38,404,125.57
Net Interest	38,404,125.57
Total Debt Service	119,674,125.57
Maximum Annual Debt Service	4,605,115.00
Average Annual Debt Service	4,648,040.26
Underwriter's Fees (per $1000)	
Average Takedown	
Other Fee	
Total Underwriter's Discount	
Bid Price	100.000000

Bond Component	Par Value	Price	Average Coupon	Average Life	PV of 1 bp change
Serial Bonds	81,270,000.00	100.000	3.172%	14.899	90,625.75
	81,270,000.00			14.899	90,625.75

	TIC	All-In TIC	Arbitrage Yield
Par Value	81,270,000.00	81,270,000.00	81,270,000.00
+ Accrued Interest			
+ Premium (Discount)			
- Underwriter's Discount			
- Cost of Issuance Expense		(1,108,906.00)	
- Other Amounts			
Target Value	81,270,000.00	80,161,094.00	81,270,000.00
Target Date	02/02/2021	02/02/2021	02/02/2021
Yield	3.129259%	3.249798%	3.129259%

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BOND PRICING

City of Westland
County of Wayne, State of Michigan
Limited Tax General Obligation Bonds, Series 2021
(Federally Taxable)
Estimated Payment Schedule - Actuarial Value of Assets

Bond Component	Maturity Date	Amount	Rate	Yield	Price
Serial Bonds:					
	11/01/2021	1,770,000	1.027%	1.027%	100.000
	11/01/2022	2,355,000	1.127%	1.127%	100.000
	11/01/2023	2,385,000	1.249%	1.249%	100.000
	11/01/2024	2,415,000	1.402%	1.402%	100.000
	11/01/2025	2,450,000	1.552%	1.552%	100.000
	11/01/2026	2,495,000	1.846%	1.846%	100.000
	11/01/2027	2,545,000	1.996%	1.996%	100.000
	11/01/2028	2,595,000	2.266%	2.266%	100.000
	11/01/2029	2,660,000	2.366%	2.366%	100.000
	11/01/2030	2,725,000	2.466%	2.466%	100.000
	11/01/2031	2,795,000	2.616%	2.616%	100.000
	11/01/2032	2,870,000	2.766%	2.766%	100.000
	11/01/2033	2,950,000	2.866%	2.866%	100.000
	11/01/2034	3,040,000	2.916%	2.916%	100.000
	11/01/2035	3,130,000	3.016%	3.016%	100.000
	11/01/2036	3,225,000	3.115%	3.115%	100.000
	11/01/2037	3,330,000	3.165%	3.165%	100.000
	11/01/2038	3,440,000	3.215%	3.215%	100.000
	11/01/2039	3,550,000	3.265%	3.265%	100.000
	11/01/2040	3,670,000	3.315%	3.315%	100.000
	11/01/2041	3,795,000	3.365%	3.365%	100.000
	11/01/2042	3,925,000	3.415%	3.415%	100.000
	11/01/2043	4,065,000	3.465%	3.465%	100.000
	11/01/2044	4,210,000	3.515%	3.515%	100.000
	11/01/2045	4,360,000	3.565%	3.565%	100.000
	11/01/2046	4,520,000	3.665%	3.665%	100.000
		81,270,000			

Dated Date	02/02/2021	
Delivery Date	02/02/2021	
First Coupon	11/01/2021	
Par Amount	81,270,000.00	
Original Issue Discount		
Production	81,270,000.00	100.000000%
Underwriter's Discount		
Purchase Price	81,270,000.00	100.000000%
Accrued Interest		
Net Proceeds	81,270,000.00	

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Limited Tax General Obligation Bonds, Series 2021
(Federally Taxable)
Estimated Payment Schedule - Market Value of Assets

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SOURCES AND USES OF FUNDS

City of Westland
County of Wayne, State of Michigan
Limited Tax General Obligation Bonds, Series 2021
(Federally Taxable)
Estimated Payment Schedule - Market Value of Assets

Sources:	
Bond Proceeds:	
Par Amount	82,035,000.00
	82,035,000.00

Uses:	
Project Fund Deposits:	
Project Fund	80,925,555.00
Delivery Date Expenses:	
Cost of Issuance	1,109,445.00
	82,035,000.00

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BOND DEBT SERVICE

City of Westland
County of Wayne, State of Michigan
Limited Tax General Obligation Bonds, Series 2021
(Federally Taxable)
Estimated Payment Schedule - Market Value of Assets

Period Ending	Principal	Coupon	Interest	Debt Service	Annual Debt Service
11/01/2021	1,790,000	1.027%	1,718,073.48	3,508,073.48	
05/01/2022			1,140,448.60	1,140,448.60	
06/30/2022					4,648,522.08
11/01/2022	2,380,000	1.127%	1,140,448.60	3,520,448.60	
05/01/2023			1,127,037.30	1,127,037.30	
06/30/2023					4,647,485.90
11/01/2023	2,405,000	1.249%	1,127,037.30	3,532,037.30	
05/01/2024			1,112,018.08	1,112,018.08	
06/30/2024					4,644,055.38
11/01/2024	2,440,000	1.402%	1,112,018.08	3,552,018.08	
05/01/2025			1,094,913.68	1,094,913.68	
06/30/2025					4,646,931.76
11/01/2025	2,475,000	1.552%	1,094,913.68	3,569,913.68	
05/01/2026			1,075,707.68	1,075,707.68	
06/30/2026					4,645,621.36
11/01/2026	2,520,000	1.846%	1,075,707.68	3,595,707.68	
05/01/2027			1,052,448.08	1,052,448.08	
06/30/2027					4,648,155.76
11/01/2027	2,565,000	1.996%	1,052,448.08	3,617,448.08	
05/01/2028			1,026,849.38	1,026,849.38	
06/30/2028					4,644,297.46
11/01/2028	2,620,000	2.266%	1,026,849.38	3,646,849.38	
05/01/2029			997,164.78	997,164.78	
06/30/2029					4,644,014.16
11/01/2029	2,685,000	2.366%	997,164.78	3,682,164.78	
05/01/2030			965,401.23	965,401.23	
06/30/2030					4,647,566.01
11/01/2030	2,750,000	2.466%	965,401.23	3,715,401.23	
05/01/2031			931,493.73	931,493.73	
06/30/2031					4,646,894.96
11/01/2031	2,820,000	2.616%	931,493.73	3,751,493.73	
05/01/2032			894,608.13	894,608.13	
06/30/2032					4,646,101.86
11/01/2032	2,895,000	2.766%	894,608.13	3,789,608.13	
05/01/2033			854,570.28	854,570.28	
06/30/2033					4,644,178.41
11/01/2033	2,980,000	2.866%	854,570.28	3,834,570.28	
05/01/2034			811,866.88	811,866.88	
06/30/2034					4,646,437.16
11/01/2034	3,065,000	2.916%	811,866.88	3,876,866.88	
05/01/2035			767,179.18	767,179.18	
06/30/2035					4,644,046.06
11/01/2035	3,160,000	3.016%	767,179.18	3,927,179.18	
05/01/2036			719,526.38	719,526.38	
06/30/2036					4,646,705.56
11/01/2036	3,260,000	3.115%	719,526.38	3,979,526.38	
05/01/2037			668,751.88	668,751.88	
06/30/2037					4,648,278.26
11/01/2037	3,360,000	3.165%	668,751.88	4,028,751.88	
05/01/2038			615,579.88	615,579.88	
06/30/2038					4,644,331.76
11/01/2038	3,470,000	3.215%	615,579.88	4,085,579.88	
05/01/2039			559,799.63	559,799.63	
06/30/2039					4,645,379.51
11/01/2039	3,585,000	3.265%	559,799.63	4,144,799.63	
05/01/2040			501,274.50	501,274.50	
06/30/2040					4,646,074.13
11/01/2040	3,705,000	3.315%	501,274.50	4,206,274.50	
05/01/2041			439,864.13	439,864.13	
06/30/2041					4,646,138.63
11/01/2041	3,830,000	3.365%	439,864.13	4,269,864.13	
05/01/2042			375,424.38	375,424.38	
06/30/2042					4,645,288.51
11/01/2042	3,965,000	3.415%	375,424.38	4,340,424.38	
05/01/2043			307,722.00	307,722.00	
06/30/2043					4,648,146.38
11/01/2043	4,100,000	3.465%	307,722.00	4,407,722.00	
05/01/2044			236,689.50	236,689.50	

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BOND DEBT SERVICE

City of Westland
County of Wayne, State of Michigan
Limited Tax General Obligation Bonds, Series 2021
(Federally Taxable)
Estimated Payment Schedule - Market Value of Assets

Period Ending	Principal	Coupon	Interest	Debt Service	Annual Debt Service
06/30/2044					4,644,411.50
11/01/2044	4,245,000	3.515%	236,689.50	4,481,689.50	
05/01/2045			162,083.63	162,083.63	
06/30/2045					4,643,773.13
11/01/2045	4,400,000	3.565%	162,083.63	4,562,083.63	
05/01/2046			83,653.63	83,653.63	
06/30/2046					4,645,737.26
11/01/2046	4,565,000	3.665%	83,653.63	4,648,653.63	
06/30/2047					4,648,653.63
	82,035,000		38,762,226.58	120,797,226.58	120,797,226.58

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BOND SUMMARY STATISTICS

City of Westland
County of Wayne, State of Michigan
Limited Tax General Obligation Bonds, Series 2021
(Federally Taxable)
Estimated Payment Schedule - Market Value of Assets

Dated Date	02/02/2021
Delivery Date	02/02/2021
Last Maturity	11/01/2046
Arbitrage Yield	3.129240%
True Interest Cost (TIC)	3.129240%
Net Interest Cost (NIC)	3.171621%
All-In TIC	3.248711%
Average Coupon	3.171621%
Average Life (years)	14.898
Duration of Issue (years)	11.611
Par Amount	82,035,000.00
Bond Proceeds	82,035,000.00
Total Interest	38,762,226.58
Net Interest	38,762,226.58
Total Debt Service	120,797,226.58
Maximum Annual Debt Service	4,648,653.63
Average Annual Debt Service	4,691,660.54
Underwriter's Fees (per $1000)	
Average Takedown	
Other Fee	
Total Underwriter's Discount	
Bid Price	100.000000

Bond Component	Par Value	Price	Average Coupon	Average Life	PV of 1 bp change
Serial Bonds	82,035,000.00	100.000	3.172%	14.898	91,471.45
	82,035,000.00			14.898	91,471.45

	TIC	All-In TIC	Arbitrage Yield
Par Value	82,035,000.00	82,035,000.00	82,035,000.00
+ Accrued Interest			
+ Premium (Discount)			
- Underwriter's Discount			
- Cost of Issuance Expense		(1,109,445.00)	
- Other Amounts			
Target Value	82,035,000.00	80,925,555.00	82,035,000.00
Target Date	02/02/2021	02/02/2021	02/02/2021
Yield	3.129240%	3.248711%	3.129240%

BOND PRICING

City of Westland
County of Wayne, State of Michigan
Limited Tax General Obligation Bonds, Series 2021
(Federally Taxable)
Estimated Payment Schedule - Market Value of Assets

