City of Royal Oak
Retiree Health Care Plan
Actuarial Valuation Report
as of June 30, 2020

Table of Contents

December 9, 2020

Ms. Julie Rudd
Finance Director
City of Royal Oak
211 S. Williams Street
Royal Oak, Michigan 48067

Re: City of Royal Oak Retiree Health Care Plan Actuarial Valuation as of June 30, 2020
Actuarial Disclosures

Dear Ms. Rudd:

The results of the June 30, 2020 Annual Actuarial Valuation of the City of Royal Oak Retiree Health Care Plan are presented in this report.

This report 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 only in its entirety and only with the permission of the City. GRS is not responsible for unauthorized use of this report.

The purposes of the valuation are to measure the System's funding progress, and to determine the employer contribution rate for the fiscal years ending June 30, 2022 and June 30, 2023. 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.

The contribution rate in this report is determined using the actuarial assumptions and methods disclosed in Section F 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 findings in this report are based on data and other information through June 30, 2020. The valuation was based upon information furnished by the City, concerning Retiree Health Care benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal reasonability and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by the City.

This report was prepared using assumptions adopted by the City. All actuarial assumptions used in this report are reasonable for the purposes of this valuation. All actuarial assumptions and methods used in the valuation follow the guidance in the applicable Actuarial Standards of Practice. Additional information about the actuarial assumptions is included in the section of this report entitled Actuarial Cost Method and Actuarial Assumptions.

This report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge the information contained in this report is accurate and fairly presents the actuarial position of the City of Royal Oak Retiree Health Care Plan as of the valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

Mark Buis and James D. Anderson 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

Gabriel, Roeder, Smith & Company will be pleased to review this valuation and report with the Board of Trustees and to answer any questions pertaining to the valuation.

Respectfully submitted,

Mark Buis

Mark Buis, FSA, EA, FCA, MAAA

James D. Anderson

James D. Anderson, FSA, EA, FCA, MAAA

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Additional Disclosures Required by Actuarial Standards of 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 or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of the actuary's assignment, the actuary did not perform an analysis of the potential range of such future measurements.

The funded ratio reported in this valuation is not appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations.

This report should not be relied on for any purpose other than the purpose described in the primary communication.

The signing actuaries are independent of the plan sponsor.

EXECUTIVE SUMMARY

Executive Summary

Actuarially Determined Contribution

Please note that beginning with the fiscal year ending June 30, 2017, GASB Statement No. 43 was replaced by GASB Statement No. 74. Also, beginning with the fiscal year ending June 30, 2018, GASB Statement No. 45 was replaced by GASB Statement No. 75. It is our understanding that the City of Royal Oak is required to comply with both GASB Statement Nos. 74 and 75, and as such requires GASB Statement Nos. 74 and 75 reporting information at the completion of each fiscal year.

We have calculated the Actuarially Determined Contribution for the fiscal years ending June 30, 2022 and June 30, 2023 under the interest rate assumption of 7.25%. Below is a summary of the results.

For additional details please refer to Section A, "Valuation Results."

	Actuarially Determined Contribution*	Estimated Claims Paid for Retirees
Fiscal Year Ending June 30, 2022	$ 1,498,790	$ 9,163,788
Fiscal Year Ending June 30, 2023	1,390,614	9,667,988

** Based on a 7.25% long-term rate of investment return.*

Liabilities and Assets – As of June 30, 2020

1. Present Value of Future Benefit Payments	$149,435,226
2. Actuarial Accrued Liability	145,389,109
3. Plan Assets	137,038,116
4. Unfunded Actuarial Accrued Liability (3) – (2)	8,350,993
5. Funded Ratio (3)/(2)	94.3%

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

SECTION A

VALUATION RESULTS

Development of the Actuarially Determined Contribution for the Other Postemployment Benefits Fiscal Years Ending June 30, 2022 and June 30, 2023

