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CITY OF Marietta GEORGIA

Report on the Actuarial Valuation of the Consolidated Retirement Plan for the Employees of the City of Marietta, Georgia

Prepared as of July 1, 2019

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November 11, 2019

Board of Trustees
Consolidated Retirement Plan for the
Employees of the City of Marietta, Georgia
205 Lawrence Street
Marietta, GA 30060

Dear Members of the Board:

We are pleased to submit herewith the results of the biennial actuarial valuation of the Consolidated Retirement Plan for the Employees of the City of Marietta ("Plan") prepared as of July 1, 2019. The purpose of this report is to provide a summary of the funded status of the Plan as of July 1, 2019 and to recommend actuarially determined employer contribution rate for the fiscal years ending June 30, 2021 and June 30, 2022. The information needed for this Fund under the new Governmental Accounting Standards Board Statements (GASB) No. 67 and 68 will be provided in separate reports. However, for informational purposes only, we have also provided accounting information in Section VI of the report. While not verifying the data at source, the actuary performed tests for consistency and reasonability.

On the basis of the valuation the actuarially determined employer contribution rate is determined to be 18.92% of payroll for the fiscal years ending June 30, 2021 and June 30, 2022. This is an increase in the contribution rate recommended in the prior valuation of 18.16% of payroll. The promised benefits of the Plan are included in the actuarially calculated contribution rates which are developed using the entry age normal cost method. A ten-year smoothed market value of plan assets was used for the actuarial value of assets. Gains and losses are reflected in the unfunded accrued liability that is being amortized by regular annual contributions as a level percentage of payroll within a 23.2-year period, on the assumption that total payroll will increase by 3.50% annually.

Since the previous valuation, various assumptions and methods have been revised to reflect the results of the experience investigation for the five-year period ending June 30, 2018. The revised assumptions were adopted by the Board on May 8, 2019 and are summarized on page 2 of this report. The valuation takes into account all plan provisions of the Plan through July 1, 2019.

We have prepared the Schedule of Active Member Valuation Data, Schedule of Retired Members and Beneficiaries Added to and Removed from Rolls, the Solvency Test and the Analysis of Financial Experience for the actuarial section of the Annual Report and the Schedule of Funding Progress and Trend Information for the financial section of the Annual Report.

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This is to certify that the independent consulting actuary is a Member of the American Academy of Actuaries and has experience in performing valuations for public retirement Plans, that the valuation was prepared in accordance with principles of practice prescribed by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the Plan and on actuarial assumptions that are internally consistent and reasonably based on the actual experience of the Plan.

In our opinion, in order for the Plan to operate in an actuarially sound manner, contributions equal to the actuarially determined contributions are necessary. Assuming that the actuarially determined employer contributions to the Plan are made by the City from year to year in the future at the rates recommended on the basis of the successive actuarial valuations, the continued sufficiency of the retirement fund to provide the benefits called for under the Plan may be safely anticipated.

Future actuarial results may differ significantly from the current results presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

The actuarial calculations were performed by qualified actuaries according to generally accepted actuarial procedures and methods. The calculations are based on the current provisions of the system, and on actuarial assumptions that are, in the aggregate, internally consistent and reasonably based on the actual experience of the system.

We trust that the report will meet the approval of the Board and will furnish the desired information concerning the financial condition of the Plan.

Respectfully submitted,

Edward J. Koebel

Jennifer Johnson

Edward J. Koebel, EA, FCA, MAAA
Chief Executive Officer

Jennifer Johnson
Senior Consultant

EJK:tdj

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Section I – Summary of Principal Results

**CONSOLIDATED RETIREMENT PLAN FOR THE
EMPLOYEES OF THE CITY OF MARIETTA
REPORT OF THE ACTUARY
ON THE VALUATION
PREPARED AS OF JULY 1, 2019**

1. For convenience of reference, the principal results of the current and preceding valuations are summarized below.

VALUATION DATE	July 1, 2019	July 1, 2017
Number of active participants	730	696
Annual compensation	$ 37,153,135	$ 34,093,042
Number of retired participants and beneficiaries	631	574
Annual benefits	$ 12,547,100	$ 11,265,377
Number of former participants entitled to deferred vested benefits	281	308
Assets:		
Actuarial Value	$ 107,542,150	$ 99,949,226
Market Value	110,837,138	102,908,643
Unfunded accrued liability	$ 88,619,569	$ 76,184,220
Weighted Amortization Period	23.2 years	25 years
Funded Ratio on Actuarial Value Basis	54.8%	56.7%
CONTRIBUTION RATES FOR FISCAL YEARS ENDING	**June 30, 2021 & 2022**	**June 30, 2019 & 2020**
Actuarially Determined Contribution (ADC) Rate:		
Normal*	3.18%	4.06%
Unfunded accrued liability	15.74	14.10
Total	18.92%	18.16%

* Includes administrative expenses.

Section I – Summary of Principal Results (continued)

2. The major benefit and contribution provisions of the Plan as reflected in the valuation are summarized in Schedule G. There have been no changes since the previous valuation.

3. Schedule E of this report outlines the full set of actuarial assumptions and methods used in the valuation. Since the previous valuation, various assumptions and methods have been changed. The revised assumptions are summarized in the following table:

Summary of Recommended Assumptions	
Demographic Assumptions	
Withdrawal	Split the rates of withdrawal for those with less than 10 years of service, and those with 10 or more years of service for all employees. We also increased the rates for General Employees and decreased the rates for Uniformed Officers to better match the experience of the Plan.
Retirement	For General Employees, we made minor adjustments in the rates of both standard retirement and Rule of 80 retirement to better match experience of the Plan.
Mortality	Changed mortality table to Pub S.H-2010(B) tables with adjustments to better match experience of Plan.
Disability	Lowered assumed rates at most ages.
Merit/Promotion Scale	Changed assumed rates to service-based rates rather than age-based and decreased the rates of salary increase at most levels of service.
Other Assumptions and Methods and Administrative Changes	
Asset Smoothing	Added a 10% corridor around the market value of assets to comply with actuarial standards.
Administrative Expenses	Changed from 0.37% of payroll to 0.50% of payroll.
Amortization Method	Changed to a layered amortization method where new bases composed of experience gains and losses are amortized over a closed 25-year period from the valuation date they are initially measured.
All others	No change to other actuarial methods.