Bond Component	Maturity Date	Amount	Rate	Yield	Price
Serial Bonds:					
	11/01/2021	1,790,000	1.027%	1.027%	100.000
	11/01/2022	2,380,000	1.127%	1.127%	100.000
	11/01/2023	2,405,000	1.249%	1.249%	100.000
	11/01/2024	2,440,000	1.402%	1.402%	100.000
	11/01/2025	2,475,000	1.552%	1.552%	100.000
	11/01/2026	2,520,000	1.846%	1.846%	100.000
	11/01/2027	2,565,000	1.996%	1.996%	100.000
	11/01/2028	2,620,000	2.266%	2.266%	100.000
	11/01/2029	2,685,000	2.366%	2.366%	100.000
	11/01/2030	2,750,000	2.466%	2.466%	100.000
	11/01/2031	2,820,000	2.616%	2.616%	100.000
	11/01/2032	2,895,000	2.766%	2.766%	100.000
	11/01/2033	2,980,000	2.866%	2.866%	100.000
	11/01/2034	3,065,000	2.916%	2.916%	100.000
	11/01/2035	3,160,000	3.016%	3.016%	100.000
	11/01/2036	3,260,000	3.115%	3.115%	100.000
	11/01/2037	3,360,000	3.165%	3.165%	100.000
	11/01/2038	3,470,000	3.215%	3.215%	100.000
	11/01/2039	3,585,000	3.265%	3.265%	100.000
	11/01/2040	3,705,000	3.315%	3.315%	100.000
	11/01/2041	3,830,000	3.365%	3.365%	100.000
	11/01/2042	3,965,000	3.415%	3.415%	100.000
	11/01/2043	4,100,000	3.465%	3.465%	100.000
	11/01/2044	4,245,000	3.515%	3.515%	100.000
	11/01/2045	4,400,000	3.565%	3.565%	100.000
	11/01/2046	4,565,000	3.665%	3.665%	100.000
		82,035,000			

Dated Date	02/02/2021	
Delivery Date	02/02/2021	
First Coupon	11/01/2021	
Par Amount	82,035,000.00	
Original Issue Discount		
Production	82,035,000.00	100.000000%
Underwriter's Discount		
Purchase Price	82,035,000.00	100.000000%
Accrued Interest		
Net Proceeds	82,035,000.00	

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7.35% - 26 Year Term Level Debt Service - Actuarial Value

Pension Analysis - Market Rates with 7.35% Discount Rate - Assuming Actuarial Value of Assets as of 12-31-2019														
Fiscal Year Ending 6/30	**UAL Payment (a)**	**Anticipated Normal Cost (a)**	**Total UAAL Amortization Payment and Normal Cost**	**1-Nov Principal Payment**	**1-Nov Interest Payment**	**Estimated Interest Rate**	**1-May Interest Payment**	**Estimated Bond Payments (b)**	**UAL Payments Already Made (c)**	**Payments Related to UAL Remaining After Bonding (d)**	**Anticipated Normal Cost (a)**	**Estimated Bond, Normal and UAL Payments**	**Difference**	**Present Value @ 3.13% (e)**
2020														
2021	$6,655,000	$636,000	$7,291,000	$0	$0	0.000%	$0	$0	$6,655,000	$0	$636,000	$7,291,000	$0	$0
2022	6,340,000	523,000	6,863,000	1,770,000	1,702,143	1.027%	1,129,892	4,602,035		101,500	523,000	5,226,535	1,636,465	1,566,835
2023	6,185,000	442,000	6,627,000	2,355,000	1,129,892	1.127%	1,116,621	4,601,513	--	104,500	442,000	5,148,013	1,478,987	1,373,090
2024	6,370,000	387,000	6,757,000	2,385,000	1,116,621	1.249%	1,101,727	4,603,348	--	107,500	387,000	5,097,848	1,659,152	1,493,616
2025	6,560,000	334,500	6,894,500	2,415,000	1,101,727	1.402%	1,084,798	4,601,525	--	110,500	334,500	5,046,525	1,847,975	1,613,121
2026	6,760,000	287,000	7,047,000	2,450,000	1,084,798	1.552%	1,065,786	4,600,584	--	114,000	287,000	5,001,584	2,045,416	1,731,294
2027	6,960,000	247,000	7,207,000	2,495,000	1,065,786	1.846%	1,042,757	4,603,543	--	117,500	247,000	4,968,043	2,238,957	1,837,608
2028	7,170,000	214,000	7,384,000	2,545,000	1,042,757	1.996%	1,017,358	4,605,115	--	121,000	214,000	4,940,115	2,443,885	1,944,939
2029	7,385,000	186,000	7,571,000	2,595,000	1,017,358	2.266%	987,957	4,600,315	--	124,500	186,000	4,910,815	2,660,185	2,052,841
2030	7,595,000	161,500	7,756,500	2,660,000	987,957	2.366%	956,489	4,604,445	--	120,500	161,500	4,886,445	2,870,055	2,147,591
2031	7,800,000	140,500	7,940,500	2,725,000	956,489	2.466%	922,890	4,604,378	--	99,950	140,500	4,844,828	3,095,672	2,246,128
2032	8,010,000	123,000	8,133,000	2,795,000	922,890	2.616%	886,331	4,604,221	--	76,800	123,000	4,804,021	3,328,980	2,342,118
2033	8,230,000	107,500	8,337,500	2,870,000	886,331	2.766%	846,639	4,602,970	--	68,250	107,500	4,778,720	3,558,780	2,427,823
2034	8,455,000	94,050	8,549,050	2,950,000	846,639	2.866%	804,365	4,601,004	--	67,300	94,050	4,762,354	3,786,696	2,504,923
2035	8,695,000	83,300	8,778,300	3,040,000	804,365	2.916%	760,042	4,604,408	--	67,800	83,300	4,755,508	4,022,793	2,580,356
2036	8,955,000	74,450	9,029,450	3,130,000	760,042	3.016%	712,842	4,602,884	--	69,850	74,450	4,747,184	4,282,266	2,663,445
2037	9,225,000	65,950	9,290,950	3,225,000	712,842	3.115%	662,612	4,600,454	--	71,950	65,950	4,738,354	4,552,596	2,745,663
2038	9,500,000	55,750	9,555,750	3,330,000	662,612	3.165%	609,915	4,602,528	--	74,100	55,750	4,732,378	4,823,373	2,820,701
2039	9,785,000	43,800	9,828,800	3,440,000	609,915	3.215%	554,617	4,604,532	--	76,300	43,800	4,724,632	5,104,168	2,894,339
2040	9,295,000	32,300	9,327,300	3,550,000	554,617	3.265%	496,663	4,601,281	--	101,700	32,300	4,735,281	4,592,020	2,524,912
2041	8,005,000	23,050	8,028,050	3,670,000	496,663	3.315%	435,833	4,602,497	--	150,500	23,050	4,776,047	3,252,004	1,733,850
2042	7,460,000	16,150	7,476,150	3,795,000	435,833	3.365%	371,982	4,602,815	--	178,000	16,150	4,796,965	2,679,185	1,385,101
2043	7,680,000	10,950	7,690,950	3,925,000	371,982	3.415%	304,963	4,601,945	--	183,500	10,950	4,796,395	2,894,555	1,451,037
2044	7,910,000	7,150	7,917,150	4,065,000	304,963	3.465%	234,537	4,604,500	--	189,000	7,150	4,800,650	3,116,500	1,514,893
2045	6,470,000	4,650	6,474,650	4,210,000	234,537	3.515%	160,546	4,605,083	--	166,000	4,650	4,775,733	1,698,917	800,765
2046	2,975,000	3,150	2,978,150	4,360,000	160,546	3.565%	82,829	4,603,375	--	104,650	3,150	4,711,175	-1,733,025	-792,056
2047	727,500	2,200	729,700	4,520,000	82,829	3.665%	--	4,602,829		61,100	2,200	4,666,129	-3,936,429	-1,744,503
2048	421,000	1,550	422,550	--	--	3.665%	--	--	--	53,650	1,550	55,200	367,350	157,858
2049	433,500	1,135	434,635	--	--	3.665%	--	--	--	55,250	1,135	56,385	378,250	157,610
2050	446,500	485	446,985	--	--	3.665%	--	--	--	56,950	485	57,435	389,550	157,393
2051	341,500	--	341,500	--	--	3.665%	--	--	--	48,500	--	48,500	293,000	114,791
2052	115,000	--	115,000	--	--	0.00%	--	--	--	19,600	--	19,600	95,400	36,242
	$198,915,000	**$4,309,070**	**$203,224,070**	**$81,270,000**	**$20,053,134**		**$18,350,991**	**$119,674,126**	**$6,655,000**	**$3,062,200**	**$4,309,070**	**$133,700,396**	**$69,523,674**	**$46,484,326**

(a) Based on GRS supplementals report dated 9/8/20; 9/28/20
including 50% of each of the prior and current calendar year figures
(b) Estimate only based on estimated interest rates as of 9/14/2020 plus .25% buffer
(c) Converts calendar year figures from GRS 9/8/20 supplemental report to City's fiscal year basis
For consistency purposes, the schedules assume the City continues to make the full monthly UAL amortization payments through June 30, 2021.
However, upon deposit of the bond proceeds into the System, the City will request the monthly amortization payments be reduced accordingly
(d) Converts remaining UAL amortization payments shown on GRS 9/14/20 supplemental report from a calendar year to a fiscal year basis
(e) Represents Arbitrage Yield

UAL Funded with Bond Proceeds:	**$80,161,094**
Estimated Bond Amount:	**$81,270,000**
All-In TIC:	**3.249%**
NPV Savings as % of Principal:	**57.20%**

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7.35% - 26 Year Term Level Debt Service - Market Value