Contributions for	Development of the Actuarially Computed Employer Contribution for July 1, 2021 - June 30, 2022		
	General	Police & Fire	Total
Normal Cost			
Normal Retirement	$ 288,393	$ 370,245	$ 658,638
Early Retirement	0	0	0
Termination Benefits	0	5,870	5,870
Death-in-Service	3,646	3,161	6,807
Disability	0	11,288	11,288
Future Refund of Member Contributions	0	0	0
Total Normal Cost	$ 292,039	$ 390,564	$ 682,603
Annual Active Member Contribution	0	0	0
Employer Normal Cost	292,039	390,564	682,603
Amortization of Unfunded Actuarial Accrued Liabilities	333,967	482,221	816,188
Actuarially Determined Contribution	626,006	872,785	1,498,791

Contributions for	Actuarially Computed Employer Contribution for July 1, 2022 - June 30, 2023		
	General	Police & Fire	Total
Actuarially Determined Contribution	$ 566,798	$ 823,816	$ 1,390,614

The unfunded actuarial accrued liabilities were amortized as a level dollar amount over a period of 18 years for the fiscal year ending June 30, 2022 and decreasing by one each year thereafter.

The long-term rate of investment return used in this valuation was 7.25%.

Determination of Unfunded Actuarial Accrued Liability as of June 30, 2020

	General	Police & Fire	Total
A. Present Value of Future Benefits			
1. Retirees and Beneficiaries	$46,281,643	$71,604,861	$ 117,886,504
2. Vested Terminated Members	228,564	0	228,564
3. Active Members	14,691,994	16,628,164	31,320,158
Total Present Value of Future Benefits	$61,202,201	$88,233,025	$149,435,226
B. Present Value of Future Employer Normal Costs	1,721,195	2,324,922	4,046,117
C. Present Value of Future Contributions from Current Active Members	0	0	0
D. Actuarial Accrued Liability (A.-B.-C.)	59,481,006	85,908,103	145,389,109
E. Actuarial Value of Assets	56,064,481	80,973,635	137,038,116
F. Unfunded Actuarial Accrued Liability (D.-E.)	3,416,525	4,934,468	8,350,993

The long-term rate of investment return used in this valuation is 7.25%.

Development of Valuation Assets

Year Ended June 30:	2019	2020	2021	2022	2023	2024
A. Valuation Assets Beginning of Year	$ 134,564,918	$ 136,677,816				
B. Market Value End of Year	132,742,175	127,228,876				
C. Market Value Beginning of Year	132,477,912	132,742,175				
D. Audit Adjustment	269,739	0				
E. Non-Investment Net Cash Flow	(6,579,500)	(6,453,566)				
F. Investment Income						
F1. Market Total: B - C - D - E	6,574,024	940,267				
F2. Amount for Immediate Recognition (7.25%)	9,537,006	9,675,200				
F3. Amount for Phased-In Recognition: F1-F2	(2,962,982)	(8,734,933)				
G. Phased-In Recognition of Investment Income						
G1. Current Year: 0.2 x F3	(592,596)	(1,746,987)				
G2. First Prior Year	(521,751)	(592,596)	$ (1,746,987)			
G3. Second Prior Year	0	(521,751)	(592,596)	$ (1,746,987)		
G4. Third Prior Year	0	0	(521,751)	$ (592,596)	$ (1,746,987)	
G5. Fourth Prior Year	0	0	0	(521,753)	(592,598)	$ (1,746,985)
G6. Total Phased-In Recognition	(1,114,347)	(2,861,334)	(2,861,334)	(2,861,336)	(2,339,585)	(1,746,985)
H. Valuation Assets End of Year: A + D + E + F2 + G6	136,677,816	137,038,116				
I. Difference between Market & Valuation Assets: B - H	(3,935,641)	(9,809,240)	(6,947,906)	(4,086,570)	(1,746,985)	0
J. Valuation Asset Recognized Rate of Return	6.41%	5.11%				
K. Market Value Recognized Rate of Return	5.08%	0.73%				

The Valuation Assets recognizes assumed investment income (line F2) fully each year. Differences between actual and assumed investment income (line F3) are phased-in over a closed 5-year period. During periods when investment performance exceeds the assumed rate, Valuation Assets will tend to be less than Market Value. During periods when investment performance is less than the assumed rate, Valuation Assets will tend to be greater than Market Value. The Valuation Assets are unbiased with respect to Market Value. At any time, it may be either greater or less than Market Value. If assumed rates are exactly realized for 4 consecutive years, it will become equal to Market Value.

