City of Battle Creek
Other Postemployment Benefits

Actuarial Valuation Report

June 30, 2017

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GRS Retirement Consulting
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October 26, 2018

Ms. Linda Morrison
Finance Director
City of Battle Creek
10 North Division Street
Battle Creek, Michigan 49014

Dear Ms. Morrison:

Submitted in this report are the results of an Actuarial Valuation of the assets and benefit values associated with the employer financed Other Postemployment Benefits provided by the City of Battle Creek. The date of the valuation was June 30, 2017, effective for the fiscal years ending June 30, 2018 and June 30, 2019. This report was prepared at the request of the City of Battle Creek.

The purposes of this valuation are to measure the plan's funding progress and to determine the employer contribution rate for the fiscal years ending June 30, 2018 and June 30, 2019. Determinations of the financial results associated with the benefits described in this report in a manner other than the intended purpose may produce significantly different results. This report does not satisfy the disclosure requirements of Governmental Accounting Standards Board (GASB) Statements No. 74 and No. 75. Information related to GASB Statements No. 74 and No. 75 reporting will be provided in a separate report.

This report should not be relied on for any purpose other than those described above. It was prepared at the request of the City and is intended for use by the City and those designated or approved by the City. This report may be provided to parties other than the City of Battle Creek only in its entirety and only with the permission of the City of Battle Creek. GRS is not responsible for unauthorized use of this report.

The contribution rate in this report is determined using the actuarial assumptions and methods disclosed in Section D of this report.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law.

The valuation was based upon information, furnished by the City, concerning retiree health care benefits, individual members, and financial data. Data was checked for internal consistency, but was not otherwise audited.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge, this report is complete and accurate and was made in accordance with standards of practice promulgated by the Actuarial Standards Board of the American Academy of Actuaries. The actuarial assumptions used for the valuation produce results which, individually and in the aggregate, are reasonable.

Abra D. Hill and Bonita J. Wurst are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

The signing actuaries are independent of the plan sponsor.

Respectfully submitted,

Abra D. Hill

Abra D. Hill, ASA, MAAA

Bonita J. Wurst

Bonita J. Wurst, ASA, EA, FCA, MAAA

ADH/BJW:ah

C3470

EXECUTIVE SUMMARY

Executive Summary

Actuarially Determined Contribution

The Actuarially Determined Contribution (ADC) for the fiscal year ending June 30, 2018 was estimated to be $2,723,435 based on an assumed discount rate of 3.56% for the General group and 7.00% for the Police and Fire Groups. Actual claims and premiums paid on behalf of retirees including the implicit subsidy may be treated as employer contributions in relation to the ADC if paid from outside of existing plan assets. The expected employer portion of the claims and premium amounts paid is estimated to be $2,003,607 for the fiscal year ending June 30, 2018 and $2,104,171 for the fiscal year ending June 30, 2019.

For additional details, please see Section A of the report.

Additional OPEB Reporting Requirements

Please note that beginning with the fiscal year beginning after June 15, 2016 GASB Statement No. 43 was replaced by GASB Statement No. 74. Also, beginning with the fiscal year beginning after June 15, 2017, GASB Statement No. 45 will be replaced with GASB Statement No. 75. Information related to GASB Statements No. 74 and No. 75 reporting will be provided in a separate report.

Liabilities and Assets

The present value of all benefits expected to be paid to current plan members as of June 30, 2017 is $49,312,319 based on an assumed discount rate of 3.56% for the General group and 7.00% for the Police and Fire groups. The Actuarial Accrued Liability, which is the portion of the above amounts attributable to service accrued by plan members as of June 30, 2017 is $40,724,745. The assets currently set aside for GASB OPEB purposes as of June 30, 2017 are $5,896,911. The Unfunded Actuarial Accrued Liability (UAAL) as of June 30, 2017 is $34,827,834.

Excise Tax

The Patient Protection and Affordable Care Act includes an excise tax for high cost (Cadillac) health plans beginning in 2020. Based on the current level of premiums, this plan is not projected to be subject to the tax during the life of the members. However, actual health care costs can be volatile and increase rapidly so a future excise tax may apply. No adjustment for the excise tax has been made in this valuation given the current premiums, trend expectations and future uncertainty.