Pension Analysis - Market Rates with 7.35% Discount Rate - Assuming Market Value of Assets as of 12-31-2019														
Fiscal Year Ending 6/30	**UAL Payment (a)**	**Anticipated Normal Cost (a)**	**Total UAAL Amortization Payment and Normal Cost**	**1-Nov Principal Payment**	**1-Nov Interest Payment**	**Estimated Interest Rate**	**1-May Interest Payment**	**Estimated Bond Payments (b)**	**UAL Payments Already Made (c)**	**Payments Related to UAL Remaining After Bonding (d)**	**Anticipated Normal Cost (a)**	**Estimated Bond, Normal and UAL Payments**	**Difference**	**Present Value @ 3.13% (e)**
2020														
2021	$6,670,000	$636,000	$7,306,000	$0	$0	0.000%	$0	$0	$6,670,000	$0	$636,000	$7,306,000	$0	$0
2022	6,390,000	523,000	6,913,000	1,790,000	1,718,073	1.027%	1,140,449	4,648,522	--	175,000	523,000	5,346,522	1,566,478	1,499,827
2023	6,255,000	442,000	6,697,000	2,380,000	1,140,449	1.127%	1,127,037	4,647,486	--	252,500	442,000	5,341,986	1,355,014	1,257,995
2024	6,445,000	387,000	6,832,000	2,405,000	1,127,037	1.249%	1,112,018	4,644,055	--	260,000	387,000	5,291,055	1,540,945	1,387,203
2025	6,635,000	334,500	6,969,500	2,440,000	1,112,018	1.402%	1,094,914	4,646,932	--	268,000	334,500	5,249,432	1,720,068	1,501,471
2026	6,830,000	287,000	7,117,000	2,475,000	1,094,914	1.552%	1,075,708	4,645,621	--	276,000	287,000	5,208,621	1,908,379	1,615,303
2027	7,035,000	247,000	7,282,000	2,520,000	1,075,708	1.846%	1,052,448	4,648,156	--	284,000	247,000	5,179,156	2,102,844	1,725,897
2028	7,250,000	214,000	7,464,000	2,565,000	1,052,448	1.996%	1,026,849	4,644,297	--	292,500	214,000	5,150,797	2,313,203	1,840,940
2029	7,470,000	186,000	7,656,000	2,620,000	1,026,849	2.266%	997,165	4,644,014	--	301,500	186,000	5,131,514	2,524,486	1,948,126
2030	7,685,000	161,500	7,846,500	2,685,000	997,165	2.366%	965,401	4,647,566	--	302,000	161,500	5,111,066	2,735,434	2,046,862
2031	7,880,000	140,500	8,020,500	2,750,000	965,401	2.466%	931,494	4,646,895	--	278,500	140,500	5,065,895	2,954,605	2,143,778
2032	8,075,000	123,000	8,198,000	2,820,000	931,494	2.616%	894,608	4,646,102	--	247,500	123,000	5,016,602	3,181,398	2,238,291
2033	8,290,000	107,500	8,397,500	2,895,000	894,608	2.766%	854,570	4,644,178	--	238,000	107,500	4,989,678	3,407,822	2,324,843
2034	8,515,000	94,050	8,609,050	2,980,000	854,570	2.866%	811,867	4,646,437	--	241,500	94,050	4,981,987	3,627,063	2,399,330
2035	8,760,000	83,300	8,843,300	3,065,000	811,867	2.916%	767,179	4,644,046	--	247,000	83,300	4,974,346	3,868,954	2,481,685
2036	9,025,000	74,450	9,099,450	3,160,000	767,179	3.016%	719,526	4,646,706	--	254,500	74,450	4,975,656	4,123,794	2,564,888
2037	9,295,000	65,950	9,360,950	3,260,000	719,526	3.115%	668,752	4,648,278	--	262,000	65,950	4,976,228	4,384,722	2,644,427
2038	9,575,000	55,750	9,630,750	3,360,000	668,752	3.165%	615,580	4,644,332	--	270,000	55,750	4,970,082	4,660,668	2,725,561
2039	9,860,000	43,800	9,903,800	3,470,000	615,580	3.215%	559,800	4,645,380	--	278,000	43,800	4,967,180	4,936,621	2,799,340
2040	9,365,000	32,300	9,397,300	3,585,000	559,800	3.265%	501,275	4,646,074	--	294,500	32,300	4,972,874	4,424,426	2,432,770
2041	8,070,000	23,050	8,093,050	3,705,000	501,275	3.315%	439,864	4,646,139	--	320,000	23,050	4,989,189	3,103,861	1,654,873
2042	7,520,000	16,150	7,536,150	3,830,000	439,864	3.365%	375,424	4,645,289	--	338,000	16,150	4,999,439	2,536,712	1,311,449
2043	7,745,000	10,950	7,755,950	3,965,000	375,424	3.415%	307,722	4,648,146	--	348,500	10,950	5,007,596	2,748,354	1,377,753
2044	7,980,000	7,150	7,987,150	4,100,000	307,722	3.465%	236,690	4,644,412	--	359,000	7,150	5,010,562	2,976,589	1,446,890
2045	6,530,000	4,650	6,534,650	4,245,000	236,690	3.515%	162,084	4,643,773	--	308,000	4,650	4,956,423	1,578,227	743,883
2046	3,010,000	3,150	3,013,150	4,400,000	162,084	3.565%	83,654	4,645,737	--	176,500	3,150	4,825,387	(1,812,237)	(828,263)
2047	744,000	2,200	746,200	4,565,000	83,654	3.665%	--	4,648,654		85,750	2,200	4,736,604	(3,990,404)	(1,768,431)
2048	434,500	1,550	436,050	--	--	3.665%	--	--	--	71,600	1,550	73,150	362,900	155,947
2049	447,500	1,135	448,635	--	--	3.665%	--	--	--	73,750	1,135	74,885	373,750	155,736
2050	461,000	485	461,485	--	--	3.665%	--	--	--	75,950	485	76,435	385,050	155,576
2051	352,500	--	352,500	--	--	3.665%	--	--	--	62,650	--	62,650	289,850	113,558
2052	118,500	--	118,500	--	--	0.00%	--	--	--	24,100	--	24,100	94,400	35,862
	$200,718,000	**$4,309,070**	**$205,027,070**	**$82,035,000**	**$20,240,150**		**$18,522,076**	**$120,797,226**	**$6,670,000**	**$7,266,800**	**$4,309,070**	**$139,043,096**	**$65,983,974**	**$44,133,370**

UAL Funded with Bond Proceeds:	**$80,925,555**
Estimated Bond Amount:	**$82,035,000**
All-In TIC:	**3.248%**
NPV Savings as % of Principal:	**53.80%**

(a) Based on GRS supplemental reports dated 9/8/20; 9/28/20
including 50% of each of the prior and current calendar year figures
(b) Estimate only based on estimated interest rates as of 9/14/2020 plus .25% buffer
(c) Converts calendar year figures from GRS 9/8/20 supplemental report to City's fiscal year basis.
For consistency purposes, the schedules assume the City continues to make the full monthly UAL amortization payments through June 30, 2021
However, upon deposit of the bond proceeds into the System, the City will request the monthly amortization payments be reduced accordingly
(d) Converts remaining UAL amortization payments shown on GRS 9/14/20 supplemental report from a calendar year to a fiscal year basis.
(e) Represents Arbitrage Yield

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

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City of Westland
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Summary of Structuring Alternatives
Using Actuarial Value of Assets

NPV Savings	Current Bond	Current Bond	Current Bond
	NPV Savings $	NPV Savings $	NPV Savings $
Expected Rate of Return (7.35%)	$54,374,991	**$46,484,326**	$39,229,445
Exp. Rate of Return less 100 bps (6.35%)	$40,677,546	**$33,605,078**	$27,101,548
Exp. Rate of Return less 200 bps (5.35%)	$33,536,725	**$21,490,920**	$15,693,423

**Current Interest Rates reflect market conditions as of September 14, 2020 plus .25%*

- Schedules based on actuarial value of assets

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City of Westland
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7.35% - 26 Year Term Level Debt Service - Actuarial Value
Current Estimated Interest Rates

Pension Analysis - Market Rates with 7.35% Discount Rate - Assuming Actuarial Value of Assets as of 12-31-2019

Fiscal Year Ending 6/30	UAL Payment (a)	Anticipated Normal Cost (a)	Total UAAL Amortization Payment and Normal Cost	1-Nov Principal Payment	1-Nov Interest Payment	Estimated Interest Rate	1-May Interest Payment	Estimated Bond Payments (b)	UAL Payments Already Made (c)	Payments Related to UAL Remaining After Bonding (d)	Anticipated Normal Cost (a)	Estimated Bond, Normal and UAL Payments	Difference	Present Value @ 3.13% (e)
2020														
2021	$6,655,000	$636,000	$7,291,000	$0	$0	0.000%	$0	$0	$6,655,000	$0	$636,000	$7,291,000	$0	$0
2022	6,340,000	523,000	6,863,000	1,770,000	1,702,143	1.027%	1,129,892	4,602,035	--	101,500	523,000	5,226,535	1,636,465	1,566,835
2023	6,185,000	442,000	6,627,000	2,355,000	1,129,892	1.127%	1,116,621	4,601,513	--	104,500	442,000	5,148,013	1,478,987	1,373,090
2024	6,370,000	387,000	6,757,000	2,385,000	1,116,621	1.249%	1,101,727	4,603,348	--	107,500	387,000	5,097,848	1,659,152	1,493,616
2025	6,560,000	334,500	6,894,500	2,415,000	1,101,727	1.402%	1,084,798	4,601,525	--	110,500	334,500	5,046,525	1,847,975	1,613,121
2026	6,760,000	287,000	7,047,000	2,450,000	1,084,798	1.552%	1,065,786	4,600,584	--	114,000	287,000	5,001,584	2,045,416	1,731,294
2027	6,960,000	247,000	7,207,000	2,495,000	1,065,786	1.846%	1,042,757	4,603,543	--	117,500	247,000	4,968,043	2,238,957	1,837,608
2028	7,170,000	214,000	7,384,000	2,545,000	1,042,757	1.996%	1,017,358	4,605,115	--	121,000	214,000	4,940,115	2,443,885	1,944,939
2029	7,385,000	186,000	7,571,000	2,595,000	1,017,358	2.266%	987,957	4,600,315	--	124,500	186,000	4,910,815	2,660,185	2,052,841
2030	7,595,000	161,500	7,756,500	2,660,000	987,957	2.366%	956,489	4,604,445	--	120,500	161,500	4,886,445	2,870,055	2,147,591
2031	7,800,000	140,500	7,940,500	2,725,000	956,489	2.466%	922,890	4,604,378	--	99,950	140,500	4,844,828	3,095,672	2,246,128
2032	8,010,000	123,000	8,133,000	2,795,000	922,890	2.616%	886,331	4,604,221	--	76,800	123,000	4,804,021	3,328,980	2,342,118
2033	8,230,000	107,500	8,337,500	2,870,000	886,331	2.766%	846,639	4,602,970	--	68,250	107,500	4,778,720	3,558,780	2,427,823
2034	8,455,000	94,050	8,549,050	2,950,000	846,639	2.866%	804,365	4,601,004	--	67,300	94,050	4,762,354	3,786,696	2,504,923
2035	8,695,000	83,300	8,778,300	3,040,000	804,365	2.916%	760,042	4,604,408	--	67,800	83,300	4,755,508	4,022,793	2,580,356
2036	8,955,000	74,450	9,029,450	3,130,000	760,042	3.016%	712,842	4,602,884	--	69,850	74,450	4,747,184	4,282,266	2,663,445
2037	9,225,000	65,950	9,290,950	3,225,000	712,842	3.115%	662,612	4,600,454	--	71,950	65,950	4,738,354	4,552,596	2,745,663
2038	9,500,000	55,750	9,555,750	3,330,000	662,612	3.165%	609,915	4,602,528	--	74,100	55,750	4,732,378	4,823,373	2,820,701
2039	9,785,000	43,800	9,828,800	3,440,000	609,915	3.215%	554,617	4,604,532	--	76,300	43,800	4,724,632	5,104,168	2,894,339
2040	9,295,000	32,300	9,327,300	3,550,000	554,617	3.265%	496,663	4,601,281	--	101,700	32,300	4,735,281	4,592,020	2,524,912
2041	8,005,000	23,050	8,028,050	3,670,000	496,663	3.315%	435,833	4,602,497	--	150,500	23,050	4,776,047	3,252,004	1,733,850
2042	7,460,000	16,150	7,476,150	3,795,000	435,833	3.365%	371,982	4,602,815	--	178,000	16,150	4,796,965	2,679,185	1,385,101
2043	7,680,000	10,950	7,690,950	3,925,000	371,982	3.415%	304,963	4,601,945	--	183,500	10,950	4,796,395	2,894,555	1,451,037
2044	7,910,000	7,150	7,917,150	4,065,000	304,963	3.465%	234,537	4,604,500	--	189,000	7,150	4,800,650	3,116,500	1,514,893
2045	6,470,000	4,650	6,474,650	4,210,000	234,537	3.515%	160,546	4,605,083	--	166,000	4,650	4,775,733	1,698,917	800,765
2046	2,975,000	3,150	2,978,150	4,360,000	160,546	3.565%	82,829	4,603,375	--	104,650	3,150	4,711,175	(1,733,025)	(792,056)
2047	727,500	2,200	729,700	4,520,000	82,829	3.665%	--	4,602,829		61,100	2,200	4,666,129	(3,936,429)	(1,744,503)
2048	421,000	1,550	422,550	--	--	3.665%	--	--	--	53,650	1,550	55,200	367,350	157,858
2049	433,500	1,135	434,635	--	--	3.665%	--	--	--	55,250	1,135	56,385	378,250	157,610
2050	446,500	485	446,985	--	--	3.665%	--	--	--	56,950	485	57,435	389,550	157,393
2051	341,500	--	341,500	--	--	3.665%	--	--	--	48,500	--	48,500	293,000	114,791
2052	115,000	--	115,000	--	--	0.00%	--	--	--	19,600	--	19,600	95,400	36,242
	$198,915,000	**$4,309,070**	**$203,224,070**	**$81,270,000**	**$20,053,134**		**$18,350,991**	**$119,674,126**	**$6,655,000**	**$3,062,200**	**$4,309,070**	**$133,700,396**	**$69,523,674**	**$46,484,326**

(a) Based on GRS supplemental reports dated 9/8/20; 9/28/20
including 50% of each of the prior and current calendar year figures
(b) Estimate only based on estimated interest rates as of 9/14/2020 plus .25% buffer
(c) Converts calendar year figures from GRS 9/8/20 supplemental report to City's fiscal year basis.
For consistency purposes, the schedules assume the City continues to make the full monthly UAL amortization payments through June 30, 2021
However, upon deposit of the bond proceeds into the System, the City will request the monthly amortization payments be reduced accordingly
(d) Converts remaining UAL amortization payments shown on GRS 9/14/20 supplemental report from a calendar year to a fiscal year basis.
(e) Represents Arbitrage Yield