4. The entry age normal actuarial cost method was used to prepare the valuation. Schedule F contains a brief description of the actuarial cost method.

5. Comments on the valuation results as of July 1, 2019 are given in Section IV and further discussion of the contributions is set out in Section V.

Section II –Membership Data

1. Data regarding the membership of the Plan for use as a basis of the valuation were furnished by the City. The valuation included 730 active members with annualized compensation totaling $37,153,135.

2. The following table shows the history of active member valuation data.

VALUATION DATE	NUMBER	ANNUAL COMPENSATION	AVERAGE COMPENSATION
7/1/2019	730	$37,153,135	$50,895
7/1/2017	696	34,093,042	48,984
7/1/2015	689	32,480,676	47,142
7/1/2013	686	31,881,509	46,475
7/1/2012	708	32,890,116	46,455

All figures prior to July 1, 2013 were reported by a prior actuarial firm.

3. The following table shows the number of retired members and beneficiaries as of July 1, 2019 together with the amount of their annual retirement benefits payable under the Plan as of that date.

THE NUMBER AND ANNUAL BENEFITS OF RETIRED MEMBERS AND BENEFICIARIES AS OF JULY 1, 2019

GROUP	NUMBER*	ANNUAL RETIREMENT BENEFITS
Service Retirements	577	$ 11,635,640
Disability Retirements	18	418,534
Beneficiaries of Deceased Members	36	492,926
Total	631**	$ 12,547,100

* In addition, there are 281 terminated members entitled to deferred vested benefits.
** Of the 631 total retirees, 104 are eligible for an annual cost of living increase under the 4022 Plan.

4. Table 1 of Schedule H shows the distribution by age and years of membership service of the number of active members included in the valuation, while Tables 2-5 shows the number and annual benefits of retired members and beneficiaries included in the valuation, distributed by age. Table 6 shows the schedule of active member valuation data and Table 7 shows the schedule of retired members and beneficiaries added to and removed from the rolls. Table 8 shows a reconciliation of membership status from the previous valuation.

Section III – Assets

1. As of July 1, 2019, the total market value of assets amounted to $110,837,138. The estimated net investment returns for the 2018 and 2019 plan years were 9.23% and 7.40%, respectively. Schedule D shows the allocation of the Plan's assets and the market value of assets for the two years.

2. The actuarial value of assets used for the current valuation was $107,542,150 on a 10-year smoothing basis. The estimated investment returns for the fiscal years ending June 30, 2018 and June 30, 2019 on an actuarial value of assets basis were 7.89% and 9.03%, respectively, which can be compared to the investment return assumed for the period of 7.50%. Schedule C shows the development of the actuarial value of assets as of July 1, 2019.

Section IV – Comments on Valuation

1. Schedule B of this report contains the valuation balance sheet which shows the present and prospective assets and liabilities of the Plan as of July 1, 2019. The valuation was prepared in accordance with the actuarial assumptions set forth in Schedule E and the actuarial cost method which is described in Schedule F.

2. The valuation balance sheet shows that the Plan has total prospective liabilities of $215,069,218 of which $129,470,566 is for the prospective benefits payable on account of present retired members, beneficiaries of deceased members, and terminated members entitled to deferred benefits, and $85,598,652 is for the prospective benefits payable on account of present active members. Against these liabilities, the Plan has a total present actuarial value of assets of $107,542,150 as of July 1, 2019. The difference of $107,527,068 between the total liabilities and the total present assets represents the present value of future contributions.

3. The contributions to the Plan consist of normal contributions and accrued liability contributions. The valuation indicates that normal contributions at the rate of 6.65% of payroll are required under the entry age method. Of this amount, 3.97% is paid by the members and the remaining 2.68% is required by the City. An additional 0.50% of payroll is required for administrative expenses, making the total City normal rate 3.18% of payroll.

4. Prospective normal contributions at the rate of 6.65% have a present value of $18,907,499. When this amount is subtracted from $107,527,068, which is the present value of the total future contributions to be made, there remains $88,619,569 as the amount of unfunded accrued liability contributions. The development of the unfunded accrued liability is shown in Schedule A.

5. Overall, the unfunded accrued liability increased approximately $12.4 million, from $76.2 million to $88.6 million, for the two-year period ending June 30, 2019. Losses were primarily due to the assumption changes based on the experience study ($7.3 million), as well as the result of turnover and retirement ($5.0 million) for this two-year period. These losses were partially offset by investment gains over the two year period. See Section VII for a complete breakdown of the experience of the Plan.