Comments

Comment A: The Actuarially Determined Contribution increased from $1,021,651 in the June 30, 2018 valuation to $1,498,791 in the June 30, 2020 valuation. Factors contributing to this increase include, but are not limited to:

- Unfavorable asset performance;
- More retirements than expected; and
- Resetting the health care trend rates.

Partially offsetting these factors were decreases due to:

- Slightly lower medical rates than projected.

Comment B: One of the key assumptions used in any valuation of the cost of postemployment benefits is the rate of return on Plan assets. Higher assumed investment returns will result in a lower Actuarially Determined Contribution. Lower returns will tend to increase the computed Actuarially Determined Contribution. Based on information from the plan sponsor, we have calculated the liability and the resulting Actuarially Determined Contribution using an assumed long-term rate of investment return of 7.25% similar to the Retirement System.

Comment C: The plan sponsor is required by GASB to perform actuarial valuations at least biennially or more frequently if significant changes in the OPEB are made in the interim.

Comment D: The period of years used to amortize (pay off) the unfunded accrued liability is 18 years beginning with the fiscal year ending June 30, 2022. The amortization period is closed. This means that the amortization period will decrease by one year each year until the unfunded (or overfunded) liability is paid off.

Comment E: On December 20, 2019, the "Further Consolidated Appropriations Act of 2020," H.R. 1865, was signed into law. The Act repeals the "Cadillac tax" which was a tax provision from the Affordable Care Act (ACA). As a result, any liability/provision analysis included as part of the prior funding valuation is no longer required. In addition, no further adjustments associated with the "Cadillac tax" are required. For purposes of the City of Royal Oak Retiree Health Care Plan funding valuation, the repeal of the "Cadillac tax" does not have an impact on plan liabilities because no load was applied as part of the June 30, 2018 funding valuation.

Comments (Concluded)

Comment F: The GASB issued Statement Nos. 74 and 75 for OPEB valuations. GASB Statement No. 74 for the plan OPEB disclosures is effective for fiscal years beginning after June 15, 2016. GASB Statement No. 75 for employer OPEB disclosures is effective for employer fiscal years beginning after June 15, 2017. The GASB implementation guides for Statement Nos. 74 and No. 75 provide additional clarification related to the implementation of these Statements. It is our understanding that the City will need to comply with GASB Statement Nos. 74 and 75 for each future fiscal year ending June 30. The basis for the June 30, 2021 and June 30, 2022 GASB Statement Nos. 74 and 75 information is expected to be this valuation (as of June 30, 2020), where roll-forward techniques will be applied.

Comment G: Michigan Public Act 202 of 2017 created new reporting and other requirements for local units of government. The assumptions and/or methods used in this valuation **do not** fall in the range of uniform assumptions established by the Treasurer for PA 202 reporting purposes. The information necessary for PA 202 reporting purposes was provided in the GASB 74/75 report.

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

- The measurement is inappropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the plan's benefit obligations;
- 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., contributions to cover the cost of the active membership accruing an additional year of service credit); and
- The measurement is inappropriate for assessing the need for or the amount of future employer contributions.

Comment I: 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 Retiree Health Care Plan. Actual experience will be reflected in each subsequent funding valuation, as experience emerges.