UAL Funded with Bond Proceeds:	**$80,161,094**
Estimated Bond Amount:	**$81,270,000**
All-In TIC:	**3.249%**
NPV Savings as % of Principal:	**57.20%**

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City of Westland
Limited Tax General Obligation Bonds
Series 2021
(Federally Taxable)

6.35% - 26 Year Term Level Debt Service - Actuarial Value
Current Estimated Interest Rates

Pension Analysis - Market Rates with 6.35% Discount Rate - Assuming Actuarial Value of Assets as of 12-31-2019

Fiscal Year Ending 6/30	UAL Payment (a)	Anticipated Normal Cost (a)	Total UAAL Amortization Payment and Normal Cost	1-Nov Principal Payment	1-Nov Interest Payment	Estimated Interest Rate	1-May Interest Payment	Estimated Bond Payments (b)	UAL Payments Already Made (c)	Payments Related to UAL Remaining After Bonding (d)	Anticipated Normal Cost (a)	Estimated Bond, Normal and UAL Payments	Difference	Present Value @ 3.13% (e)
2020														
2021	$6,800,000	$681,500	$7,481,500	$0	$0	0.000%	$0	$0	$6,800,000	$0	$681,500	$7,481,500	$0	$0
2022	6,785,000	654,500	7,439,500	1,770,000	1,702,143	1.027%	1,129,892	4,602,035	--	1,290,000	654,500	6,546,535	892,965	854,970
2023	6,790,000	604,500	7,394,500	2,355,000	1,129,892	1.127%	1,116,621	4,601,513	--	1,310,000	604,500	6,516,013	878,487	815,586
2024	6,990,000	530,500	7,520,500	2,385,000	1,116,621	1.249%	1,101,727	4,603,348	--	1,350,000	530,500	6,483,848	1,036,652	933,224
2025	7,200,000	460,000	7,660,000	2,415,000	1,101,727	1.402%	1,084,798	4,601,525	--	1,395,000	460,000	6,456,525	1,203,475	1,050,529
2026	7,420,000	396,000	7,816,000	2,450,000	1,084,798	1.552%	1,065,786	4,600,584	--	1,440,000	396,000	6,436,584	1,379,416	1,167,574
2027	7,640,000	341,500	7,981,500	2,495,000	1,065,786	1.846%	1,042,757	4,603,543	--	1,480,000	341,500	6,425,043	1,556,457	1,277,451
2028	7,865,000	297,000	8,162,000	2,545,000	1,042,757	1.996%	1,017,358	4,605,115	--	1,525,000	297,000	6,427,115	1,734,885	1,380,689
2029	8,100,000	259,000	8,359,000	2,595,000	1,017,358	2.266%	987,957	4,600,315	--	1,570,000	259,000	6,429,315	1,929,685	1,489,121
2030	8,330,000	226,000	8,556,000	2,660,000	987,957	2.366%	956,489	4,604,445	--	1,600,000	226,000	6,430,445	2,125,555	1,590,500
2031	8,480,000	198,000	8,678,000	2,725,000	956,489	2.466%	922,890	4,604,378	--	1,550,000	198,000	6,352,378	2,325,622	1,687,402
2032	8,575,000	173,500	8,748,500	2,795,000	922,890	2.616%	886,331	4,604,221	--	1,435,000	173,500	6,212,721	2,535,780	1,784,059
2033	8,745,000	152,000	8,897,000	2,870,000	886,331	2.766%	846,639	4,602,970	--	1,400,000	152,000	6,154,970	2,742,030	1,870,630
2034	8,985,000	133,500	9,118,500	2,950,000	846,639	2.866%	804,365	4,601,004	--	1,440,000	133,500	6,174,504	2,943,996	1,947,471
2035	9,245,000	118,500	9,363,500	3,040,000	804,365	2.916%	760,042	4,604,408	--	1,480,000	118,500	6,202,908	3,160,593	2,027,312
2036	9,520,000	106,500	9,626,500	3,130,000	760,042	3.016%	712,842	4,602,884	--	1,520,000	106,500	6,229,384	3,397,116	2,112,907
2037	9,805,000	94,500	9,899,500	3,225,000	712,842	3.115%	662,612	4,600,454	--	1,565,000	94,500	6,259,954	3,639,546	2,195,004
2038	10,075,000	79,850	10,154,850	3,330,000	662,612	3.165%	609,915	4,602,528	--	1,615,000	79,850	6,297,378	3,857,473	2,255,844
2039	10,400,000	62,950	10,462,950	3,440,000	609,915	3.215%	554,617	4,604,532	--	1,665,000	62,950	6,332,482	4,130,468	2,342,198
2040	9,910,000	46,700	9,956,700	3,550,000	554,617	3.265%	496,663	4,601,281	--	1,625,000	46,700	6,272,981	3,683,720	2,025,485
2041	8,530,000	33,550	8,563,550	3,670,000	496,663	3.315%	435,833	4,602,497	--	1,490,000	33,550	6,126,047	2,437,504	1,299,588
2042	7,960,000	23,700	7,983,700	3,795,000	435,833	3.365%	371,982	4,602,815	--	1,445,000	23,700	6,071,515	1,912,185	988,572
2043	8,200,000	16,350	8,216,350	3,925,000	371,982	3.415%	304,963	4,601,945	--	1,490,000	16,350	6,108,295	2,108,055	1,056,766
2044	8,445,000	11,050	8,456,050	4,065,000	304,963	3.465%	234,537	4,604,500	--	1,535,000	11,050	6,150,550	2,305,500	1,120,676
2045	6,935,000	7,500	6,942,500	4,210,000	234,537	3.515%	160,546	4,605,083	--	1,295,000	7,500	5,907,583	1,034,917	487,796
2046	3,260,000	5,250	3,265,250	4,360,000	160,546	3.565%	82,829	4,603,375	--	691,500	5,250	5,300,125	(2,034,875)	(930,013)
2047	880,500	3,850	884,350	4,520,000	82,829	3.665%	--	4,602,829		288,000	3,850	4,894,679	(4,010,329)	(1,777,253)
2048	549,000	2,950	551,950	--	--	3.665%	--	--	--	226,500	2,950	229,450	322,500	138,585
2049	565,500	2,350	567,850	--	--	3.665%	--	--	--	233,500	2,350	235,850	332,000	138,339
2050	582,500	1,050	583,550	--	--	3.665%	--	--	--	240,500	1,050	241,550	342,000	138,181
2051	445,500	--	445,500	--	--	3.665%	--	--	--	184,000	--	184,000	261,500	102,450
2052	150,000	--	150,000	--	--	0.00%	--	--	--	62,000	--	62,000	88,000	33,430
	$214,163,000	**$5,724,100**	**$219,887,100**	**$81,270,000**	**$20,053,134**		**$18,350,991**	**$119,674,126**	**$6,800,000**	**$37,436,000**	**$5,724,100**	**$169,634,226**	**$50,252,874**	**$33,605,078**

(a) Based on GRS supplemental reports dated 9/8/20; 9/28/20
including 50% of each of the prior and current calendar year figures
(b) Estimate only based on estimated interest rates as of 9/14/2020 plus .25% buffer
(c) Converts calendar year figures from GRS 9/8/20 supplemental report to City's fiscal year basis.
For consistency purposes, the schedules assume the City continues to make the full monthly UAL amortization payments through June 30, 2021
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(d) Converts remaining UAL amortization payments shown on GRS 9/14/20 supplemental report from a calendar year to a fiscal year basis.
(e) Represents Arbitrage Yield

UAL Funded with Bond Proceeds:	**$80,161,094**
Estimated Bond Amount:	**$81,270,000**
All-In TIC:	**3.249%**
NPV Savings as % of Principal:	**41.35%**

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City of Westland
Limited Tax General Obligation Bonds
Series 2021
(Federally Taxable)

5.35% - 26 Year Term Level Debt Service - Actuarial Value
Current Estimated Interest Rates

Pension Analysis - Market Rates with 5.35% Discount Rate - Assuming Actuarial Value of Assets as of 12-31-2019

Fiscal Year Ending 6/30	UAL Payment (a)	Anticipated Normal Cost (a)	Total UAAL Amortization Payment and Normal Cost	1-Nov Principal Payment	1-Nov Interest Payment	Estimated Interest Rate	1-May Interest Payment	Estimated Bond Payments (b)	UAL Payments Already Made (c)	Payments Related to UAL Remaining After Bonding (d)	Anticipated Normal Cost (a)	Estimated Bond, Normal and UAL Payments	Difference	Present Value @ 3.13% (e)
2020														
2021	$6,955,000	$741,000	$7,696,000	$0	$0	0.000%	$0	$0	$6,955,000	$0	$741,000	$7,696,000	$0	$0
2022	7,245,000	826,500	8,071,500	1,770,000	1,702,143	1.027%	1,129,892	4,602,035	--	2,470,000	826,500	7,898,535	172,965	165,605
2023	7,410,000	817,500	8,227,500	2,355,000	1,129,892	1.127%	1,116,621	4,601,513	--	2,510,000	817,500	7,929,013	298,487	277,115
2024	7,635,000	719,500	8,354,500	2,385,000	1,116,621	1.249%	1,101,727	4,603,348	--	2,585,000	719,500	7,907,848	446,652	402,089
2025	7,865,000	625,000	8,490,000	2,415,000	1,101,727	1.402%	1,084,798	4,601,525	--	2,660,000	625,000	7,886,525	603,475	526,781
2026	8,100,000	539,000	8,639,000	2,450,000	1,084,798	1.552%	1,065,786	4,600,584	--	2,740,000	539,000	7,879,584	759,416	642,790
2027	8,340,000	466,500	8,806,500	2,495,000	1,065,786	1.846%	1,042,757	4,603,543	--	2,820,000	466,500	7,890,043	916,457	752,176
2028	8,590,000	407,000	8,997,000	2,545,000	1,042,757	1.996%	1,017,358	4,605,115	--	2,905,000	407,000	7,917,115	1,079,885	859,415
2029	8,850,000	356,000	9,206,000	2,595,000	1,017,358	2.266%	987,957	4,600,315	--	2,995,000	356,000	7,951,315	1,254,685	968,229
2030	9,095,000	311,500	9,406,500	2,660,000	987,957	2.366%	956,489	4,604,445	--	3,065,000	311,500	7,980,945	1,425,555	1,066,707
2031	9,185,000	273,500	9,458,500	2,725,000	956,489	2.466%	922,890	4,604,378	--	2,975,000	273,500	7,852,878	1,605,622	1,164,992
2032	9,150,000	241,000	9,391,000	2,795,000	922,890	2.616%	886,331	4,604,221	--	2,755,000	241,000	7,600,221	1,790,780	1,259,911
2033	9,265,000	212,000	9,477,000	2,870,000	886,331	2.766%	846,639	4,602,970	--	2,685,000	212,000	7,499,970	1,977,030	1,348,743
2034	9,520,000	186,500	9,706,500	2,950,000	846,639	2.866%	804,365	4,601,004	--	2,755,000	186,500	7,542,504	2,163,996	1,431,497
2035	9,790,000	166,000	9,956,000	3,040,000	804,365	2.916%	760,042	4,604,408	--	2,835,000	166,000	7,605,408	2,350,593	1,507,750
2036	10,065,000	149,000	10,214,000	3,130,000	760,042	3.016%	712,842	4,602,884	--	2,920,000	149,000	7,671,884	2,542,116	1,581,122
2037	10,350,000	132,500	10,482,500	3,225,000	712,842	3.115%	662,612	4,600,454	--	3,005,000	132,500	7,737,954	2,744,546	1,655,231
2038	10,700,000	112,500	10,812,500	3,330,000	662,612	3.165%	609,915	4,602,528	--	3,095,000	112,500	7,810,028	3,002,473	1,755,842
2039	11,050,000	88,850	11,138,850	3,440,000	609,915	3.215%	554,617	4,604,532	--	3,190,000	88,850	7,883,382	3,255,468	1,846,026
2040	10,485,000	66,200	10,551,200	3,550,000	554,617	3.265%	496,663	4,601,281	--	3,085,000	66,200	7,752,481	2,798,720	1,538,870
2041	9,045,000	47,800	9,092,800	3,670,000	496,663	3.315%	435,833	4,602,497	--	2,775,000	47,800	7,425,297	1,667,504	889,052
2042	8,445,000	34,050	8,479,050	3,795,000	435,833	3.365%	371,982	4,602,815	--	2,655,000	34,050	7,291,865	1,187,185	613,758
2043	8,700,000	23,800	8,723,800	3,925,000	371,982	3.415%	304,963	4,601,945	--	2,730,000	23,800	7,355,745	1,368,055	685,804
2044	8,965,000	16,350	8,981,350	4,065,000	304,963	3.465%	234,537	4,604,500	--	2,815,000	16,350	7,435,850	1,545,500	751,249
2045	7,385,000	11,350	7,396,350	4,210,000	234,537	3.515%	160,546	4,605,083	--	2,370,000	11,350	6,986,433	409,917	193,210
2046	3,525,000	8,200	3,533,200	4,360,000	160,546	3.565%	82,829	4,603,375	--	1,250,500	8,200	5,862,075	(2,328,875)	(1,064,381)
2047	1,020,500	6,200	1,026,700	4,520,000	82,829	3.665%	--	4,602,829		502,000	6,200	5,111,029	(4,084,329)	(1,810,047)
2048	670,500	4,900	675,400	--	--	3.665%	--	--	--	389,000	4,900	393,900	281,500	120,967
2049	690,500	4,050	694,550	--	--	3.665%	--	--	--	400,500	4,050	404,550	290,000	120,838
2050	711,500	1,850	713,350	--	--	3.665%	--	--	--	412,500	1,850	414,350	299,000	120,808
2051	544,000	--	544,000	--	--	3.665%	--	--	--	315,500	--	315,500	228,500	89,522
2052	183,000	--	183,000	--	--	0.00%	--	--	--	106,000	--	106,000	77,000	29,252
	$229,530,000	**$7,596,100**	**$237,126,100**	**$81,270,000**	**$20,053,134**		**$18,350,991**	**$119,674,126**	**$6,955,000**	**$70,771,000**	**$7,596,100**	**$204,996,226**	**$32,129,874**	**$21,490,920**