Section V – Contributions Payable

1. The contributions consist of a normal contribution and an accrued liability contribution as determined by actuarial valuation.
2. The normal contribution rate is calculated as the level percentage of payroll which, if applied for the average new member during the entire period of his anticipated covered service, would be required to meet the cost of all benefits payable on his behalf. On the basis of the valuation, the normal contribution rate was determined to be 6.65%.
3. Section 3 of Article IV of the City of Marietta Ordinance No. 4532 states that each member shall contribute an amount equal to the Member's Compensation multiplied by 4.00%. However, contributions are not required of active members still participating in the 4022 Plan. This year the weighted average employee contribution rate for all active members is 3.97%.
4. The City normal contribution rate is equal to the difference between the normal contribution rate of 6.65% and the member contribution rate of 3.97%, or 2.68% of payroll. An additional 0.50% of payroll is required for administrative expenses, making the total City normal rate 3.18% of payroll.
5. The amortization method adopted by the Board provides that the UAL as of June 30, 2017 (Transitional UAL) will be amortized as a level percentage of payroll over a closed 25-year period. In each subsequent valuation, all benefit changes, assumption and method changes and experience gains and/or losses that have occurred since the previous valuation will determine a New Incremental UAL. Each New Incremental UAL will be amortized as a level percentage of payroll over a closed 25-year period from the date it is established. We have determined that an accrued liability contribution of 15.74% of payroll will be sufficient to amortize the unfunded actuarial accrued liability of $88,619,569 within approximately 23.2 years following the valuation date, on the assumption that total payroll will increase by 3.50% each year.

6. The following table shows the components of the total UAL and the derivation of the UAL contribution rate in accordance with the assumptions and methods adopted by the Board:

TOTAL UAL AND UAL CONTRIBUTION RATE

	Original UAL	Remaining UAL	Remaining Amortization Period	Amortization Payment*
Transitional	$ 76,184,220	$ 77,542,126	23	$5,329,859
New Incremental 7/1/2019	11,077,443	11,077,443	25	723,452
Total		$ 88,619,569		$6,053,311
Total Estimated Payroll				$38,453,495
UAL Contribution Rate				15.74%
Blended Amortization Period (years)				23.2

*Assuming 3.50% annual payroll growth

7. Section 1 of Article IV of the City of Marietta Ordinance No. 4532 states that the City of Marietta shall contribute an amount necessary to fund the Plan. The actuarially determined contribution (ADC) rate for the fiscal year ending June 30, 2021 is 18.92% of payroll, the total of the employer normal rate of 3.18% and the amortization of the UAL of 15.74% of payroll.

8. The following table summarizes the employer contribution rate and estimated dollars which were determined by the July 1, 2019 valuation and are recommended for use for the next two fiscal years following the valuation date. The results for fiscal year ending June 20, 2022 assume a 3.50% annual growth in the compensation of active members.

CITY ACTUARIALLY DETERMINED CONTRIBUTIONS (ADC)
FOR FISCAL YEARS ENDING JUNE 30, 2021 AND JUNE 30, 2022

		JUNE 30, 2021	JUNE 30, 2022
Contribution for	As % of Active Pay	Estimated Amount	Estimated Amount
Normal Cost (including expenses)	3.18%	$1,223,000	$1,266,000
Accrued Liability	15.74	6,053,000	6,264,000
Total	18.92%	7,276,000	7,530,000

Section VI – Accounting Information

The information required under the Governmental Accounting Standards Board (GASB) Statements No. 67 and 68 will be issued in separate reports. The following information is provided for informational purposes only.

1. The following is a distribution of the number of employees by type of membership, as follows:

NUMBER OF ACTIVE AND RETIRED PARTICIPANTS
AS OF JULY 1, 2019

GROUP	NUMBER
Retired participants and beneficiaries currently receiving benefits	631
Terminated participants and beneficiaries entitled to benefits but not yet receiving benefits	281
Active Participants	730
Total	1,642

2. Another such item is the schedule of funding progress as shown below.

SCHEDULE OF FUNDING PROGRESS
(dollar amounts in thousands)

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (UAAL) (b – a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b – a) / c)
7/01/2011	$ 81,426	$ 147,636	$ 66,210	55.2 %	$ 33,654	196.7%
7/01/2012	84,502	152,019	67,517	55.6	32,890	205.3
7/01/2013	87,437	156,758	69,321	55.8	31,882	217.4
7/01/2015	95,046	161,782	66,736	58.7	32,481	205.5
7/01/2017	99,949	176,133	76,184	56.7	34,093	223.5
7/01/2019#	107,542	196,162	88,620	54.8	37,153	238.5

All figures prior to July 1, 2013 were reported by a prior actuarial firm.
#Includes Assumption Changes.

Section VI – Accounting Information (continued)

3. Additional information as of July 1, 2019 follows:

Valuation date	7/01/2019
Actuarial cost method	Entry age
Amortization period	Level Percent of Pay, Closed
Remaining amortization period	23.2 years
Asset valuation method	Ten-year smoothed market value with a 10% corridor around the market value
Actuarial assumptions:	
Investment rate of return (includes inflation)	7.50%
Projected salary increases (includes inflation)	3.50% - 6.50%
Inflation	3.00%
Cost-of-living adjustments	3.00% for Plan 4022 Level 1

1. Actual experience will never (except by coincidence) coincide exactly with assumed experience. It is assumed that gains and losses will be in balance over a period of years, but sizable year to year fluctuations are common.

2. The following table shows the estimated change in the unfunded accrued liability from various factors that resulted in an increase of $12,435,349 in the unfunded accrued liability from $76,184,220 to $88,619,569 during the two-year period ending June 30, 2019.

ANALYSIS OF FINANCIAL EXPERIENCE – CHANGE IN UNFUNDED ACCRUED LIABILITY
(dollar amounts in thousands)

ITEM	AMOUNT OF INCREASE/(DECREASE)
Interest (7.50%) added to previous unfunded accrued liability for 2018	$ 5,714
Accrued Liability Contribution in 2018	(5,082)
Interest (7.50%) added to previous unfunded accrued liability for 2019	5,761
Accrued Liability Contribution in 2019	(5,991)
Recognized Asset (Gain)/Loss	(1,948)
Liability (Gain)/Loss	6,396
Salary Increases	290
Amendments	0
Assumption and Method Changes	7,295
Increase/(Decrease) in Unfunded Accrued Liability	$12,435

Section VIII - Risk Assessment

Overview

Actuarial Standards of Practice (ASOP) No. 51, issued by the Actuarial Standards Board, provides guidance on assessing and disclosing risks related to pension plan funding. This guidance is binding on all credentialed actuaries practicing in the United States. This standard was issued as final in September 2017 with application to measurement dates on or after November 1, 2018.