Actuarial Assumptions

There have been changes in actuarial assumptions since the prior valuation, as shown below:

- Lower the Investment Return Assumption from 5.00% to 3.56% for the General group and raise the Investment Return Assumption from 5.00% to 7.00% for the Police and Fire groups.
- Lower the Wage Inflation Assumption from 4.25% to 3.50%.
- Lower the Ultimate Healthcare Cost Trend from 4.50% to 3.50%.
- Extend the number of years of decreasing Healthcare Cost Trend, from 10 to 16.
- The General group is using updated Merit and Seniority wage increase assumptions, mortality rates, early retirement rates, withdrawal rates, and disability rates.
- Elimination of the Excise Tax adjustment.

SECTION A

VALUATION RESULTS

Development of the Actuarially Determined Contributions for the Other Postemployment Benefits as of July 1, 2017

Contributions for	Development of the Annual Required Contribution for July 1, 2017 - June 30, 2018 General	Police & Fire	Total
Total Normal Cost	$ 525,641	$ 448,599	$ 974,240
Annual Active Member Contribution	0	292,423	292,423
Employer Normal Cost	525,641	156,176	681,817
Amortization of Unfunded Actuarial Accrued Liabilities (Amortized over 22 years)	572,964	1,468,653	2,041,617
Actuarially Determined Contribution (ADC)	**1,098,605**	**1,624,830**	**2,723,435**
Projected Payroll for the Fiscal Year Beginning July 1, 2017	16,901,605	12,069,106	28,970,711
Actuarially Determined Contribution (ADC) as a Percentage of Projected Payroll	**6.50%**	**13.47%**	**9.40%**
ADC Per Active Participant	3,401	8,597	5,319
Projected Payroll for the Fiscal Year Beginning July 1, 2018	17,493,161	12,491,525	29,984,686
Actuarially Determined Contribution (ADC) for the Fiscal Year Beginning July 1, 2018	**1,137,056**	**1,682,476**	**2,819,532**
ADC Per Active Participant	3,520	8,902	5,507

The assumptions used to calculate the liabilities shown above include a 3.56% investment return rate for the General group and a 7.00% investment return rate for the Police and Fire groups.

The unfunded actuarial accrued liabilities were amortized as a level percent of payroll, assuming payroll growth of 3.5%, over a period of 22 years. A 30-year amortization period for Unfunded Actuarial Accrued Liability (UAAL) is the maximum period that complies with GASB requirements.

Determination of Unfunded Actuarial Accrued Liability as of June 30, 2017

	General	Police & Fire	Total
A. Present Value of Future Benefits			
1. Retirees and Beneficiaries	$ 6,174,378	$17,392,607	$23,566,985
2. Vested Terminated Members	0	0	0
3. Current Active Members			
Allocated to Service Rendered Prior to Valuation Date	6,122,801	11,034,959	17,157,760
Allocated to Service Likely to be Rendered After Valuation Date	5,275,351	3,312,223	8,587,574
Total Active	11,398,152	14,347,182	25,745,334
Total Present Value of Future Benefits	17,572,530	31,739,789	49,312,319
B. Present Value of Future Employer Normal Costs	5,275,351	616,085	5,891,436
C. Present Value of Future Contributions from Current Active Members	0	2,696,138	2,696,138
D. Actuarial Accrued Liability (A.-B.-C.)	12,297,179	28,427,566	40,724,745
E. Actuarial Value of Assets	0	5,896,911	5,896,911
F. Unfunded Actuarial Accrued Liability (D.-E.)	12,297,179	22,530,655	34,827,834
F. Funded Ratio (E./D.)	0.0%	20.7%	14.5%

The assumptions used to calculate the liabilities shown above include a 3.56% investment return rate for the General group and a 7.00% investment return rate for the Police and Fire groups.

Under the new GASB Statement No. 75, the Net OPEB Obligation (analogous to the Unfunded Actuarial Accrued Liability) will appear on the Township's balance sheet in fiscal year ending 2018.

Comments

Comment A: There have been changes in actuarial assumptions since the prior valuation, as shown below:

- Lower the Investment Return Assumption from 5.00% to 3.56% for the General group and raise the Investment Return Assumption from 5.00% to 7.00% for the Police and Fire groups.
- Lower the Wage Inflation Assumption from 4.25% to 3.50%.
- Lower the Ultimate Healthcare Cost Trend from 4.50% to 3.50%.
- Extend the number of remaining years of decreasing Healthcare Cost Trend, from 8 to 16.
- The General group is using updated Merit and Seniority wage increase assumptions, mortality rates, early retirement rates, withdrawal rates, and disability rates.
- Elimination of the Excise Tax Adjustment.