(a) Based on GRS supplemental reports dated 9/8/20; 9/28/20
including 50% of each of the prior and current calendar year figures
(b) Estimate only based on estimated interest rates as of 9/14/2020 plus .25% buffer
(c) Converts calendar year figures from GRS 9/8/20 supplemental report to City's fiscal year basis.
For consistency purposes, the schedules assume the City continues to make the full monthly UAL amortization payments through June 30, 2021
However, upon deposit of the bond proceeds into the System, the City will request the monthly amortization payments be reduced accordingly
(d) Converts remaining UAL amortization payments shown on GRS 9/14/20 supplemental report from a calendar year to a fiscal year basis.
(e) Represents Arbitrage Yield

UAL Funded with Bond Proceeds:	**$80,161,094**
Estimated Bond Amount:	**$81,270,000**
All-In TIC:	**3.249%**
NPV Savings as % of Principal:	**26.44%**

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City of Westland
Limited Tax General Obligation Bonds
Series 2021
(Federally Taxable)

7.35% - 26 Year Term Level Debt Service - Actuarial Value
Current Estimated Interest Rates plus 50 bps

Pension Analysis - Market Rates with 7.35% Discount Rate - Assuming Actuarial Value of Assets as of 12-31-2019

Fiscal Year Ending 6/30	UAL Payment (a)	Anticipated Normal Cost (a)	Total UAAL Amortization Payment and Normal Cost	1-Nov Principal Payment	1-Nov Interest Payment	Estimated Interest Rate	1-May Interest Payment	Estimated Bond Payments (b)	UAL Payments Already Made (c)	Payments Related to UAL Remaining After Bonding (d)	Anticipated Normal Cost (a)	Estimated Bond, Normal and UAL Payments	Difference	Present Value @ 3.64% (e)
2020						0.000%								
2021	$6,655,000	$636,000	$7,291,000	$0	$0	0.000%	$0	$0	$6,655,000	$0	$636,000	$7,291,000	$0	$0
2022	6,340,000	523,000	6,863,000	1,510,000	2,024,155	1.527%	1,342,924	4,877,079	--	101,500	523,000	5,501,579	1,361,421	1,294,475
2023	6,185,000	442,000	6,627,000	2,210,000	1,342,924	1.627%	1,324,946	4,877,870	--	104,500	442,000	5,424,370	1,202,630	1,103,352
2024	6,370,000	387,000	6,757,000	2,245,000	1,324,946	1.749%	1,305,313	4,875,259	--	107,500	387,000	5,369,759	1,387,241	1,228,047
2025	6,560,000	334,500	6,894,500	2,285,000	1,305,313	1.902%	1,283,583	4,873,896	--	110,500	334,500	5,318,896	1,575,604	1,345,833
2026	6,760,000	287,000	7,047,000	2,335,000	1,283,583	2.052%	1,259,626	4,878,209	--	114,000	287,000	5,279,209	1,767,791	1,456,989
2027	6,960,000	247,000	7,207,000	2,385,000	1,259,626	2.346%	1,231,650	4,876,275	--	117,500	247,000	5,240,775	1,966,225	1,563,650
2028	7,170,000	214,000	7,384,000	2,445,000	1,231,650	2.496%	1,201,136	4,877,786	--	121,000	214,000	5,212,786	2,171,214	1,666,058
2029	7,385,000	186,000	7,571,000	2,510,000	1,201,136	2.766%	1,166,423	4,877,559	--	124,500	186,000	5,188,059	2,382,941	1,764,338
2030	7,595,000	161,500	7,756,500	2,580,000	1,166,423	2.866%	1,129,451	4,875,874	--	120,500	161,500	5,157,874	2,598,626	1,856,493
2031	7,800,000	140,500	7,940,500	2,655,000	1,129,451	2.966%	1,090,078	4,874,529	--	99,950	140,500	5,114,979	2,825,521	1,947,732
2032	8,010,000	123,000	8,133,000	2,740,000	1,090,078	3.116%	1,047,389	4,877,466	--	76,800	123,000	5,077,266	3,055,734	2,032,484
2033	8,230,000	107,500	8,337,500	2,830,000	1,047,389	3.266%	1,001,175	4,878,563	--	68,250	107,500	5,054,313	3,283,187	2,107,116
2034	8,455,000	94,050	8,549,050	2,925,000	1,001,175	3.366%	951,947	4,878,122	--	67,300	94,050	5,039,472	3,509,578	2,173,346
2035	8,695,000	83,300	8,778,300	3,025,000	951,947	3.416%	900,280	4,877,227	--	67,800	83,300	5,028,327	3,749,973	2,240,697
2036	8,955,000	74,450	9,029,450	3,130,000	900,280	3.516%	845,255	4,875,534	--	69,850	74,450	5,019,834	4,009,616	2,311,739
2037	9,225,000	65,950	9,290,950	3,245,000	845,255	3.615%	786,601	4,876,856	--	71,950	65,950	5,014,756	4,276,194	2,378,891
2038	9,500,000	55,750	9,555,750	3,365,000	786,601	3.665%	724,938	4,876,539	--	74,100	55,750	5,006,389	4,549,361	2,442,016
2039	9,785,000	43,800	9,828,800	3,490,000	724,938	3.715%	660,111	4,875,048	--	76,300	43,800	4,995,148	4,833,652	2,503,540
2040	9,295,000	32,300	9,327,300	3,625,000	660,111	3.765%	591,870	4,876,981	--	101,700	32,300	5,010,981	4,316,319	2,157,117
2041	8,005,000	23,050	8,028,050	3,765,000	591,870	3.815%	520,053	4,876,923	--	150,500	23,050	5,050,473	2,977,577	1,435,834
2042	7,460,000	16,150	7,476,150	3,910,000	520,053	3.865%	444,492	4,874,545	--	178,000	16,150	5,068,695	2,407,455	1,120,161
2043	7,680,000	10,950	7,690,950	4,065,000	444,492	3.915%	364,920	4,874,412	--	183,500	10,950	5,068,862	2,622,088	1,177,201
2044	7,910,000	7,150	7,917,150	4,230,000	364,920	3.965%	281,060	4,875,980	--	189,000	7,150	5,072,130	2,845,021	1,232,452
2045	6,470,000	4,650	6,474,650	4,405,000	281,060	4.015%	192,630	4,878,689	--	166,000	4,650	5,049,339	1,425,311	595,765
2046	2,975,000	3,150	2,978,150	4,585,000	192,630	4.065%	99,439	4,877,069	--	104,650	3,150	4,984,869	(2,006,719)	(809,344)
2047	727,500	2,200	729,700	4,775,000	99,439	4.165%	--	4,874,439		61,100	2,200	4,937,739	(4,208,039)	(1,637,599)
2048	421,000	1,550	422,550	--	--	4.165%	--	--	--	53,650	1,550	55,200	367,350	137,940
2049	433,500	1,135	434,635	--	--	4.165%	--	--	--	55,250	1,135	56,385	378,250	137,047
2050	446,500	485	446,985	--	--	4.165%	--	--	--	56,950	485	57,435	389,550	136,187
2051	341,500	--	341,500	--	--	3.665%	--	--	--	48,500	--	48,500	293,000	98,837
2052	115,000	--	115,000	--	--	0.00%	--	--	--	19,600	--	19,600	95,400	31,051
	$198,915,000	**$4,309,070**	**$203,224,070**	**$81,270,000**	**$23,771,441**		**$21,747,286**	**$126,788,728**	**$6,655,000**	**$3,062,200**		**$140,814,998**	**$62,409,072**	**$39,229,445**

UAL Funded with Bond Proceeds:	**$80,161,094**
Estimated Bond Amount:	**$81,270,000**
All-In TIC:	**3.761%**
NPV Savings as % of Principal:	**48.27%**

(a) Based on GRS supplemental reports dated 9/8/20; 9/28/20
including 50% of each of the prior and current calendar year figures
(b) Estimate only based on estimated interest rates as of 9/14/2020 plus .25% buffer
(c) Converts calendar year figures from GRS 9/8/20 supplemental report to City's fiscal year basis.
For consistency purposes, the schedules assume the City continues to make the full monthly UAL amortization payments through June 30, 2021
However, upon deposit of the bond proceeds into the System, the City will request the monthly amortization payments be reduced accordingly
(d) Converts remaining UAL amortization payments shown on GRS 9/14/20 supplemental report from a calendar year to a fiscal year basis.
(e) Represents Arbitrage Yield

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City of Westland
Limited Tax General Obligation Bonds
Series 2021
(Federally Taxable)

6.35% - 26 Year Term Level Debt Service - Actuarial Value
Current Estimated Interest Rates plus 50 bps