SECTION B

RETIREE PREMIUM RATE DEVELOPMENT

Retiree Premium Rate Development

Rate Development

The City offers benefits on a fully-insured basis and on a self-insured basis. The fully-insured and self-insured rates are developed separately and then blended together at the end to create a single set of rates for use in the valuation.

Initial self-insured premium rates were developed separately for each class (Medicare (post-65) and Non-Medicare (pre-65) retirees). The rates were calculated by using incurred claims and exposure data during the period of April 2017 to March 2020 and paid through June 2020 adjusted for catastrophic claims, plus the load for administration, network access fee, and stop loss premiums. The Medical 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. We estimated the split between Medicare and Non-Medicare claims for the period of April 2017 to March 2018 since they were not provided separately. Furthermore, since the prescription drug claims and the medical claims exhibit different trends and claim payment patterns, we analyzed these claims separately as well.

Initial fully-insured premium rates were developed for the two classes of retirees (pre-65 and post-65). The fully-insured rates provided by the City were utilized to determine the appropriate premium rates. For the pre-65 and post-65 retirees, the fully-insured premium rate is used as the basis of the initial per capita cost without adjustments since the rates reflect the demographics of each of the retiree groups.

All Medicare retirees in BCBS plans are enrolled in the Medicare Complementary programs for medical coverage. For their Rx coverage, they get the prescription drug benefit that corresponds to their BCBS suffix.

For the current active employees, it was assumed they would retire into a Blue Cross/Blue Shield Plan. We have developed separate premium rates for future retirees in order to reflect the benefit differences.

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

Retiree Premium Rate Development (Continued)

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

For Those Not Eligible for Medicare (Pre-65)				
	Future Retirees		Current Retirees	
Age	Male	Female	Male	Female
40	$ 378.95	$ 615.76	$ 432.04	$ 702.04
50	614.27	756.72	700.33	862.74
60	1,043.97	1,027.95	1,190.24	1,171.98
64	1,269.50	1,198.06	1,447.37	1,365.93

For Those Eligible for Medicare (Post-65)				
	Future Retirees		Current Retirees	
Age	Male	Female	Male	Female
65	$ 585.61	$ 552.35	$ 741.69	$ 699.56
75	685.17	668.57	867.78	846.76
85	724.52	733.06	917.62	928.43

The dental and vision premiums were not "age graded" for this valuation since these claims do not vary significantly by age. The combined dental and vision rates used in this valuation are $37.74 for pre-65 participants and $37.25 for post-65 participants.

Retiree Premium Rate Development (Continued)

Health Care Trend Assumption

The health care cost trend rate is the rate of change in per capita health care claims over time as a result of factors such as medical inflation, utilization of health care services, plan design, and technological improvements. It is a crucial economic assumption that is required for measuring retiree health care benefit obligations.

Retiree health care valuations use a health care cost trend assumption (trend vector) that changes over the years. The trend vector used in this valuation begins with a near-term trend assumption and declines over time to an ultimate trend rate. The near-term rates reflect the increases in the current cost of health care goods and services. The process of trending down to a lower ultimate trend relies on the theory that premium levels will moderate over the long-term, otherwise the healthcare sector would eventually consume the entire GDP. It is on this basis that projected premium rate increases continue to exceed wage inflation for the next ten years, but by less each year until leveling off at an ultimate rate, assumed to be 3.25% in this valuation; see below for further details regarding the trend vector used in this valuation.

While experience is often the best starting point for future costs, GRS does not rely on a group's experience in setting the near-term trend assumptions since trends vary significantly from year to year and are not credible for most groups. Therefore, professional judgment, trends from GRS' book of business and industry benchmarks (e.g., trend reports from various Pharmacy Benefit Management (PBM) organizations and national healthcare benefit consulting firms) are used in conjunction with a group's historical experience to establish the trend assumptions.