Comment B: One of the key assumptions used in any valuation of the cost of postemployment benefits is the long-term rate of investment return on plan assets. Higher assumed investment returns will result in a lower Actuarially Determined Contribution (ADC). Lower returns will result in a higher ADC.

It is our understanding that the General group is being funded on a pay as you go basis. Based on this understanding we believe an interest rate of 3.56%, which is consistent with GASB Statement Nos. 74 and 75, requirements, to be a reasonable investment return assumption. It is our understanding that the Police and Fire group assets are invested in the MERS Total Market Fund. Based on our analysis, we believe that 7.0% is a reasonable investment return assumption.

Comment C: The Patient Protection and Affordable Care Act includes an excise tax for high cost (Cadillac) health plans beginning in 2020. Based on the current level of premiums, this plan is not projected to be subject to the tax during the life of the members. However, actual health care costs can be volatile and increase rapidly so a future excise tax may apply. No adjustment for the excise tax has been made in this valuation given the current premiums, trend expectations, and future uncertainty.

Comment D: Valuation liabilities presented in this report decreased due to premium rate decreases, and the subsequent elimination of the Excise Tax Adjustment, as well as a smaller difference between the premiums charged to retirees and the actual cost of health coverage. In addition the ultimate trend rate decreased from 4.50% to 3.50%. These liability gains were partially offset by extending the number of years of decreasing Healthcare Cost Trend, as well as the new mortality rates used for the General retirees.

Comment E: The exhibit below is an illustration of the Indirect and Direct components of the Actuarial Accrued Liability. For this purpose, the "Direct" costs represent the plan provided subsidy ($200 a month, $8,000 annual, 100% premium paid). "Indirect" costs represent additional costs due to the difference between the premiums paid for retiree health benefits and the actual cost of those benefits.

	Actuarial Accrued Liability		
Group	**Indirect**	**Direct**	**Total**
MERS General Fund	$ 4,272,310	$ 8,024,869	$ 12,297,179
Police VEBA	748,177	7,546,691	8,294,868
Fire Trust	786,459	12,791,282	13,577,741
401(h)	122,587	6,432,370	6,554,957
Total Police & Fire	$ 1,657,223	$ 26,770,343	$ 28,427,566
Grand Total	$ 5,929,533	$ 34,795,212	$ 40,724,745

Other Observations

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Contributions and Funded Status

Given the Plan's contribution allocation procedure, if all actuarial assumptions are met (including the investment return assumptions), it is expected that:

1. Benefits will be paid partially from a trust and partially on a pay as you go basis.
2. The Unfunded Actuarial Accrued Liabilities (UAAL) will never be fully funded.
3. The funded status of the plan will continue to fluctuate in the future.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the Actuarial Accrued Liability (AAL) and the Market Value of Assets (MVA). Unless otherwise indicated, with regard to any funded status measurements presented in this report:

1. The measurement is inappropriate for assessing the sufficiency of OPEB Plan assets to cover the estimated cost of settling the OPEB Plan's benefit obligations, for example: transferring the liability to an unrelated third party in a market value type transaction.

2. The measurement is dependent upon the Actuarial Cost Method which, in combination with the OPEB Plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. Even though the funded status is over 100%, the OPEB Plan would still require future normal cost contributions (i.e., contributions to cover the cost of active membership accruing an additional year of service credit).

Limitations of Project Scope

Actuarial standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entities to make required contributions to the plan when due. Such an evaluation was not within the scope of this project and is not within the actuary's domain of expertise. Consequently, the actuary performed no such evaluation.

Risks to Future Employer Contribution Requirements

There are ongoing risks to future employer contribution requirements to which the Plan is exposed, such as:

- Actual and Assumed Investment Rate of Return
- Actual and Assumed Mortality Rates
- Amortization Policy

SECTION B

RETIREE PREMIUM RATE DEVELOPMENT

Retiree Premium Rate Development

Initial premium rates were developed separately for each class (pre-65 and post-65) and each group (MERS and Police & Fire). The rates for self-insured plans were calculated by using incurred claims and exposure data for the period of January 2014 through December 2016 adjusted for catastrophic claims, plus the load for administration, and stop loss premiums. The self-insured and prescription drug data were provided by Blue Cross Blue Shield of Michigan. The data was analyzed for the pre-65 and post-65 participants separately since Medicare is available for the post-65 participants and has a significant impact on the claim experience. Furthermore, since the prescription drug claims and the medical claims exhibit different trends and claim payment patterns, we analyzed these claims separately as well.