The term "risk" frequently has a negative connotation, but from an actuarial perspective, it may be thought of as simply the fact that what actually happens in the real world will not always match what was expected, based on actuarial assumptions. Of course, when actual experience is better than expected, the favorable risk is easily absorbed. The risk of unfavorable experience will likely be unpleasant, and so there is an understandable focus on aspects of risk that are negative.

Risk usually can be reduced or eliminated at some cost. Consumers, for example, buy auto and home insurance to reduce the risk of accidents or catastrophes. Another way to express this concept, however, is that there is generally some reward for assuming risk. Thus, retirement plans invest not just in US Treasury bonds which have almost no risk, but also in equities which are considerably riskier – because they have an expected reward of a higher return that justifies the risk.

Under ASOP 51, the actuary is called on to identify the significant risks to the pension plan and provide information to help those sponsoring and administering the plan understand the implications of these risks. In this section, we identify some of the key risks for the Plan and provide information to help interested parties better understand these risks.

Investment Risk

The investment return on assets is the most obvious risk – and usually the largest risk – to funding a pension plan. To illustrate the magnitude of this risk, please review the following chart showing the Asset Volatility Ratio (AVR), defined as the market value of assets divided by covered payroll.

($ in thousands)

Valuation	Market Value of Assets	Covered Payroll	Asset Volatility Ratio
2013	$84,994	$31,882	2.67
2015	$97,315	$32,481	3.00
2017	$102,909	$34,093	3.02
2019	$110,837	$37,153	2.98

The asset volatility ratio is especially useful to compare across plans or through time. It is also frequently useful to consider how the AVR translates into changes in the Required Contribution Rate (actuarially determined contribution rate). For example, the following table demonstrates that with an AVR of 3.00, if the market value return is 10% below assumed, or -2.50% for Marietta, there will be an increase in the Required Contribution Rate of approximately 0.19% of payroll in the first year assuming a 10-year smoothing period. A higher AVR would produce even more volatility in the Required Contribution Rate.

AVR	Estimated Increase in Required Contribution Rate	Estimated Increase in Required Contribution
1.0	0.06%	$23,406
2.0	0.13%	$46,813
3.0	0.19%	$70,219
4.0	0.25%	$93,626

Sensitivity Measures

Valuations are generally performed with a single set of assumptions that reflects the best estimate of future conditions, in the opinion of the actuary and typically the governing board. Note that under actuarial standards of practice, the set of economic assumptions used for funding must be consistent. To enhance the understanding of the importance of an assumption, a sensitivity test can be performed where the valuation results are recalculated using a different assumption or set of assumptions.

The following table contains the key measures using the market related actuarial value of assets under the valuation assumption for investment return of 7.50%, along with the results if the related actuarial assumption were 6.50% or 8.50%. In this analysis, only the investment return assumption is changed. Consequently, there may be inconsistencies between the investment return and other economic assumptions such as inflation or payroll increases. In addition, simply because the valuation results under alternative assumptions are shown here, it should not be implied that CMC believes that either assumption (6.50% or 8.50%) would comply with actuarial standards of practice.

($ in thousands)

As of July 1, 2019	Current Discount Rate (7.50%)	+1% Discount Rate (8.50%)	-1% Discount Rate (6.50%)
Plan's Normal Rate	3.18%	1.86%	4.92%
Accrued Liability	$196,162	$178,622	$216,767
Unfunded Liability	$88,620	$71,080	$109,225
Funded Ratio	54.8%	60.2%	49.6%

Schedule A – Development Of The Unfunded Actuarial Accrued Liability

AS OF JULY 1, 2019

(1)	Present value of prospective benefits:		
	(a)	Present active members	$ 85,598,652
	(b)	Present retired members, beneficiaries and former members entitled to deferred vested benefits and refunds	129,470,566
	(c)	Total	$ 215,069,218
(2)	Present value of future Plan and member normal contributions before expenses		18,907,499
(3)	Actuarial accrued liabilities 1(c) – (2)		$ 196,161,719
(4)	Actuarial value of assets		107,542,150
(5)	Unfunded actuarial accrued liability (3) – (4)		$ 88,619,569

Schedule B – Valuation Balance Sheet

The present and prospective assets and liabilities of the Plan as of July 1, 2019:

ACTUARIAL LIABILITIES		
Present value of prospective benefits payable on account of present retired members, beneficiaries of deceased members, and terminated members entitled to deferred benefits and refunds		$ 129,470,566
Present value of prospective benefits payable on account of present active members		85,598,652
Total liabilities		$ 215,069,218
PRESENT AND PROSPECTIVE ASSETS		
Actuarial value of assets		$ 107,542,150
Present value of future contributions		
City and member normal contributions	$ 18,907,499	
Unfunded accrued liability contributions	88,619,569	
Total prospective contributions		107,527,068
Total assets		$ 215,069,218

Schedule B (continued) – Solvency Test

(dollar amounts in thousands)

Valuation Date	Aggregate Accrued Liabilities For			Reported Assets	Portion of Accrued Liabilities Covered by Reported Assets		
	(1) Active Member Contributions	(2) Retirees and Beneficiaries	(3) Active Members (Employer Financed Portion)		(1)	(2)	(3)
7/1/19[1]	$9,030.3	$129,470.6	$57,660.8	$107,542.2	100%	76.1%	0%
7/1/17	7,649.3	111,606.0	56,878.2	99,949.2	100	82.7	0
7/1/15	6,413.5	100,579.3	54,789.0	95,046.1	100	88.1	0
7/1/13	5,389.9	94,635.8	56,731.9	87,436.9	100	86.7	0
7/1/12	4,219.2	85,394.7	62,405.0	84,501.4	100	94.0	0
7/1/11	3,006.1	83,062.7	61,567.4	81,425.8	100	94.4	0

All figures prior to July 1, 2013 were reported by a prior actuarial firm.
[1]Economic and demographic assumptions were changed as of July 1, 2019 due to an experience review.