Pension Analysis - Market Rates with 6.35% Discount Rate - Assuming Actuarial Value of Assets as of 12-31-2019														
Fiscal Year Ending 6/30	UAL Payment (a)	Anticipated Normal Cost (a)	Total UAAL Amortization Payment and Normal Cost	1-Nov Principal Payment	1-Nov Interest Payment	Estimated Interest Rate	1-May Interest Payment	Estimated Bond Payments (b)	UAL Payments Already Made (c)	Payments Related to UAL Remaining After Bonding (d)	Anticipated Normal Cost (a)	Estimated Bond, Normal and UAL Payments	Difference	Present Value @ 3.64% (e)
2020						0.000%								
2021	$6,800,000	$681,500	$7,481,500	$0	$0	0.000%	$0	$0	$6,800,000	$0	$681,500	$7,481,500	$0	$0
2022	6,785,000	654,500	7,439,500	1,510,000	2,024,155	1.527%	1,342,924	4,877,079	--	1,290,000	654,500	6,821,579	617,921	587,536
2023	6,790,000	604,500	7,394,500	2,210,000	1,342,924	1.627%	1,324,946	4,877,870	--	1,310,000	604,500	6,792,370	602,130	552,424
2024	6,990,000	530,500	7,520,500	2,245,000	1,324,946	1.749%	1,305,313	4,875,259	--	1,350,000	530,500	6,755,759	764,741	676,983
2025	7,200,000	460,000	7,660,000	2,285,000	1,305,313	1.902%	1,283,583	4,873,896	--	1,395,000	460,000	6,728,896	931,104	795,321
2026	7,420,000	396,000	7,816,000	2,335,000	1,283,583	2.052%	1,259,626	4,878,209	--	1,440,000	396,000	6,714,209	1,101,791	908,081
2027	7,640,000	341,500	7,981,500	2,385,000	1,259,626	2.346%	1,231,650	4,876,275	--	1,480,000	341,500	6,697,775	1,283,725	1,020,888
2028	7,865,000	297,000	8,162,000	2,445,000	1,231,650	2.496%	1,201,136	4,877,786	--	1,525,000	297,000	6,699,786	1,462,214	1,122,014
2029	8,100,000	259,000	8,359,000	2,510,000	1,201,136	2.766%	1,166,423	4,877,559	--	1,570,000	259,000	6,706,559	1,652,441	1,223,473
2030	8,330,000	226,000	8,556,000	2,580,000	1,166,423	2.866%	1,129,451	4,875,874	--	1,600,000	226,000	6,701,874	1,854,126	1,324,612
2031	8,480,000	198,000	8,678,000	2,655,000	1,129,451	2.966%	1,090,078	4,874,529	--	1,550,000	198,000	6,622,529	2,055,471	1,416,909
2032	8,575,000	173,500	8,748,500	2,740,000	1,090,078	3.116%	1,047,389	4,877,466	--	1,435,000	173,500	6,485,966	2,262,534	1,504,897
2033	8,745,000	152,000	8,897,000	2,830,000	1,047,389	3.266%	1,001,175	4,878,563	--	1,400,000	152,000	6,430,563	2,466,437	1,582,934
2034	8,985,000	133,500	9,118,500	2,925,000	1,001,175	3.366%	951,947	4,878,122	--	1,440,000	133,500	6,451,622	2,666,878	1,651,494
2035	9,245,000	118,500	9,363,500	3,025,000	951,947	3.416%	900,280	4,877,227	--	1,480,000	118,500	6,475,727	2,887,773	1,725,512
2036	9,520,000	106,500	9,626,500	3,130,000	900,280	3.516%	845,255	4,875,534	--	1,520,000	106,500	6,502,034	3,124,466	1,801,406
2037	9,805,000	94,500	9,899,500	3,245,000	845,255	3.615%	786,601	4,876,856	--	1,565,000	94,500	6,536,356	3,363,144	1,870,952
2038	10,075,000	79,850	10,154,850	3,365,000	786,601	3.665%	724,938	4,876,539	--	1,615,000	79,850	6,571,389	3,583,461	1,923,538
2039	10,400,000	62,950	10,462,950	3,490,000	724,938	3.715%	660,111	4,875,048	--	1,665,000	62,950	6,602,998	3,859,952	1,999,222
2040	9,910,000	46,700	9,956,700	3,625,000	660,111	3.765%	591,870	4,876,981	--	1,625,000	46,700	6,548,681	3,408,019	1,703,187
2041	8,530,000	33,550	8,563,550	3,765,000	591,870	3.815%	520,053	4,876,923	--	1,490,000	33,550	6,400,473	2,163,077	1,043,070
2042	7,960,000	23,700	7,983,700	3,910,000	520,053	3.865%	444,492	4,874,545	--	1,445,000	23,700	6,343,245	1,640,455	763,285
2043	8,200,000	16,350	8,216,350	4,065,000	444,492	3.915%	364,920	4,874,412	--	1,490,000	16,350	6,380,762	1,835,588	824,098
2044	8,445,000	11,050	8,456,050	4,230,000	364,920	3.965%	281,060	4,875,980	--	1,535,000	11,050	6,422,030	2,034,021	881,130
2045	6,935,000	7,500	6,942,500	4,405,000	281,060	4.015%	192,630	4,878,689	--	1,295,000	7,500	6,181,189	761,311	318,220
2046	3,260,000	5,250	3,265,250	4,585,000	192,630	4.065%	99,439	4,877,069	--	691,500	5,250	5,573,819	(2,308,569)	(931,085)
2047	880,500	3,850	884,350	4,775,000	99,439	4.165%	--	4,874,439		288,000	3,850	5,166,289	(4,281,939)	(1,666,358)
2048	549,000	2,950	551,950	--	--	4.165%	--	--	--	226,500	2,950	229,450	322,500	121,098
2049	565,500	2,350	567,850	--	--	4.165%	--	--	--	233,500	2,350	235,850	332,000	120,290
2050	582,500	1,050	583,550	--	--	4.165%	--	--	--	240,500	1,050	241,550	342,000	119,563
2051	445,500	--	445,500	--	--	4.165%	--	--	--	184,000	--	184,000	261,500	88,211
2052	150,000	--	150,000	--	--	0.00%	--	--	--	62,000	--	62,000	88,000	28,643
	$214,163,000	**$5,724,100**	**$219,887,100**	**$81,270,000**	**$23,771,441**		**$21,747,286**	**$126,788,728**	**$6,800,000**	**$37,436,000**		**$176,748,828**	**$43,138,272**	**$27,101,548**

(a) Based on GRS supplemental reports dated 9/8/20; 9/28/20
including 50% of each of the prior and current calendar year figures
(b) Estimate only based on estimated interest rates as of 9/14/2020 plus .25% buffer
(c) Converts calendar year figures from GRS 9/8/20 supplemental report to City's fiscal year basis.
For consistency purposes, the schedules assume the City continues to make the full monthly UAL amortization payments through June 30, 2021
However, upon deposit of the bond proceeds into the System, the City will request the monthly amortization payments be reduced accordingly
(d) Converts remaining UAL amortization payments shown on GRS 9/14/20 supplemental report from a calendar year to a fiscal year basis.
(e) Represents Arbitrage Yield

UAL Funded with Bond Proceeds:	**$80,161,094**
Estimated Bond Amount:	**$81,270,000**
All-In TIC:	**3.761%**
NPV Savings as % of Principal:	**33.35%**

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City of Westland
Limited Tax General Obligation Bonds
Series 2021
(Federally Taxable)

5.35% - 26 Year Term Level Debt Service - Actuarial Value
Current Estimated Interest Rates plus 50 bps

Pension Analysis - Market Rates with 5.35% Discount Rate - Assuming Actuarial Value of Assets as of 12-31-2019

Fiscal Year Ending 6/30	UAL Payment (a)	Anticipated Normal Cost (a)	Total UAAL Amortization Payment and Normal Cost	1-Nov Principal Payment	1-Nov Interest Payment	Estimated Interest Rate	1-May Interest Payment	Estimated Bond Payments (b)	UAL Payments Already Made (c)	Payments Related to UAL Remaining After Bonding (d)	Anticipated Normal Cost (a)	Estimated Bond, Normal and UAL Payments	Difference	Present Value @ 3.64% (e)
2020						0.000%								
2021	$6,955,000	$741,000	$7,696,000	$0	$0	0.000%	$0	$0	$6,955,000	$0	$741,000	$7,696,000	$0	$0
2022	7,245,000	826,500	8,071,500	1,510,000	2,024,155	1.527%	1,342,924	4,877,079	--	2,470,000	826,500	8,173,579	(102,079)	(97,059)
2023	7,410,000	817,500	8,227,500	2,210,000	1,342,924	1.627%	1,324,946	4,877,870	--	2,510,000	817,500	8,205,370	22,130	20,303
2024	7,635,000	719,500	8,354,500	2,245,000	1,324,946	1.749%	1,305,313	4,875,259	--	2,585,000	719,500	8,179,759	174,741	154,689
2025	7,865,000	625,000	8,490,000	2,285,000	1,305,313	1.902%	1,283,583	4,873,896	--	2,660,000	625,000	8,158,896	331,104	282,819
2026	8,100,000	539,000	8,639,000	2,335,000	1,283,583	2.052%	1,259,626	4,878,209	--	2,740,000	539,000	8,157,209	481,791	397,086
2027	8,340,000	466,500	8,806,500	2,385,000	1,259,626	2.346%	1,231,650	4,876,275	--	2,820,000	466,500	8,162,775	643,725	511,925
2028	8,590,000	407,000	8,997,000	2,445,000	1,231,650	2.496%	1,201,136	4,877,786	--	2,905,000	407,000	8,189,786	807,214	619,407
2029	8,850,000	356,000	9,206,000	2,510,000	1,201,136	2.766%	1,166,423	4,877,559	--	2,995,000	356,000	8,228,559	977,441	723,701
2030	9,095,000	311,500	9,406,500	2,580,000	1,166,423	2.866%	1,129,451	4,875,874	--	3,065,000	311,500	8,252,374	1,154,126	824,523
2031	9,185,000	273,500	9,458,500	2,655,000	1,129,451	2.966%	1,090,078	4,874,529	--	2,975,000	273,500	8,123,029	1,335,471	920,587
2032	9,150,000	241,000	9,391,000	2,740,000	1,090,078	3.116%	1,047,389	4,877,466	--	2,755,000	241,000	7,873,466	1,517,534	1,009,369
2033	9,265,000	212,000	9,477,000	2,830,000	1,047,389	3.266%	1,001,175	4,878,563	--	2,685,000	212,000	7,775,563	1,701,437	1,091,965
2034	9,520,000	186,500	9,706,500	2,925,000	1,001,175	3.366%	951,947	4,878,122	--	2,755,000	186,500	7,819,622	1,886,878	1,168,471
2035	9,790,000	166,000	9,956,000	3,025,000	951,947	3.416%	900,280	4,877,227	--	2,835,000	166,000	7,878,227	2,077,773	1,241,518
2036	10,065,000	149,000	10,214,000	3,130,000	900,280	3.516%	845,255	4,875,534	--	2,920,000	149,000	7,944,534	2,269,466	1,308,457
2037	10,350,000	132,500	10,482,500	3,245,000	845,255	3.615%	786,601	4,876,856	--	3,005,000	132,500	8,014,356	2,468,144	1,373,054
2038	10,700,000	112,500	10,812,500	3,365,000	786,601	3.665%	724,938	4,876,539	--	3,095,000	112,500	8,084,039	2,728,461	1,464,589
2039	11,050,000	88,850	11,138,850	3,490,000	724,938	3.715%	660,111	4,875,048	--	3,190,000	88,850	8,153,898	2,984,952	1,546,025
2040	10,485,000	66,200	10,551,200	3,625,000	660,111	3.765%	591,870	4,876,981	--	3,085,000	66,200	8,028,181	2,523,019	1,260,900
2041	9,045,000	47,800	9,092,800	3,765,000	591,870	3.815%	520,053	4,876,923	--	2,775,000	47,800	7,699,723	1,393,077	671,764
2042	8,445,000	34,050	8,479,050	3,910,000	520,053	3.865%	444,492	4,874,545	--	2,655,000	34,050	7,563,595	915,455	425,951
2043	8,700,000	23,800	8,723,800	4,065,000	444,492	3.915%	364,920	4,874,412	--	2,730,000	23,800	7,628,212	1,095,588	491,871
2044	8,965,000	16,350	8,981,350	4,230,000	364,920	3.965%	281,060	4,875,980	--	2,815,000	16,350	7,707,330	1,274,021	551,901
2045	7,385,000	11,350	7,396,350	4,405,000	281,060	4.015%	192,630	4,878,689	--	2,370,000	11,350	7,260,039	136,311	56,976
2046	3,525,000	8,200	3,533,200	4,585,000	192,630	4.065%	99,439	4,877,069	--	1,250,500	8,200	6,135,769	(2,602,569)	(1,049,661)
2047	1,020,500	6,200	1,026,700	4,775,000	99,439	4.165%	--	4,874,439		502,000	6,200	5,382,639	(4,355,939)	(1,695,155)
2048	670,500	4,900	675,400	--	--	4.165%	--	--	--	389,000	4,900	393,900	281,500	105,703
2049	690,500	4,050	694,550	--	--	4.165%	--	--	--	400,500	4,050	404,550	290,000	105,072
2050	711,500	1,850	713,350	--	--	4.165%	--	--	--	412,500	1,850	414,350	299,000	104,530
2051	544,000	--	544,000	--	--	4.165%	--	--	--	315,500	--	315,500	228,500	77,079
2052	183,000	--	183,000	--	--	0.00%	--	--	--	106,000	--	106,000	77,000	25,062
	$229,530,000	**$7,596,100**	**$237,126,100**	**$81,270,000**	**$23,771,441**		**$21,747,286**	**$126,788,728**	**$6,955,000**	**$70,771,000**	**$7,596,100**	**$212,110,828**	**$25,015,272**	**$15,693,423**