The majority of post-65 retirees are participating in BCBS Medicare Advantage programs. In a Medicare Advantage Program, the liability is based on the difference between the present value of future claims minus the present value of future reimbursements from CMS. Each of these items will experience future growth under arguably differing forces. Recently announced changes to the Medicare Advantage program will most likely result in decreases in the reimbursements from CMS within the next few years. This, in turn, will cause the net employer cost to trend upward at a rate above usual market trends for healthcare costs. When the plan is insured, this effect is buried in the rates being charged by the insurer. To account for this expectation, we have increased the Medicare rates to account for the expected CMS reimbursement lagging behind medical increases. This adjustment will be revisited at the time of the next valuation.

Post-65 rates used in the valuation are based on a per member weighted average based on the current post-65 participation in fully-insured plans and self-insured plans.

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

Retiree Premium Rate Development

The combined monthly one-person medical, drug, and vision premiums for participants at select ages are shown below.

Police and Fire

For Those Not Eligible for Medicare

Age	Male	Female
45	$ 484.29	$ 668.39
50	630.60	776.84
55	829.80	906.02
60	1,071.74	1,055.29

For Those Eligible for Medicare

Age	Male	Female
65	$ 391.95	$ 369.69
70	426.98	413.16
75	458.58	447.47

MERS

For Those Not Eligible for Medicare

Age	Male	Female
45	$ 396.95	$ 547.85
50	516.88	636.74
55	680.15	742.62
60	878.45	864.97

For Those Eligible for Medicare

Age	Male	Female
65	$ 312.96	$ 295.18
70	340.93	329.90
75	366.16	357.29

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

James E. Pranschke

James E. Pranschke, FSA, MAAA

SECTION C

SUMMARY OF BENEFIT PROVISIONS AND VALUATION DATA

City of Battle Creek Retiree Health Care Plan
Summary of Benefits Valued as of June 30, 2017

Plan Participants

Employees of the City of Battle Creek Retiree Health Care Plan are eligible to receive retiree health care benefits.

Retiree Health Care Benefit Amount

Police Members retired prior to January 1, 2007 - (401h)
Fire Members retired prior to July 1, 2004 - (401h)

- City pays for a subsidy toward retiree health care premium in the total amount of $500,000 annually. Individual member allotment is determined annually based on the members receiving retiree health care through the City at that time.

Police Members retired on or after January 1, 2007 - (VEBA)

- Members receive a maximum $200 per month from the City prorated for service less than 25 years
- Members contribute 2% of pay and City contributes 3% of pay during active employment
- Retiree must be immediately eligible for pension and have at least 15 years of service
- Beginning in 2010, members are eligible for an additional dollar subsidy of up to $8,000 per year

Fire Members hired after May 14, 2007

- Members contribute 3% of pay and retirees contribute 3% of pension into 149 Trust
- Members receive a maximum $200 per month paid from the 149 Trust
- If there is not enough money in the trust fund, the City pays the difference

Fire Members hired prior to May 14, 2007 and who retired after July 1, 2004

- Members contribute 3% of pay and pension into 149 Trust
- Upon retirement, trust fund pays insurance premium
- If there is not enough money in the trust fund, the City pays the difference

General Members - (City General Fund)

- Members receive a maximum $200 per month from the City based on service

Normal Retirement Eligibility

Normal retirement eligibility conditions for pension benefits are as follows:

Fire OSP
Age 50 with 25 years of service
Age 60 with any amount of service

Police, Fire IAFF, and Non-Represented Fire
Any age with 25 years of service
Age 60 with any amount of service

MERS City Managers
Age 50 with 25 years of service
Age 55 with 15 years of service
Age 60 with 10 years of service

All Other MERS Members
Age 55 with 25 years of service
Age 60 with 10 years of service

Early Retirement Eligibility

Early retirement eligibility conditions for pension benefits are as follows:

MERS Members
Age 50 with 25 years of service
Age 55 with 15 years of service

Deferred Retirement Eligibility

Members who are not immediately eligible for a pension upon separation are not eligible for deferred retiree health care benefits.