Year Beginning July 1,*	Medical & Drug Pre-65	Medical & Drug Post-65	Dental & Vision
2021	7.50%	6.25%	3.25%
2022	7.00	5.75	3.25
2023	6.50	5.50	3.25
2024	6.00	5.25	3.25
2025	5.50	5.00	3.25
2026	5.00	4.75	3.25
2027	4.50	4.50	3.25
2028	4.25	4.25	3.25
2029	4.00	4.00	3.25
2030	3.75	3.75	3.25
2031	3.50	3.50	3.25
2032 & Later	3.25	3.25	3.25

** Except for Medicare Part B Reimbursement which increases on January 1 each year.*

Retiree Premium Rate Development (Concluded)

Actuarial Disclosures

The premium rates used in this valuation were developed using proprietary Excel models which in James E. Pranschke's professional judgment provide initial projected costs which are consistent with the purposes of the valuation. We performed tests to ensure that the models, in their entirety, reasonably represent that which is intended to be modeled.

Aging factors used in the premium development models were developed based on information and data from a 2013 study commissioned by the Society of Actuaries entitled "Health Care Costs – From Birth to Death."

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, FCA, MAAA

SECTION C

SUMMARY OF BENEFIT PROVISIONS

City of Royal Oak Retiree Health Care Plan
Summary of Benefits as of June 30, 2020

Persons Covered

Health insurance coverage is provided by and paid for by the City for the following people:

- To retired members of the Retirement System if they meet the eligibility requirements for post-retirement medical benefits (see next page);
- To eligible spouses and/or dependents of eligible retirees during the retirees' lifetime;
- To eligible surviving spouses and/or dependents after the eligible retiree's death for members who retired on or after June 1, 1980. Spousal coverage does not continue for those who retired prior to June 1, 1980;
- To employees and eligible spouses and/or dependents who retire from a deferred status if they meet the minimum service requirements under their contract; and
- Eligible employees may elect to receive health insurance through their spouse's health care plan. The City will pay the employee 30% of the schedule applicable premium annually, up to a maximum of $2,400.

  Note: Eligible = covered spouse and/or dependents at time of retirement or termination if deferred.

Benefits Provided

Retirees and their spouses are provided medical, prescription drug, dental, and vision coverage as well as reimbursed their Medicare Part B premiums. Benefits are provided as outlined in the labor contract/agreement under which the employee retired. (Some older contracts do not provide prescription drug, dental, and/or vision coverage.)

City of Royal Oak Retiree Health Care Plan
Summary of Benefits as of June 30, 2020

Eligibility Requirements

Current active members are eligible to receive City paid health insurance upon retirement if they meet the eligibility requirements below:

Employee Group	Date of Closure to New Hires	Eligibility Requirements
SEIU AFL-CIO Local 517 M	7/1/2006	Age 55 with 20 years of service or Age 50 with 25 years of service
Foreman & Supervisors	7/1/2006	Age 55 with 20 years of service or Age 50 with 25 years of service
Department Heads and Deputies	7/1/2008	Age 55 with 20 years of service, Age 50 with 25 years of service, or Age 60 with 15 years of service
Executive Department Heads/Judges	5/1/2008	Age 55 with 20 years of service, Age 50 with 25 years of service, or Age 60 with 15 years of service
Professional & Technical/44th District Court	7/1/2007	Age 55 with 20 years of service, Age 50 with 25 years of service, or Age 60 with 15 years of service
AFSCME/TPOAM	7/1/2005	Age 55 with 20 years of service, Age 50 with 25 years of service, or Age 60 with 15 years of service
Police/PSA/Command/Detectives	3/27/2009	20 years of service
Fire	7/1/2009	20 years of service or Age 55 with 15 years of service
Police/Fire Department Heads		Since promoted from within, they revert back to Police or Fire group (original group hired into).