Schedule C – Development of Actuarial Value of Assets

		7/01/2018 to 6/30/2019	7/01/2017 to 6/30/2018
(1)	Actuarial Value of Assets Beginning of Year	$ 103,068,585	$ 99,949,226
(2)	Market Value of Assets as of End of Year	$ 110,837,138	$ 107,612,144
(3)	Market Value of Assets as of Beginning of Year	$ 107,612,144	$ 102,908,643
	Audit Adjustment	50,000	0
	Final Market Value of Assets as of Beginning of Year	107,662,144	102,908,643
(4)	Net Cash Flow During Plan Year		
	(a) Contributions	$ 8,286,459	$ 7,441,019
	(b) Benefit Payments and Administrative Expenses	12,908,698	12,026,334
	(c) Net Cash Flow (a) – (b)	$ (4,622,239)	$ (4,585,315)
(5)	Investment Return		
	(2) – (3) – (4c)	$ 7,847,233	$ 9,288,816
(6)	Expected Investment Return		
	[(3) x 7.50%] + [(4)c x 7.50% x 0.5]	$ 7,897,577	$ 7,546,199
(7)	Investment Gain/(Loss) for Phased-In Recognition (5) – (6)	$ (50,344)	$ 1,742,617
(8)	Recognized Amounts for Plan Year		
	(a) Current Year 0.10 x (7)	$ (5,034)	$ 174,262
	(b) First Prior Year	174,262	789,701
	(c) Second Prior Year	789,701	(955,935
	(d) Third Prior Year	(955,935)	(444,982
	(e) Fourth Prior Year	(444,982)	837,555
	(f) Fifth Prior Year	837,555	454,979
	(g) Sixth Prior Year	454,979	(545,748
	(h) Seventh Prior Year	(545,748)	755,159
	(i) Eighth Prior Year	755,159	138,271
	(j) Ninth Prior Year	138,271	(1,044,787)
	(k) Total Recognized Investment Gain/(Loss)	$ 1,198,227	$ 158,475
(9)	Preliminary Actuarial Value of Assets End of Year		
	[(1) + (4)(c) + (6) + (8)(k)]	$ 107,542,150	$ 103,068,585
(10)	Corridor Lower limit (90% of Market Value End of Year)	$ 99,753,424	$ 96,850,930
(11)	Corridor Upper Limit (110% of Market Value End of Year)	$ 121,920,852	$ 118,373,358
(12)	Final Actuarial Value End of the Year [(9) not less than (10) and not greater than (11)]	107,542,150	103,068,585
(13)	Rate of Return on Actuarial Value	9.03%	7.89%

Schedule D – Reconciliation of Market Value of Assets

	Years Ended June 30 2019	Years Ended June 30 2018
Market Value of Assets - Beginning of Year	$ 107,612,144	$ 102,908,643
Audit Adjustment	50,000	0
Market Value of Assets - Beginning of Year after Adjustment	107,662,144	102,908,643
ADDITIONS:		
Contributions:		
Member	$ 1,446,307	$ 1,352,681
Employer	6,840,152	6,088,338
Total Contributions	8,286,459	7,441,019
Investment Income/(loss):		
Net Appreciation (depreciation) in fair value of investments	5,358,767	7,771,458
Interest & Dividends	3,052,275	2,137,285
	8,411,042	9,908,743
Investment Fees	(613,809)	(619,927)
Net Investment Income/(loss)	7,797,233	9,288,816
Total Additions/(loss)	16,083,692	16,729,835
DEDUCTIONS:		
Benefits & Refunds	(12,462,039)	(11,747,238)
Administration Expenses	(446,659)	(279,096)
Total Deductions	(12,908,698)	(12,026,334)
Change in Net Assets	3,174,994	4,703,501
Market Value of Assets - End of Year	$ 110,837,138	$ 107,612,144
Rate of Return on Market Value of Assets	7.40%	9.23%

Schedule E – Outline of Actuarial Assumptions and Methods

The assumptions and methods used in the valuation were selected by the Actuary and adopted by the Board following the most recent Experience Study for the five-year period ending June 30, 2018.

INVESTMENT RATE OF RETURN: 7.50% per year, compounded annually, net of investment expenses.

WAGE BASE GROWTH: The National Wage Base used to calculate Covered Compensation is expected to grow 3.50% per year.

SALARY INCREASES: Representative values of the assumed annual rates of salary increases are as follows:

Years of Service	General Employees*	Uniformed Officers*
0	6.50%	5.00%
1-5	6.00	4.50
6-10	5.00	4.25
11-15	4.60	4.00
16-20	4.25	3.80
21-25	4.00	3.50
26+	4.00	3.50

*Includes inflation of 3.00%

SEPARATIONS FROM ACTIVE SERVICE: For death rates, the PubS.H-2010(B) Mortality Table projected to 2025 with projection scale MP-2018, set forward 3 years for males and 4 years for females was used. Representative values of the assumed annual rates of separation from active service are as follows:

Annual Rates of			
Age	Disability	Death - Males	Death - Females
20	0.025%	0.05%	0.03%
25	0.025	0.06	0.04
30	0.025	0.08	0.06
35	0.035	0.10	0.08
40	0.070	0.12	0.10
45	0.115	0.14	0.12
50	0.185	0.19	0.16
55	0.300	0.29	0.24
60	0.450	0.50	0.33