City of Battle Creek Retiree Health Care Plan
Summary of Benefits Valued as of JUNE 30, 2017

Death-in-Service Retirement Eligibility

Death retirement eligibility conditions for retiree health care benefits are as follows:

Duty Death-in-Service Retiree Health Care Benefit Eligibility Conditions
Any age with any years of service, benefit commences immediately.

Non-Duty Retiree Health Care Benefit Eligibility Conditions

Fire Members
Any age with 20 years of service, benefit commences when member would have been eligible for normal retirement.

All Other Members
Any age with 10 years of service, benefit commences when member would have been eligible for normal retirement.

Disabled Retirement Eligibility

Disability retirement eligibility conditions for retiree health care benefits are as follows:

Duty Disability Retiree Health Care Benefit Eligibility Conditions
Any age with any years of service, benefit commences immediately.

Non-Duty Disability Retiree Health Care Benefit Eligibility Conditions

All Members
Any age with 5 years of service, benefit commences immediately.

Benefits for Spouses of Retired Employees

Spouses of retired employees are eligible to receive retiree health care benefits. Coverage continues to surviving spouses of deceased retirees. City provides up to $80 per month based on deceased retirees' service at retirement.

Non-Medicare and Medicare-Eligible Provisions

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

Dental, Vision, and Life Insurance Coverage

Retiree pays for full dental premium and life insurance. The City does not offer vision coverage to retired members.

Retiree Opt-Out

Retirees who decide to opt-out of the health care plan are not eligible to receive payment in lieu of retiree health care benefits in any year in which they receive coverage from another source. If a retiree waives coverage, they are not eligible to opt back into the City's retiree health care plan.

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

Member Demographic Data as of June 30, 2017

Police and Fire Active Members

Attained Age	Years of Service to Valuation Date 0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	Total No.
20-24	2							2
25-29	17	1						18
30-34	19	8	2					29
35-39	5	10	11	5				31
40-44	4	8	5	16	5			38
45-49	2	2	1	6	24	4		39
50-54		1		3	9	2		15
55-59		1			11		1	13
60-64				1	3			4
Totals	**49**	**31**	**19**	**31**	**52**	**6**	**1**	**189**

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

Age: 41.3 years
Service: 13.2 years

Member Demographic Data as of June 30, 2017

MERS Active Members

Attained Age	Years of Service to Valuation Date							Total No.
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	
15-19								
20-24	6							6
25-29	17	2						19
30-34	17	6	2					25
35-39	18	11	7	2				38
40-44	22	10	4	7	2			45
45-49	12	8	4	8	7	2		41
50-54	11	13	3	11	2	6	5	51
55-59	12	12	8	13	9	5	2	61
60-64	3	4	3	9	3	3	5	30
65 & Over	1	2	1		1		2	7
Totals	**119**	**68**	**32**	**50**	**24**	**16**	**14**	**323**

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

Age: 46.7 years
Service: 10.6 years

Member Demographic Data as of June 30, 2017

Retired Members

Attained Age	Number of Retirees				
	MERS		Police and Fire		Total
	Male	Female	Male	Female	
Under 55	3	1	12	2	18
55-59	7	5	15	3	30
60-64	26	20	26	3	75
65 & Over	46	48	74	17	185
Totals	**82**	**74**	**127**	**25**	**308**

This schedule includes only retirees indicated as receiving health care.

SECTION D

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Valuation Methods

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

(i) the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement; and

(ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

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

Financing of Unfunded Actuarial Accrued Liabilities. Unfunded Actuarial Accrued Liabilities (UAAL) were amortized by a level (principal and interest combined) percent of payroll contribution. The UAAL were determined using the funding value of assets and Actuarial Accrued Liability calculated as of the valuation date. The UAAL amortization payment is the amount required to fully amortize the UAAL over a 22-year period beginning on the valuation date. This UAAL payment does not reflect any payments expected to be made between the valuation date and the fiscal year for which the contributions in this report have been calculated.

***Rates of Investment Return under a Pay as You Go Arrangement*. 3.56% per year,** compounded annually, net of expenses. This rate consists of a real rate of return of 0.06% a year plus a long-term rate of wage growth of 3.50% a year. This assumption is used to equate the value of payments due at different points in time.