SECTION D

SUMMARY OF THE INFORMATION SUBMITTED FOR THE VALUATION

Reported Financial Information
for the Year Ended June 30, 2020 (Market Value)

Revenues and Expenditures During the Year

Revenues:		
a. Retiree contributions	$ 0	
b. Employer contributions	1,086,472	
c. Interest and dividends	3,756,584	
d. Net Appreciation in Fair Value of Investments	(2,485,276)	
e. Other	0	
f. Total		$2,357,780
Expenditures:		
a. Benefits paid	7,516,243	
b. Investment expense	331,041	
c. Administrative expenses	23,788	
d. Miscellaneous expenses	7	
e. Total		7,871,079
Reserve Increase:		
Total revenues minus total expenditures		(5,513,299)

Assets

Assets:	
a. Cash or equivalents	$ 57,133
b. Receivables net of payables	(88,495)
c. Stocks	0
d. Fixed income	0
e. Real Estate Investment Fund	0
f. Mutual Funds	127,260,238
Total	$127,228,876

Total Active Members as of June 30, 2020
by Age and Years of Service

Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
35-39			4	2				6	$ 451,833
40-44			6	12	3			21	1,738,083
45-49			1	8	12	1		22	1,800,428
50-54				10	17	6		33	2,527,613
55-59				4	9	2	2	17	1,345,695
60-64				6	3	2	5	16	1,047,433
65 & Over					1		2	3	166,942
Totals			**11**	**42**	**45**	**11**	**9**	**118**	**$9,078,027**

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

Age:	51.0	years
Service:	21.3	years
Annual Pay:	$76,932	

General Active Members as of June 30, 2020
by Age and Years of Service

	Years of Service to Valuation Date							Totals	
Age	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
35-39			1	1				2	$ 100,093
40-44			2	3	1			6	463,418
45-49				5	3	1		9	603,453
50-54				6	8	2		16	1,011,837
55-59				3	6	1	1	11	730,790
60-64				6	3	2	5	16	1,047,433
65 & Over					1		2	3	166,942
Totals			**3**	**24**	**22**	**6**	**8**	**63**	**$ 4,123,966**

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

Age:	54.1	years
Service:	22.6	years
Annual Pay:	$65,460	

Police and Fire Active Members as of June 30, 2020
by Age and Years of Service

Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
35-39			3	1				4	$ 351,740
40-44			4	9	2			15	1,274,665
45-49			1	3	9			13	1,196,975
50-54				4	9	4		17	1,515,776
55-59				1	3	1	1	6	614,905
Totals			**8**	**18**	**23**	**5**	**1**	**55**	**$ 4,954,061**

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

Age:	47.5	years
Service:	19.7	years
Annual Pay:	$90,074	

Total Retired and Deferred Members as of June 30, 2020
by Age

Age	Retired Members	
	General	Police/Fire
Under 55	3	40
55-59	16	31
60-64	22	28
65 & Over	158	140
Totals	**199**	**239**

The number counts above only include those retirees who have elected to receive retiree health care coverage through the City of Royal Oak retiree health care plan.

Age	Deferred Members	
	General	Police/Fire
Under 55	1	0
55-59	0	0
60-64	0	0
65 & Over	0	0
Totals	**1**	**0**

The number counts above only include those deferred vested who are eligible based on service at termination to receive retiree health care coverage through the City of Royal Oak retiree health care plan.

SECTION E

ACCOUNTING INFORMATION

Accounting Information

Valuation Date	June 30, 2020
Actuarial Cost Method	Individual Entry Age
Amortization Method	Level Dollar Closed
Remaining Amortization Periods	18 Years
Asset Valuation Method	Market Value
Actuarial Assumptions:	
Investment Rate of Return	7.25%
Projected Salary Increases	3.0% - 5.2%
Health Care Cost Trend Rate	7.50% Initial Pre-65 Medical and Drug 6.25% Initial Post-65 Medical and Drug 3.25% Initial Dental and Vision 3.25% Ultimate (All)

SECTION F

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) (full funding credit if assets exceed liabilities) were amortized by level (principal & interest combined) percent-of-payroll contributions. The UAAL was determined using the funding value of assets and actuarial accrued liability calculated as of the valuation date. The UAAL amortization payment (one component of the contribution requirement), is the level dollar amount required to fully amortize the UAAL over an 18-year period beginning with the fiscal year ending June 30, 2022. 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.