Schedule E- Outline of Actuarial Assumptions and Methods (continued)

Annual Rates of Withdrawal		
Service	General Employees	Uniformed Officers
0	24.00%	22.00%
1	21.00	10.00
2	16.50	10.00
3	13.50	9.00
4	12.50	8.00
5	11.00	8.00
6	9.00	5.00
7	9.00	5.00
8	9.00	5.00
9	9.00	5.00
10+	4.00	3.00

Annual Rates of Retirement*			
Age	4022 Plan Uniformed Officers	General Employees	Uniformed Officers
45-49	5%	0%	0%
50	12	0	0
51-53	20	0	0
54	60	0	0
55	60	10	20
56-59	60	5	10
60	100	10	100
61		10	
62-66		25	
67-69		25	
70		100	

*For Employees not yet eligible for Rule of 80

Schedule E- Outline of Actuarial Assumptions and Methods (continued)

Annual Rate of Retirement for Rule of 80		
Age Plus Service	**General Employees**	**Uniformed Officers**
80	35%	40%
81	35	30
82-90	20	30

DEATHS AFTER RETIREMENT: The mortality table, for post-retirement mortality, used in evaluating allowances to be paid is the PubS.H-2010(B) Retiree Table with the following adjustments:

- For males, set forward 3 years.
- For females, set forward 4 years.
- Projection scale MP-2018 will be used to project to 2025.

ADMINISTRATIVE EXPENSES: 0.50% of payroll.

PERCENT MARRIED: 100% of active members are assumed to be married with the male three years older than his spouse.

COST OF LIVING: An automatic 3.00% cost of living adjustment is assumed for all Plan 4022 Level 1 members. No increases are assumed for the Consolidated Plan members.

ASSETS: Actuarial value, as developed in Schedule B. The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected actuarial value of assets, based on the assumed valuation rate of return. The amount recognized each year is 10% of the difference between market value and expected actuarial value. The actuarial value is not less than 90% or greater than 110% of the market value.

VALUATION METHOD: Entry age actuarial cost method. See Schedule F for a brief description of this method.

Schedule F – Actuarial Cost Method

1. The valuation is prepared on the projected benefit basis, under which the present value, at the interest rate assumed to be earned in the future (currently 7.50%), of each member's expected benefits at retirement or death is determined, based on age, service and sex. The calculations take into account the probability of a member's death or termination of employment prior to becoming eligible for a benefit, as well as the possibility of his terminating with a service, disability or survivor's benefit. The present value of the expected benefits payable on account of the active members is added to the present value of the expected future payments to retired members and beneficiaries to obtain the present value of all expected benefits payable from the Plan on account of the present group of members and beneficiaries.
2. The employer contributions required to support the benefits of the Plan are determined following a level funding approach, and consist of a normal contribution and an accrued liability contribution.
3. The normal contribution is determined using the entry age actuarial cost method. Under this method, a calculation is made to determine the level percentage of payroll which, if applied for the average new member during the entire period of his anticipated covered service, would be required in addition to the contributions of the member to meet the cost of all benefits payable on his behalf.
4. The unfunded accrued liability is determined by subtracting the present value of prospective employer normal contributions and member contributions, together with the current actuarial value of assets held, from the present value of expected benefits to be paid from the Plan.

Schedule G - Summary of Main Plan Provisions as Interpreted for Valuation Purposes

Member	An employee of the City of Marietta.
Membership Service Credit	Full-time service for all periods of employment with the City of Marietta subject to the break in service rules of the plan.
Final Average Earnings	A member's average monthly compensation for the highest 3 consecutive years if hired before January 1, 2009, and highest 5 consecutive years if hired on or after January 1, 2009. For elected officials, amount is based on the average salary for all participants in the Consolidated Plan.
Accrued Benefit	The monthly amount of retirement benefits earned by a member as of any date computed from his Final Average Earnings and Membership Service Credit at that date.
Service Retirement Benefit	
Eligibility	If hired prior to March 18, 2008, age 65 with at least 5 years of service. If hired between March 18, 2008 and December 31, 2008, age 65 with at least 7 years of service. If hired on or after January 1, 2009, age 65 with at least 10 years of service.
Benefit	Monthly benefit is 2.1% of final average earnings multiplied by years of membership service credit. Maximum benefit amount limited to 35 years of service.
Early Retirement Benefit	
Eligibility	If hired prior to March 18, 2008, age 55 with at least 5 years of service. If hired between March 18, 2008 and December 31, 2008, age 55 with at least 7 years of service. If hired on or after January 1, 2009, age 55 with at least 10 years of service.
Benefit	Accrued benefit reduced by 3% per year before age 65 for members hired before January 1, 2009. Accrued benefit reduced by 5.004% per year before age 65 for members hired on or after January 1, 2009. Unreduced early retirement is granted to members whose age plus service is at least 80. Members hired after March 18, 2008 must also be at least age 55

Schedule G - Summary of Main Plan Provisions as Interpreted for Valuation Purposes (continued)

Plan 4022 Level 1 Retirement Benefit	
Eligibility	Normal Retirement at age 55 with 5 years of service.
Benefit	1.33% of final average earnings times years of service, not less than 1.1% of the highest consecutive 36 months of average earnings, up to the Covered Compensation Limit plus 2.1% of the highest consecutive 36 months of average earnings greater than this limit times years of service. Covered Compensation is determined as if the participant were 10 years older.
	Early retirement available starting at age 45. Accrued benefit is reduced by 2.004% per year before age 55.
	Plan 4022 members can choose an unreduced early retirement benefit under the Consolidated Plan when the sum of their age plus service is at least 80. Under this alternate retirement option, members will have their benefit calculated using the 2.1% multiplier for all years of service, up to the maximum 35 years, but will forfeit their cost of living increase and their beneficiary's death benefit under the 4022 Plan. Members can purchase the death benefit, by choosing one of the optional forms of payment.
Disability Retirement Benefit	
Eligibility	1 year of service for a non-work related injury or 1 day of service for a work related injury.
Benefit	The larger of the normal pension accrued, no less than 50% of average monthly earnings in the year preceding disability. This amount is offset by the benefits received from Workers' Compensation.
Deferred Vested Retirement Benefit	
Eligibility	If hired prior to March 18, 2008, 5 years of service.
	If hired between March 18, 2008 and December 31, 2008, 7 years of service.
	If hired on or after January 1, 2009, 10 years of service.