***Rates of Investment Return under a Fully Funded Arrangement*. 7.00% per year,** compounded annually, net of expenses. This rate consists of a real rate of return of 3.50% a year plus a long-term rate of wage growth of 3.50% a year. This assumption is used to equate the value of payments due at different points in time.

The number of active members is assumed to remain constant in the future.

The growth rate for amortizing the Unfunded Actuarial Accrued Liabilities was assumed to be 3.50%.

Rates of price inflation are not specifically used for this valuation. However, a rate of price inflation of 2.50% would be consistent with other assumptions in this report.

Basis of assumptions. The assumptions for the General group was based on the experience study, performed by the prior MERS pension actuary, covering the five year period ending December 31, 2013. The assumptions for the Police and Fire groups were based on the experience study for the City of Battle Creek Police and Fire Retirement System covering the five year period ending June 30, 2015.

Actuarial Assumptions

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

MERS

	% Increase in Salary at Sample Ages		
Sample Ages	**Merit & Seniority**	**Base (Economic)**	**Increase Next Year**
20	11.00%	3.50%	14.50%
25	7.20%	3.50%	10.70%
30	3.10%	3.50%	6.60%
35	1.90%	3.50%	5.40%
40	1.20%	3.50%	4.70%
45	0.81%	3.50%	4.31%
50	0.52%	3.50%	4.02%
55	0.30%	3.50%	3.80%
60	0.00%	3.50%	3.50%
Ref	501		

Police and Fire

	% Increase in Salary at Sample Years of Service		
Sample Years of Service at Beginning of the Year	**Merit & Seniority**	**Base (Economic)**	**Increase Next Year**
0	12.00%	3.50%	15.50%
1	9.00%	3.50%	12.50%
2	4.30%	3.50%	7.80%
3	3.50%	3.50%	7.00%
4	2.30%	3.50%	5.80%
5	2.00%	3.50%	5.50%
6	1.00%	3.50%	4.50%
7	1.00%	3.50%	4.50%
8	1.00%	3.50%	4.50%
9 and Over	0.50%	3.50%	4.00%
Ref	299		

MERS

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

The mortality table used to project the mortality experience of non-disabled plan members is a 50% Male - 50% Female blend of the following tables:

1. The RP-2014 Healthy Annuitant Mortality Tables, with rates multiplied by 105%
2. The RP-2014 Employee Mortality Tables
3. The RP-2014 Juvenile Mortality Tables

For ages 0-17 we use the rates in Table 3; for ages 18-49 we use the rates in Table 2; for ages 70 and older we use the rates in Table 1; and for ages 50-69 we blend Table 2 and Table 1 as follows:

a. Age 50, use 60% of Table 2 and 40% of Table 1
b. Age 51, use 57% of Table 2 and 43% of Table 1
c. Etc. …
d. Age 69, use 3% of Table 2 and 97% of Table 1

The mortality table used to project the mortality experience of disabled plan members is a 50% Male - 50% Female blend of the RP-2014 Disabled Retiree Mortality Tables.

Ninety percent (90%) of active member deaths are assumed to be non-duty deaths and 10% of the deaths are assumed to be duty related.

Possible future mortality improvements are reflected in the mortality assumption. The mortality assumptions include a 10% margin for future mortality improvements.

The life expectancies and mortality rates projected for non-disabled members are shown below for selected ages:

Sample Attained Ages	Probability of Dying Next Year	Future Life Expectancy (years)
20	0.03 %	63.06
25	0.03	58.15
30	0.03	53.24
35	0.04	48.33
40	0.05	43.43
45	0.08	38.56
50	0.23	33.74
55	0.37	29.18
60	0.58	24.79
65	0.94	20.59
70	1.56	16.66
75	2.51	13.07
80	4.18	9.85

Ref #1603x1sb0yrs0Unisex

Actuarial Assumptions (Continued)

The life expectancies and mortality rates projected for disabled members are shown below for selected ages:

Sample Attained Ages	Probability of Dying Next Year	Future Life Expectancy (years)
20	0.47 %	46.95
25	0.54	43.14
30	0.55	39.24
35	0.65	35.33
40	0.82	31.52
45	1.30	27.98
50	1.62	24.87
55	1.89	21.91
60	2.18	18.97
65	2.63	16.04
70	3.43	13.19
75	4.77	10.54
80	6.88	8.18
Ref	#1605x1sb0yrs0Unisex	

Police and Fire

The post-retirement mortality table used to project the mortality experience of Police and Fire members is the RP-2014 Healthy Annuitant Mortality Table projected to 2019 using MP-2014 mortality improvement scales for healthy retirees.