Actuarial Value of System Assets. Last year's valuation assets are increased by contributions, expected investment income on last year's valuation assets and non-investment net cash flow, and reduced by refunds, benefit payments and expenses. To this amount is added the phased-in recognition of investment income. The phased-in recognition is the sum over the five years ending on the valuation date of 20% of the difference between each year's expected return and actual market return.

The following amortization factors were used in developing the Annual Recommended Contribution for the fiscal year shown.

	Fiscal Year Ending	
7.25% Interest	**June 30, 2022**	**June 30, 2023**
General (Level Dollar)	10.2341	9.9402
Police & Fire (Level Dollar)	10.2341	9.9402

Actuarial Assumptions

The rationale for the rates of merit and seniority salary increase, retirement rates, early retirement rates, rates of separation from active membership, and disability rates used in this valuation is included in the City of Royal Oak Retirement System's 5-year Experience Study Report, dated September 28, 2018, for the period of July 1, 2012 through June 30, 2017.

The rate of investment return was 7.25% a year, compounded annually net after investment and administrative expenses.

The assumed real return is the rate of return in excess of price inflation. Considering other assumptions used in the valuation, the 7.25% nominal rate translates to a net real return of 4.25% a year.

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

	% Increase in Salary at Sample Ages				
Sample	Merit and Seniority		Base	Increase Next Year	
Ages	General	Police/Fire	(Economic)	General	Police/Fire
20	2.16%	1.69%	3.00%	5.16%	4.69%
25	1.76%	1.69%	3.00%	4.76%	4.69%
30	1.51%	1.69%	3.00%	4.51%	4.69%
35	1.34%	1.18%	3.00%	4.34%	4.18%
40	1.20%	0.44%	3.00%	4.20%	3.44%
45	0.94%	0.14%	3.00%	3.94%	3.14%
50	0.64%	0.08%	3.00%	3.64%	3.08%
55	0.37%	0.02%	3.00%	3.37%	3.02%
60	0.09%	0.00%	3.00%	3.09%	3.00%
65	0.00%	0.00%	3.00%	3.00%	3.00%
Ref	760	761	3.00%		

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

Actuarial Assumptions (Continued)

The mortality tables used were as follows:

- **Healthy Pre-Retirement:** The RP-2014 Employee Generational Mortality Tables, with blue-collar adjustments and extended via cubic spline. This table is adjusted backwards to 2006 with the MP-2014 scale, resulting in a base year of 2006 with future mortality improvements assumed each year using scale MP-2017.

- **Healthy Post-Retirement:** The RP-2014 Healthy Annuitant Generational Mortality Tables, with blue-collar adjustments and extended via cubic spline. This table is adjusted backwards to 2006 with the MP-2014 scale, resulting in a base year of 2006 with future mortality improvements assumed each year using scale MP-2017.

- **Disability Retirement:** The RP-2014 Disabled Mortality Table, extended via cubic spline. This table is adjusted backwards to 2006 with the MP-2014 scale, resulting in a base year of 2006 with future mortality improvements assumed each year using scale MP-2017.

Sample Attained Ages	Healthy Pre-Retirement Future Life Expectancy (Years)*		Healthy Post-Retirement Future Life Expectancy (Years)*		Disabled Retirement Future Life Expectancy (Years)*	
	Men	Women	Men	Women	Men	Women
55	29.82	35.01	28.60	31.46	21.35	25.08
60	24.99	30.03	24.05	26.74	18.30	21.53
65	20.50	25.17	19.78	22.26	15.43	18.11
70	16.42	20.45	15.85	17.99	12.68	14.74
75	12.68	15.93	12.25	14.03	10.05	11.57
80	9.31	11.68	9.08	10.50	7.66	8.82