(a) Based on GRS supplemental reports dated 9/8/20; 9/28/20
including 50% of each of the prior and current calendar year figures
(b) Estimate only based on estimated interest rates as of 9/14/2020 plus .25% buffer
(c) Converts calendar year figures from GRS 9/8/20 supplemental report to City's fiscal year basis.
For consistency purposes, the schedules assume the City continues to make the full monthly UAL amortization payments through June 30, 2021
However, upon deposit of the bond proceeds into the System, the City will request the monthly amortization payments be reduced accordingly
(d) Converts remaining UAL amortization payments shown on GRS 9/14/20 supplemental report from a calendar year to a fiscal year basis.
(e) Represents Arbitrage Yield
0

UAL Funded with Bond Proceeds:	**$80,161,094**
Estimated Bond Amount:	**$81,270,000**
All-In TIC:	**3.761%**
NPV Savings as % of Principal:	**19.31%**

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City of Westland
Limited Tax General Obligation Bonds
Series 2021
(Federally Taxable)

7.35% - 26 Year Term Level Debt Service - Actuarial Value
Current Estimated Interest Rates less 50 bps

Pension Analysis - Market Rates with 7.35% Discount Rate - Assuming Actuarial Value of Assets as of 12-31-2019

Fiscal Year Ending 6/30	UAL Payment (a)	Anticipated Normal Cost (a)	Total UAAL Amortization Payment and Normal Cost	1-Nov Principal Payment	1-Nov Interest Payment	Estimated Interest Rate	1-May Interest Payment	Estimated Bond Payments (b)	UAL Payments Already Made (c)	Payments Related to UAL Remaining After Bonding (d)	Anticipated Normal Cost (a)	Estimated Bond, Normal and UAL Payments	Difference	Present Value @ 2.62% (e)
2020						0.000%								
2021	$6,655,000	$636,000	$7,291,000	$0	$0	0.000%	$0	$0	$6,655,000	$0	$636,000	$7,291,000	$0	$0
2022	6,340,000	523,000	6,863,000	2,040,000	1,379,675	0.527%	917,827	4,337,502	--	101,500	523,000	4,962,002	1,900,998	1,832,861
2023	6,185,000	442,000	6,627,000	2,510,000	917,827	0.627%	909,958	4,337,785	--	104,500	442,000	4,884,285	1,742,715	1,637,345
2024	6,370,000	387,000	6,757,000	2,530,000	909,958	0.749%	900,483	4,340,442	--	107,500	387,000	4,834,942	1,922,058	1,759,733
2025	6,560,000	334,500	6,894,500	2,550,000	900,483	0.902%	888,983	4,339,466	--	110,500	334,500	4,784,466	2,110,034	1,882,504
2026	6,760,000	287,000	7,047,000	2,575,000	888,983	1.052%	875,438	4,339,421	--	114,000	287,000	4,740,421	2,306,579	2,005,307
2027	6,960,000	247,000	7,207,000	2,605,000	875,438	1.346%	857,907	4,338,345	--	117,500	247,000	4,702,845	2,504,155	2,121,485
2028	7,170,000	214,000	7,384,000	2,640,000	857,907	1.496%	838,160	4,336,066	--	121,000	214,000	4,671,066	2,712,934	2,239,671
2029	7,385,000	186,000	7,571,000	2,685,000	838,160	1.766%	814,451	4,337,611	--	124,500	186,000	4,648,111	2,922,889	2,351,384
2030	7,595,000	161,500	7,756,500	2,735,000	814,451	1.866%	788,933	4,338,385	--	120,500	161,500	4,620,385	3,136,116	2,458,496
2031	7,800,000	140,500	7,940,500	2,790,000	788,933	1.966%	761,508	4,340,441	--	99,950	140,500	4,580,891	3,359,609	2,566,447
2032	8,010,000	123,000	8,133,000	2,845,000	761,508	2.116%	731,408	4,337,915	--	76,800	123,000	4,537,715	3,595,285	2,676,351
2033	8,230,000	107,500	8,337,500	2,910,000	731,408	2.266%	698,437	4,339,845	--	68,250	107,500	4,515,595	3,821,905	2,772,400
2034	8,455,000	94,050	8,549,050	2,975,000	698,437	2.366%	663,243	4,336,681	--	67,300	94,050	4,498,031	4,051,020	2,863,562
2035	8,695,000	83,300	8,778,300	3,050,000	663,243	2.416%	626,399	4,339,642	--	67,800	83,300	4,490,742	4,287,558	2,953,374
2036	8,955,000	74,450	9,029,450	3,125,000	626,399	2.516%	587,087	4,338,486	--	69,850	74,450	4,482,786	4,546,664	3,051,880
2037	9,225,000	65,950	9,290,950	3,205,000	587,087	2.615%	545,181	4,337,268	--	71,950	65,950	4,475,168	4,815,782	3,149,979
2038	9,500,000	55,750	9,555,750	3,290,000	545,181	2.665%	501,342	4,336,523	--	74,100	55,750	4,466,373	5,089,377	3,243,931
2039	9,785,000	43,800	9,828,800	3,380,000	501,342	2.715%	455,459	4,336,801	--	76,300	43,800	4,456,901	5,371,900	3,336,576
2040	9,295,000	32,300	9,327,300	3,475,000	455,459	2.765%	407,417	4,337,875	--	101,700	32,300	4,471,875	4,855,425	2,938,777
2041	8,005,000	23,050	8,028,050	3,575,000	407,417	2.815%	357,099	4,339,515	--	150,500	23,050	4,513,065	3,514,985	2,073,142
2042	7,460,000	16,150	7,476,150	3,675,000	357,099	2.865%	304,454	4,336,553	--	178,000	16,150	4,530,703	2,945,447	1,692,868
2043	7,680,000	10,950	7,690,950	3,785,000	304,454	2.915%	249,288	4,338,742	--	183,500	10,950	4,533,192	3,157,758	1,768,548
2044	7,910,000	7,150	7,917,150	3,895,000	249,288	2.965%	191,544	4,335,832	--	189,000	7,150	4,531,982	3,385,168	1,847,500
2045	6,470,000	4,650	6,474,650	4,015,000	191,544	3.015%	131,018	4,337,563	--	166,000	4,650	4,508,213	1,966,437	1,045,804
2046	2,975,000	3,150	2,978,150	4,140,000	131,018	3.065%	67,573	4,338,591	--	104,650	3,150	4,446,391	(1,468,241)	(760,911)
2047	727,500	2,200	729,700	4,270,000	67,573	3.165%	--	4,337,573		61,100	2,200	4,400,873	(3,671,173)	(1,853,991)
2048	421,000	1,550	422,550	--	--	3.165%	--	--	--	53,650	1,550	55,200	367,350	180,779
2049	433,500	1,135	434,635	--	--	3.165%	--	--	--	55,250	1,135	56,385	378,250	181,390
2050	446,500	485	446,985	--	--	3.165%	--	--	--	56,950	485	57,435	389,550	182,039
2051	341,500	--	341,500	--	--	3.165%	--	--	--	48,500	--	48,500	293,000	133,424
2052	115,000	--	115,000	--	--	0.00%	--	--	--	19,600	--	19,600	95,400	42,333
	$198,915,000	**$4,309,070**	**$203,224,070**	**$81,270,000**	**$16,450,272**		**$15,070,597**	**$112,790,869**	**$6,655,000**	**$3,062,200**	**$4,309,070**	**$126,817,139**	**$76,406,931**	**$54,374,991**

(a) Based on GRS supplemental reports dated 9/8/20; 9/28/20
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(e) Represents Arbitrage Yield

UAL Funded with Bond Proceeds:	**$80,161,094**
Estimated Bond Amount:	**$81,270,000**
All-In TIC:	**2.738%**
NPV Savings as % of Principal:	**66.91%**

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6.35% - 26 Year Term Level Debt Service - Actuarial Value
Current Estimated Interest Rates less 50 bps

Pension Analysis - Market Rates with 6.35% Discount Rate - Assuming Actuarial Value of Assets as of 12-31-2019