Sample Attained Ages	Probability of Dying Next Year		Future Life Expectancy (years)	
	Men	Women	Men	Women
50	0.37 %	0.26 %	33.25	35.95
55	0.53	0.35	28.92	31.44
60	0.74	0.49	24.73	27.02
65	1.04	0.74	20.70	22.74
70	1.56	1.17	16.85	18.67
75	2.45	1.90	13.26	14.86
80	4.06	3.18	10.01	11.41
Ref	#1208x1sb0yrs0Unisex		#1209x1sb0yrs0Unisex	

Actuarial Assumptions (Continued)

The disabled mortality table is the RP-2014 Disabled Retirees Mortality Table projected to 2019 using MP-2014 mortality improvement scales.

Sample Attained Ages	Probability of Dying Next Year		Future Life Expectancy (years)	
	Men	Women	Men	Women
50	1.84 %	1.11 %	23.75	28.16
55	2.17	1.39	20.96	24.79
60	2.53	1.61	18.26	21.51
65	3.00	1.93	15.56	18.23
70	3.75	2.56	12.93	15.02
75	4.95	3.73	10.41	12.06
80	6.96	5.57	8.08	9.45
Ref	#1258x1sb0yrs0Unisex		#1259x1sb0yrs0Unisex	

The pre-retirement mortality table is the RP-2014 Mortality Table for Employees projected to 2019 using the MP-2014 mortality improvement scales for active employees. 100% of active member deaths are assumed to be non-duty deaths.

Sample Attained Ages	Probability of Dying Next Year		Future Life Expectancy (years)	
	Men	Women	Men	Women
50	0.15 %	0.10 %	35.05	39.48
55	0.26	0.16	30.36	34.71
60	0.45	0.23	25.81	30.01
65	0.78	0.34	21.48	25.39
70	1.29	0.57	17.41	20.87
75	2.11	0.98	13.64	16.54
80	3.52	1.68	10.20	12.42
Ref	#1158x1sb0yrs0Unisex		#1159x1sb0yrs0Unisex	

Actuarial Assumptions (Continued)

The rates of retirement used to measure the probability of eligible members retiring during the next year, were as follows:

MERS

	Retirement Ages	Percent of Eligible Active Members Retiring within Next Year: City Managers	Percent of Eligible Active Members Retiring within Next Year: All Others
1	50	20%	
2	51	20	
3	52	20	
4	53	20	
5	54	20	
1	55	20	20%
2	56	20	20
3	57	21	21
4	58	21	21
5	59	21	21
6	60	21	21
7	61	22	22
8	62	22	22
9	63	22	22
10	64	23	23
11	65	25	25
12	66	25	25
13	67	26	26
14	68	28	28
15	69	30	30
16	70 and above	100	100
	Ref	1,876	1,876

Actuarial Assumptions (Continued)

The rates of retirement used to measure the probability of eligible members retiring during the next year, were as follows:

Police and Fire

	Percent of Active Members Retiring within Next Year		
Retirement		Fire	
Ages	Police	IAAF	OSP*
50			20%
51			15%
52-56			10%
57			15%
58			25%
59			30%
60-65	35%	20%	100%
66	25%	15%	100%
67	20%	10%	100%
68-71	15%	10%	100%
72	15%	15%	100%
73	25%	25%	100%
74	30%	30%	100%
75 & Over	100%	100%	100%
Ref	552	553	24

	Percent of Eligible Active Members Retiring within Next Year	
Service	Police	Fire
25	60 %	30 %
26	30	15
27	30	15
28	30	15
29	20	15
30	20	50
31	20	40
32	20	30
33	20	20
34	20	20
35 & Over	100	100
Ref	1,788	999

** The probability of retirement at first eligibility for Fire (OSP) members is 60%.*

Actuarial Assumptions (Continued)

The rates of early retirement used to measure the probability of eligible members retiring during the next year, were as follows:

MERS

Retirement Ages	Percent of Eligible Active Members Early Retiring within Next Year
50	2.0 %
51	2.0
52	3.3
53	3.8
54	5.6
55	4.3
56	4.2
57	4.1
58	5.0
59	6.2
Ref	2,736

Actuarial Assumptions (Continued)

Rates of separation from active membership are used to estimate the number of employees at each age that are expected to terminate employment before qualifying for retirement benefits. The withdrawal rates do not apply to members eligible to retire, and do not include separation on account of death or disability.