** Based on retirements in 2020. Retirements in future years will reflect improvements in life expectancy.*

Actuarial Assumptions (Continued)

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

	Percents of Active Members Retiring within Next Year					
Retirement Ages	General	Police Service Aides	Fire Hired Before 10/1/09 & All Police	Fire Hired After 10/1/09	Retirement Service	All Police, Police and Fire Department Heads, and Fire Hired Before 10/1/09
45-49						
50	20%	22.5%		50%	25	50%
51	15%	17.5%		50%	26	50%
52	15%	17.5%		50%	27	50%
53	15%	17.5%		30%	28	30%
54	15%	17.5%		30%	29	30%
55	15%	17.5%	30%	30%	30	30%
56	15%	17.5%	30%	30%	31	30%
57	15%	17.5%	30%	30%	32	30%
58	15%	17.5%	30%	30%	33	30%
59	15%	17.5%	30%	30%	34	30%
60	15%	17.5%	30%	30%	35	30%
61	15%	17.5%	30%	30%	36	30%
62	35%	37.5%	30%	30%	37	30%
63	20%	22.5%	30%	30%	38	30%
64	20%	22.5%	30%	30%	39	30%
65	55%	100%	100%	100%	40	100%
66	45%					
67	45%					
68	45%					
69	45%					
70	100%					
Ref.	2321	2549	2550	2550		2550

Actuarial Assumptions (Concluded)

Rates of disability among active members.

Sample Ages	Percent Becoming Disabled Within Next Year: General Males	General Females	Police/Fire Males	Police/Fire Females
20	0.04%	0.02%	0.08%	0.08%
25	0.05%	0.03%	0.11%	0.11%
30	0.05%	0.04%	0.19%	0.19%
35	0.07%	0.07%	0.23%	0.23%
40	0.11%	0.10%	0.53%	0.53%
45	0.16%	0.14%	0.60%	0.60%
50	0.26%	0.23%	0.71%	0.71%
55	0.46%	0.38%	0.83%	0.83%
Ref	#33x0.5	#34x0.5	#45x0.75	#45x0.75

Rates of separation 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	Service Index	Percent of Active Members Separating Within Next Year: General Males	General Females	Police/Fire Males	Police/Fire Females
ALL	1	12.00%	12.00%	10.00%	10.00%
	2	9.00%	9.00%	7.00%	7.00%
	3	7.00%	7.00%	5.00%	5.00%
	4	5.00%	5.00%	4.00%	4.00%
	5	4.50%	4.50%	3.50%	3.50%
20	6 & Over	4.50%	4.50%	2.50%	2.50%
25		4.50%	4.50%	2.50%	2.50%
30		4.00%	4.00%	2.00%	2.00%
35		3.50%	3.50%	1.25%	1.25%
40		2.50%	2.50%	0.75%	0.75%
45		2.00%	2.00%	0.50%	0.50%
50		1.50%	1.50%	0.25%	0.25%
55		1.00%	1.00%	0.25%	0.25%
Ref		29	29	30	30
		#1300x1	#1300x1	#1177x1	#1177x1

Miscellaneous and Technical Assumptions

Decrement Operation	Disability and mortality decrements do not operate during the first 5 years of service. Disability also does not operate during retirement eligibility.
Decrement Timing	Decrements of all types are assumed to occur mid-year.
Eligibility Testing	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
Incidence of Contributions	Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.
Marriage Assumption	90% of 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.
Pay Increase Timing	Beginning of year.
Medicare Coverage	Assumed to be available for all covered employees on attainment of age 65.
Election Percentage	It was assumed that 95% of eligible future retirees would choose to receive retiree health care benefits through the City. Of those assumed to elect coverage, 70% of males and 70% of females in the General groups were assumed to elect two-person coverage and 80% of males and 80% of females in the Police/Fire groups 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.

APPENDIX

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.

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

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.

Glossary (Concluded)

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

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

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

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

Other Postemployment 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.