Schedule G - Summary of Main Plan Provisions as Interpreted for Valuation Purposes (continued)

Benefit	Accrued benefit payable at earliest retirement age, with the appropriate reduction for early retirement. The assumption is made that members will defer payment until age 65.
Death Benefit	If a member dies in service, his beneficiary is entitled to receive a lump sum equal to the return of the member's accumulated contributions with zero interest.
Plan 4022 Death Benefit	If member dies while in active service, his beneficiary is entitled to the monthly benefit accrued at member's death. Upon the death of a retiree, a monthly benefit shall be paid to his beneficiary in accordance with tables set forth in Plan 4022.
Optional Forms of Benefit	(1) 100%, 75%, or 50% joint and survivor annuity. (2) Joint and survivor annuity with a pop-up provision. (3) Social Security option.
Contributions	Each member of the Consolidated Plan contributes 4.00% of pay. Upon termination, these contributions may be refunded to member with no interest. Plan 4022 members do not contribute.

Schedule H – Tables of Membership Data

TABLE 1
DISTRIBUTION OF ACTIVE MEMBERS BY AGE AND SERVICE GROUPS
AS OF JULY 1, 2019

Attained Age	Completed Years of Service									Total	
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 & Over	No.	Payroll
Under 25	36	24								60	$2,103,157
25 to 29	23	54	15							92	$3,857,642
30 to 34	7	21	35	21						84	$4,245,264
35 to 39	8	28	20	37	8					101	$4,981,256
40 to 44	6	13	9	20	17	6				71	$3,887,667
45 to 49	7	17	10	20	20	22	5	1		102	$5,684,721
50 to 54	5	7	4	10	17	14	11	5	1	74	$4,272,692
55 to 59	8	16	10	6	18	19	3	4	2	86	$4,814,052
60 to 64	2	5	5	8	6	6	4	6	1	43	$2,388,243
65 to 69		1	2	3	2	1			1	10	$621,358
70 & up			1	3		2		1		7	$297,083
Total Count	102	186	111	128	88	70	23	17	5	730	$37,153,135

Average Age: 42.5
Average Service: 10.2

Schedule H – Tables of Membership Data (continued)

TABLE 2
NUMBER OF RETIRED MEMBERS AND THEIR BENEFITS BY AGE

Attained Age	Number of Members	Total Annual Benefits	Average Annual Benefits
Under 50	0	$ -	$ -
50 - 54	19	833,114	43,848
55 - 59	110	2,180,200	19,820
60 - 64	134	2,780,514	20,750
65 - 69	121	2,243,304	18,540
70 - 74	83	1,544,670	18,610
75 - 79	57	1,155,736	20,276
80 - 84	36	474,447	13,179
85 - 89	15	404,957	26,997
90 & Over	2	18,698	9,349
Total	577	$ 11,635,640	$ 20,166

TABLE 3
NUMBER OF DISABLED MEMBERS AND THEIR BENEFITS BY AGE

Attained Age	Number of Members	Total Annual Benefits	Average Annual Benefits
Under 50	1	$ 18,169	$ 18,169
50 - 54	1	21,939	21,939
55 - 59	4	74,581	18,645
60 - 64	3	64,461	21,487
65 - 69	3	92,363	30,788
70 - 74	3	99,355	33,119
75 - 79	2	38,495	19,248
80 & Over	1	9,171	9,171
Total	18	$ 418,534	$ 23,252

Schedule H – Tables of Membership Data (continued)

TABLE 4
NUMBER OF BENEFICIARIES AND THEIR BENEFITS BY AGE

Attained Age	Number of Members	Total Annual Benefits	Average Annual Benefits
Under 50	1	$ 13,216	$ 13,216
50 - 54	1	10,185	10,185
55 - 59	3	19,040	6,347
60 - 64	7	112,384	16,055
65 - 69	7	70,728	10,104
70 - 74	5	62,084	12,417
75 - 79	8	154,058	19,257
80 & Over	4	51,231	12,808
Total	36	$ 492,926	$ 13,692

TABLE 5
NUMBER OF DEFERRED VESTEDS AND THEIR BENEFITS BY AGE

Attained Age	Number of Members	Total Annual Benefits	Average Annual Benefits
Under 35	12	$ 89,352	$ 7,446
35 - 39	31	254,089	8,196
40 - 44	42	345,656	8,230
45 - 49	58	495,959	8,551
50 - 54	90	666,751	7,408
55 - 59	28	160,829	5,744
60 - 64	18	96,592	5,366
65 & Over	2	5,759	2,880
Total	281	$ 2,114,987	$ 7,527

TABLE 6
SCHEDULE OF ACTIVE MEMBER VALUATION DATA

Valuation Date	Number Prior Year	Exits	New Entrants & Rehires	Number Current Year	Annual Payroll	Annual Average Pay	% Increase in Average Pay
7/1/2019	696	141	175	730	$37,153,135	$50,895	3.9%
7/1/2017	689	126	133	696	34,093,042	48,984	3.9%
7/1/2015	702	79	66	689	32,480,676	47,142	3.8%
7/1/2014	686	68	84	702	31,881,508	45,415	-2.3%
7/1/2013	708	65	43	686	31,881,509	46,475	0.0%
7/1/2012	729	47	26	708	32,890,116	46,455	0.6%
7/1/2011	722	30	37	729	33,653,835	46,164	0.1%

Results prior to the 7/1/2013 valuation were reported by a prior actuarial firm.