Sample rates of separation from active employment are shown below:

MERS

Years of Service	% of Active Members Separating within Next Year
0	13.72 %
1	11.41
2	9.31
3	7.35
4	6.02
5	4.83
10	3.22
15	2.38
20	1.82
25	1.54
30 & Over	1.54
Ref	1114x0.7

Police and Fire

Sample Ages	% of Active Members Separating within Next Year	
	Police	**Fire**
25	4.00 %	3.50 %
30	3.68	2.90
35	3.16	1.50
40	1.88	0.60
45	1.40	0.50
50	1.40	0.50
55	0.40	0.50
60	0.40	0.50
65	0.40	0.50
70	0.40	0.50
Ref	235 x 0.8	54 x 1

Actuarial Assumptions (Concluded)

Rates of disability among active members are used to estimate the incidence of member disability in future years. For MERS members, 20% of disabilities were assumed to be duty related and 80% of disabilities were assumed to be non-duty related. For Police and Fire members, 100% of disabilities were assumed to be duty related.

Sample	Percent Becoming Disabled within Next Year		
		Police/Fire	
Ages	MERS	Male	Female
20	0.02 %	0.06 %	0.08 %
25	0.02	0.06	0.08
30	0.02	0.06	0.08
35	0.05	0.06	0.08
40	0.08	0.15	0.27
45	0.20	0.20	0.30
50	0.29	0.37	0.43
55	0.38	0.67	0.57
60	0.39	1.06	0.76
65	0.39	1.24	0.92
Ref	#1106x1	#9x0.75	#10x0.75

Health care trend rates used in the valuation were as shown below.

Year	Intermediate
2018	8.00 %
2019	7.50
2020	7.00
2021	6.50
2022	6.25
2023	6.00
2024	5.75
2025	5.50
2026	5.25
2027	5.00
2028	4.75
2029	4.50
2030	4.25
2031	4.00
2032	3.75
2033 & Later	3.50

Required Supplementary Information

Valuation Date	June 30, 2017
Actuarial Cost Method	Individual Entry Age
Amortization Method	Level Percent Closed
Remaining Amortization Periods	22 Years
Asset Valuation Method	Market Value
Actuarial Assumptions:	
Discount Rate	3.56% Per Year for General and 7.00% Per Year for Police and Fire
Projected Salary Increases	3.5% - 15.5%
Valuation Health Care Cost Trend Rate	8% in 2018, grading to 3.50% in 2033

Miscellaneous and Technical Assumptions

Decrement Timing:	Decrements of all types are assumed to occur mid-year.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
Incidence of Contributions:	Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.
Marriage Assumption:	70% of General and 100% of Police and Fire males and females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses for active member valuation purposes.
Medicare Coverage:	Assumed to be available for all covered employees on attainment of age 65.
Election Percentage:	It was assumed that 90% of eligible retirees will elect to receive retiree health care benefits through the City. Of those eligible to elect coverage, 30% of MERS retirees and 55% of Police and Fire retirees were assumed to elect two-person coverage, if eligible. For those that elect two-person coverage, it was assumed that coverage would continue to the spouse upon death of the retiree, if eligible. For eligible active employees who have opted out of the City's active health care plan, it was assumed 90% would elect retiree health care coverage upon retiring.
Patient Protection and Affordable Care Act:	The Patient Protection and Affordable Care Act includes an excise tax for high cost (Cadillac) health plans beginning in 2020. Based on the current level of premiums, this plan is not projected to be subject to the tax during the life of the members. However, actual health care costs can be volatile and increase rapidly so a future excise tax may apply. No adjustment for the excise tax has been made in this valuation given the current premiums, trend expectations, and future uncertainty.

APPENDIX

GLOSSARY

Glossary

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

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

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

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

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

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

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

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

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

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

Glossary (Concluded)

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

Net OPEB Obligation (NOO). The NOO is the cumulative difference between the ADC and actual employer contributions with adjustments.

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

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

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

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