Fiscal Year Ending 6/30	UAL Payment (a)	Anticipated Normal Cost (a)	Total UAAL Amortization Payment and Normal Cost	1-Nov Principal Payment	1-Nov Interest Payment	Estimated Interest Rate	1-May Interest Payment	Estimated Bond Payments (b)	UAL Payments Already Made (c)	Payments Related to UAL Remaining After Bonding (d)	Anticipated Normal Cost (a)	Estimated Bond, Normal and UAL Payments	Difference	Present Value @ 2.62% (e)
2020						0.000%								
2021	$6,800,000	$681,500	$7,481,500	$0	$0	0.000%	$0	$0	$6,800,000	$0	$681,500	$7,481,500	$0	$0
2022	6,785,000	654,500	7,439,500	2,040,000	1,379,675	0.527%	917,827	4,337,502	--	1,290,000	654,500	6,282,002	1,157,498	1,116,010
2023	6,790,000	604,500	7,394,500	2,510,000	917,827	0.627%	909,958	4,337,785	--	1,310,000	604,500	6,252,285	1,142,215	1,073,153
2024	6,990,000	530,500	7,520,500	2,530,000	909,958	0.749%	900,483	4,340,442	--	1,350,000	530,500	6,220,942	1,299,558	1,189,806
2025	7,200,000	460,000	7,660,000	2,550,000	900,483	0.902%	888,983	4,339,466	--	1,395,000	460,000	6,194,466	1,465,534	1,307,502
2026	7,420,000	396,000	7,816,000	2,575,000	888,983	1.052%	875,438	4,339,421	--	1,440,000	396,000	6,175,421	1,640,579	1,426,296
2027	7,640,000	341,500	7,981,500	2,605,000	875,438	1.346%	857,907	4,338,345	--	1,480,000	341,500	6,159,845	1,821,655	1,543,281
2028	7,865,000	297,000	8,162,000	2,640,000	857,907	1.496%	838,160	4,336,066	--	1,525,000	297,000	6,158,066	2,003,934	1,654,354
2029	8,100,000	259,000	8,359,000	2,685,000	838,160	1.766%	814,451	4,337,611	--	1,570,000	259,000	6,166,611	2,192,389	1,763,717
2030	8,330,000	226,000	8,556,000	2,735,000	814,451	1.866%	788,933	4,338,385	--	1,600,000	226,000	6,164,385	2,391,616	1,874,860
2031	8,480,000	198,000	8,678,000	2,790,000	788,933	1.966%	761,508	4,340,441	--	1,550,000	198,000	6,088,441	2,589,559	1,978,196
2032	8,575,000	173,500	8,748,500	2,845,000	761,508	2.116%	731,408	4,337,915	--	1,435,000	173,500	5,946,415	2,802,085	2,085,888
2033	8,745,000	152,000	8,897,000	2,910,000	731,408	2.266%	698,437	4,339,845	--	1,400,000	152,000	5,891,845	3,005,155	2,179,932
2034	8,985,000	133,500	9,118,500	2,975,000	698,437	2.366%	663,243	4,336,681	--	1,440,000	133,500	5,910,181	3,208,320	2,267,879
2035	9,245,000	118,500	9,363,500	3,050,000	663,243	2.416%	626,399	4,339,642	--	1,480,000	118,500	5,938,142	3,425,358	2,359,469
2036	9,520,000	106,500	9,626,500	3,125,000	626,399	2.516%	587,087	4,338,486	--	1,520,000	106,500	5,964,986	3,661,514	2,457,737
2037	9,805,000	94,500	9,899,500	3,205,000	587,087	2.615%	545,181	4,337,268	--	1,565,000	94,500	5,996,768	3,902,732	2,552,757
2038	10,075,000	79,850	10,154,850	3,290,000	545,181	2.665%	501,342	4,336,523	--	1,615,000	79,850	6,031,373	4,123,477	2,628,273
2039	10,400,000	62,950	10,462,950	3,380,000	501,342	2.715%	455,459	4,336,801	--	1,665,000	62,950	6,064,751	4,398,200	2,731,795
2040	9,910,000	46,700	9,956,700	3,475,000	455,459	2.765%	407,417	4,337,875	--	1,625,000	46,700	6,009,575	3,947,125	2,389,023
2041	8,530,000	33,550	8,563,550	3,575,000	407,417	2.815%	357,099	4,339,515	--	1,490,000	33,550	5,863,065	2,700,485	1,592,749
2042	7,960,000	23,700	7,983,700	3,675,000	357,099	2.865%	304,454	4,336,553	--	1,445,000	23,700	5,805,253	2,178,447	1,252,042
2043	8,200,000	16,350	8,216,350	3,785,000	304,454	2.915%	249,288	4,338,742	--	1,490,000	16,350	5,845,092	2,371,258	1,328,057
2044	8,445,000	11,050	8,456,050	3,895,000	249,288	2.965%	191,544	4,335,832	--	1,535,000	11,050	5,881,882	2,574,168	1,404,886
2045	6,935,000	7,500	6,942,500	4,015,000	191,544	3.015%	131,018	4,337,563	--	1,295,000	7,500	5,640,063	1,302,437	692,671
2046	3,260,000	5,250	3,265,250	4,140,000	131,018	3.065%	67,573	4,338,591	--	691,500	5,250	5,035,341	(1,770,091)	(917,344)
2047	880,500	3,850	884,350	4,270,000	67,573	3.165%	--	4,337,573		288,000	3,850	4,629,423	(3,745,073)	(1,891,311)
2048	549,000	2,950	551,950	--	--	3.165%	--	--	--	226,500	2,950	229,450	322,500	158,708
2049	565,500	2,350	567,850	--	--	3.165%	--	--	--	233,500	2,350	235,850	332,000	159,211
2050	582,500	1,050	583,550	--	--	3.165%	--	--	--	240,500	1,050	241,550	342,000	159,819
2051	445,500	--	445,500	--	--	3.165%	--	--	--	184,000	--	184,000	261,500	119,080
2052	150,000	--	150,000	--	--	0.00%	--	--	--	62,000	--	62,000	88,000	39,050
	$214,163,000	**$5,724,100**	**$219,887,100**	**$81,270,000**	**$16,450,272**		**$15,070,597**	**$112,790,869**	**$6,800,000**	**$37,436,000**		**$162,750,969**	**$57,136,131**	**$40,677,546**

(a) Based on GRS supplemental reports dated 9/8/20; 9/28/20
including 50% of each of the prior and current calendar year figures
(b) Estimate only based on estimated interest rates as of 9/14/2020 plus .25% buffer
(c) Converts calendar year figures from GRS 9/8/20 supplemental report to City's fiscal year basis.
For consistency purposes, the schedules assume the City continues to make the full monthly UAL amortization payments through June 30, 2021
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(d) Converts remaining UAL amortization payments shown on GRS 9/14/20 supplemental report from a calendar year to a fiscal year basis.
(e) Represents Arbitrage Yield

UAL Funded with Bond Proceeds:	**$80,161,094**
Estimated Bond Amount:	**$81,270,000**
All-In TIC:	**2.738%**
NPV Savings as % of Principal:	**50.05%**

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5.35% - 26 Year Term Level Debt Service - Actuarial Value
Current Estimated Interest Rates less 50 bps

Pension Analysis - Market Rates with 5.35% Discount Rate - Assuming Actuarial Value of Assets as of 12-31-2019														
Fiscal Year Ending 6/30	UAL Payment (a)	Anticipated Normal Cost (a)	Total UAAL Amortization Payment and Normal Cost	1-Nov Principal Payment	1-Nov Interest Payment	Estimated Interest Rate	1-May Interest Payment	Estimated Bond Payments (b)	UAL Payments Already Made (c)	Payments Related to UAL Remaining After Bonding (d)	Anticipated Normal Cost (a)	Estimated Bond, Normal and UAL Payments	Difference	Present Value @ 2.62% (e)
2020						0.000%								
2021	$6,955,000	$741,000	$7,696,000	$0	$0	0.000%	$0	$0	$6,955,000	$0	$741,000	$7,696,000	$0	$0
2022	7,245,000	826,500	8,071,500	2,040,000	1,379,675	0.527%	917,827	4,337,502	--	2,470,000	826,500	6,807,502	1,263,998	1,218,693
2023	7,410,000	817,500	8,227,500	2,510,000	917,827	0.627%	909,958	4,337,785	--	2,510,000	817,500	6,847,785	1,379,715	1,296,293
2024	7,635,000	719,500	8,354,500	2,530,000	909,958	0.749%	900,483	4,340,442	--	2,585,000	719,500	6,925,442	1,429,058	1,308,369
2025	7,865,000	625,000	8,490,000	2,550,000	900,483	0.902%	888,983	4,339,466	--	2,660,000	625,000	6,999,466	1,490,534	1,329,806
2026	8,100,000	539,000	8,639,000	2,575,000	888,983	1.052%	875,438	4,339,421	--	2,740,000	539,000	7,079,421	1,559,579	1,355,876
2027	8,340,000	466,500	8,806,500	2,605,000	875,438	1.346%	857,907	4,338,345	--	2,820,000	466,500	7,158,345	1,648,155	1,396,294
2028	8,590,000	407,000	8,997,000	2,640,000	857,907	1.496%	838,160	4,336,066	--	2,905,000	407,000	7,241,066	1,755,934	1,449,617
2029	8,850,000	356,000	9,206,000	2,685,000	838,160	1.766%	814,451	4,337,611	--	2,995,000	356,000	7,332,611	1,873,389	1,507,090
2030	9,095,000	311,500	9,406,500	2,735,000	814,451	1.866%	788,933	4,338,385	--	3,065,000	311,500	7,403,385	2,003,116	1,570,303
2031	9,185,000	273,500	9,458,500	2,790,000	788,933	1.966%	761,508	4,340,441	--	2,975,000	273,500	7,315,441	2,143,059	1,637,109
2032	9,150,000	241,000	9,391,000	2,845,000	761,508	2.116%	731,408	4,337,915	--	2,755,000	241,000	7,092,915	2,298,085	1,710,708
2033	9,265,000	212,000	9,477,000	2,910,000	731,408	2.266%	698,437	4,339,845	--	2,685,000	212,000	7,024,845	2,452,155	1,778,787
2034	9,520,000	186,500	9,706,500	2,975,000	698,437	2.366%	663,243	4,336,681	--	2,755,000	186,500	7,091,681	2,614,820	1,848,349
2035	9,790,000	166,000	9,956,000	3,050,000	663,243	2.416%	626,399	4,339,642	--	2,835,000	166,000	7,174,642	2,781,358	1,915,867
2036	10,065,000	149,000	10,214,000	3,125,000	626,399	2.516%	587,087	4,338,486	--	2,920,000	149,000	7,258,486	2,955,514	1,983,845
2037	10,350,000	132,500	10,482,500	3,205,000	587,087	2.615%	545,181	4,337,268	--	3,005,000	132,500	7,342,268	3,140,232	2,054,010
2038	10,700,000	112,500	10,812,500	3,290,000	545,181	2.665%	501,342	4,336,523	--	3,095,000	112,500	7,431,523	3,380,977	2,155,010
2039	11,050,000	88,850	11,138,850	3,380,000	501,342	2.715%	455,459	4,336,801	--	3,190,000	88,850	7,526,801	3,612,050	2,243,504
2040	10,485,000	66,200	10,551,200	3,475,000	455,459	2.765%	407,417	4,337,875	--	3,085,000	66,200	7,422,875	3,128,325	1,893,439
2041	9,045,000	47,800	9,092,800	3,575,000	407,417	2.815%	357,099	4,339,515	--	2,775,000	47,800	7,114,515	1,978,285	1,166,795
2042	8,445,000	34,050	8,479,050	3,675,000	357,099	2.865%	304,454	4,336,553	--	2,655,000	34,050	6,991,553	1,487,497	854,925
2043	8,700,000	23,800	8,723,800	3,785,000	304,454	2.915%	249,288	4,338,742	--	2,730,000	23,800	7,068,742	1,655,058	926,939
2044	8,965,000	16,350	8,981,350	3,895,000	249,288	2.965%	191,544	4,335,832	--	2,815,000	16,350	7,150,832	1,830,518	999,029
2045	7,385,000	11,350	7,396,350	4,015,000	191,544	3.015%	131,018	4,337,563	--	2,370,000	11,350	6,707,563	688,787	366,316
2046	3,525,000	8,200	3,533,200	4,140,000	131,018	3.065%	67,573	4,338,591	--	1,250,500	8,200	5,589,091	(2,055,891)	(1,065,459)
2047	1,020,500	6,200	1,026,700	4,270,000	67,573	3.165%	--	4,337,573		502,000	6,200	4,839,573	(3,812,873)	(1,925,551)
2048	670,500	4,900	675,400	--	--	3.165%	--	--	--	389,000	4,900	389,000	286,400	140,943
2049	690,500	4,050	694,550	--	--	3.165%	--	--	--	400,500	4,050	400,500	294,050	141,012
2050	711,500	1,850	713,350	--	--	3.165%	--	--	--	412,500	1,850	412,500	300,850	140,589
2051	544,000	--	544,000	--	--	3.165%	--	--	--	315,500	--	315,500	228,500	104,053
2052	183,000	--	183,000	--	--	0.00%	--	--	--	106,000	--	106,000	77,000	34,168
	$229,530,000	**$7,596,100**	**$237,126,100**	**$81,270,000**	**$16,450,272**		**$15,070,597**	**$112,790,869**	**$6,955,000**	**$70,771,000**		**$191,257,869**	**$45,868,231**	**$33,536,725**

(a) Based on GRS supplemental reports dated 9/8/20; 9/28/20
including 50% of each of the prior and current calendar year figures
(b) Estimate only based on estimated interest rates as of 9/14/2020 plus .25% buffer
(c) Converts calendar year figures from GRS 9/8/20 supplemental report to City's fiscal year basis.
For consistency purposes, the schedules assume the City continues to make the full monthly UAL amortization payments through June 30, 2021
However, upon deposit of the bond proceeds into the System, the City will request the monthly amortization payments be reduced accordingly
(d) Converts remaining UAL amortization payments shown on GRS 9/14/20 supplemental report from a calendar year to a fiscal year basis.
(e) Represents Arbitrage Yield

UAL Funded with Bond Proceeds:	**$80,161,094**
Estimated Bond Amount:	**$81,270,000**
All-In TIC:	**2.738%**
NPV Savings as % of Principal:	**41.27%**