TABLE 7
SCHEDULE OF RETIRED MEMBERS AND BENEFICIARIES
ADDED TO AND REMOVED FROM ROLLS

	Rolls – Beginning of Year		Added to Rolls		Removed from			Rolls – End of Year			
Year Ended	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances	Cost of Living Adjustment	No.	Annual Allowances	% Increase in Annual Allowances	Average Annual Allowances
7/1/2019	574	$11,265,377	91	$1,858,489	34	$661,406	$84,640	631	$12,547,100	11.4%	$19,884
7/1/2017	489	10,081,236	114	1,756,556	29	597,105	24,690	574	11,265,377	11.7%	19,626
7/1/2015	465	9,370,822	38	959,484	14	286,014	36,943	489	10,081,236	7.6%	20,616
7/1/2014	443	8,858,707	31	679,947	9	201,577	33,745	465	9,370,822	5.8%	20,152
7/1/2013	420	8,076,216	35	960,814	12	218,379	40,056	443	8,858,707	9.7%	19,997
7/1/2012	407	7,735,164	29	*	16	*	*	420	8,076,216	4.4%	19,229
7/1/2011	402	7,664,736	20	*	15	*	*	407	7,735,164	0.9%	19,005

Results prior to the 7/1/2013 valuation were reported by the prior actuarial firm.
*Amount not provided by prior actuary.

Schedule H – Tables of Membership Data (continued)

TABLE 8
STATUS RECONCILIATION

	Active Members	Terminated Members	Pension Recipients: Service Retired	Pension Recipients: Disability Retired	Pension Recipients: All Beneficiaries	Total
July 1, 2017	**696**	**308**	**514**	**21**	**39**	**1,578**
Increase (Decrease) From:						
Service Retirement	(40)	(42)	82			
Disability Retirement						
Deaths	(1)	(4)	(21)	(3)	(3)	(32)
Survivors					8	8
Other Terminations						
Vested Terminations	(21)	21				
Refund of Contributions	(79)					(79)
Benefits Expired					(8)	(8)
New Entrants/Rehires	175	(2)				173
Data Adjustments			2			2
July 1, 2019	**730**	**281**	**577**	**18**	**36**	**1,642**

Schedule I – Amortization of UAL

AMORTIZATION OF 2017 TRANSITIONAL UAL

Valuation Date	Amortization Period	Balance of Transitional UAL	Annual Amortization Payment
7/1/2017	25	$ 76,184,220	$ 4,975,480
7/1/2018	24	76,922,556	5,149,622
7/1/2019	**23**	**77,542,126**	**5,329,859**
7/1/2020	22	78,027,926	5,516,404
7/1/2021	21	78,363,617	5,709,478
7/1/2022	20	78,531,410	5,909,310
7/1/2023	19	78,511,956	6,116,136
7/1/2024	18	78,284,217	6,330,200
7/1/2025	17	77,825,333	6,551,757
7/1/2026	16	77,110,475	6,781,069
7/1/2027	15	76,112,692	7,018,406
7/1/2028	14	74,802,737	7,264,051
7/1/2029	13	73,148,892	7,518,292
7/1/2030	12	71,116,766	7,781,433
7/1/2031	11	68,669,091	8,053,783
7/1/2032	10	65,765,490	8,335,665
7/1/2033	9	62,362,237	8,627,413
7/1/2034	8	58,411,991	8,929,373
7/1/2035	7	53,863,518	9,241,901
7/1/2036	6	48,661,380	9,565,367
7/1/2037	5	42,745,616	9,900,155
7/1/2038	4	36,051,382	10,246,661
7/1/2039	3	28,508,575	10,605,294
7/1/2040	2	20,041,424	10,976,479
7/1/2041	1	10,568,052	11,360,656
7/1/2042	0	0	0

AMORTIZATION OF 2019 INCREMENTAL UAL

Valuation Date	Amortization Period	Balance of Transitional UAL	Annual Amortization Payment
7/1/2019	**25**	**$ 11,077,443**	**$ 723,452**
7/1/2020	24	11,184,800	748,772
7/1/2021	23	11,274,887	774,980
7/1/2022	22	11,345,524	802,104
7/1/2023	21	11,394,335	830,177
7/1/2024	20	11,418,733	859,234
7/1/2025	19	11,415,904	889,307
7/1/2026	18	11,382,790	920,433
7/1/2027	17	11,316,067	952,648
7/1/2028	16	11,212,124	985,990
7/1/2029	15	11,067,043	1,020,500
7/1/2030	14	10,876,571	1,056,218
7/1/2031	13	10,636,096	1,093,185
7/1/2032	12	10,340,618	1,131,447
7/1/2033	11	9,984,718	1,171,047
7/1/2034	10	9,562,525	1,212,034
7/1/2035	9	9,067,680	1,254,455
7/1/2036	8	8,493,301	1,298,361
7/1/2037	7	7,831,938	1,343,804
7/1/2038	6	7,075,529	1,390,837
7/1/2039	5	6,215,357	1,439,516
7/1/2040	4	5,241,993	1,489,899
7/1/2041	3	4,145,243	1,542,046
7/1/2042	2	2,914,091	1,596,017
7/1/2043	1	1,536,631	1,651,878
7/1/2044	0	0	0