

CITY OF ROYAL OAK RETIREE HEALTH CARE PLAN
THE REPORT OF THE ACTUARIAL VALUATION
AS OF JUNE 30, 2016

TABLE OF CONTENTS

Section	Page Number	
	--	Cover Letter
		EXECUTIVE SUMMARY
	1-2	Executive Summary
A		VALUATION RESULTS
	1	Development of the Annual Recommended Contribution
	2	Determination of Unfunded Actuarial Accrued Liability
	3-5	Comments
B		RETIREE PREMIUM RATE DEVELOPMENT
	1-2	Retiree Premium Rate Development
C		SUMMARY OF BENEFIT PROVISIONS
	1-2	Summary of Benefits
D		SUMMARY OF PARTICIPANT DATA
	1	Active Members by Age and Years of Service
	2	General Active Members by Age and Years of Service
	3	Police and Fire Members by Age and Years of Service
	4	Total Retired and Deferred Members by Age
E		ACCOUNTING INFORMATION
	1	Accounting Information
F		ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS
	1	Valuation Methods
	2-5	Actuarial Assumptions
	6	Miscellaneous and Technical Assumptions
Appendix A		
	1-2	Glossary

March 8, 2017

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

Dear Ms. Rudd:

Submitted in this report are the results of an Actuarial Valuation of the assets and benefit values associated with the employer financed retiree health benefits provided by the City of Royal Oak. The date of the valuation was June 30, 2016, effective for the fiscal years beginning July 1, 2017 and July 1, 2018. This report was prepared at the request of the City of Royal Oak.

The actuarial calculations were prepared for purposes of complying with the requirements of Statement No. 45 of the Governmental Accounting Standards Board (GASB). In addition, we have included information which may be helpful if there is a trust requiring a GASB Statement No. 43 disclosure. The calculations reported herein have been made on a basis consistent with our understanding of these accounting standards. Determinations of the liability associated with the benefits described in this report for purposes other than satisfying the City's financial reporting requirements may produce significantly different results. This report is not compliant with GASB Statements No. 74 and No. 75. A separate report that incorporates GASB Statements No. 74 and No. 75 will need to be prepared at a later date once implementation guides are issued for these new standards.

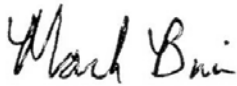
This report was requested by the City of Royal Oak and is intended for use by the City and those designated or approved by the City. This report may be provided to parties other than the City of Royal Oak only in its entirety and only with the permission of the City of Royal Oak. GRS is not responsible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

The valuation was based upon information, furnished by the City, concerning retiree health benefits, individual members, and financial data. Data was checked for internal consistency, but was not audited. We are not responsible for the accuracy or completeness of the information provided by the City of Royal Oak.

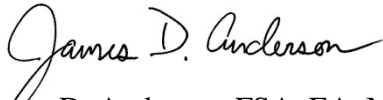
Ms. Julie Rudd
March 8, 2017
Page 2

To the best of our knowledge, the information contained in this report is accurate and fairly presents the actuarial position of the 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. Please see the following page for additional disclosures required by the Actuarial Standards of Practice. Mark Buis and James D. Anderson 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.

Respectfully submitted,



Mark Buis, FSA, EA, FCA, MAAA



James D. Anderson, FSA, EA, MAAA

MB/JDA:ah

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

This report presents the Annual Required Contribution (ARC), one component of the annual Other Postemployment Benefits (OPEB) cost required to be recognized by the plan sponsor for purposes of complying with the accounting requirements of the Governmental Accounting Standards Board (GASB) Statement No. 45. In addition, the plan may need to comply with GASB Statement No. 43. Please consult with legal counsel and your auditors to determine whether you have a plan for GASB Statement No. 43 purposes.

We have calculated the annual recommended contributions for the fiscal years beginning July 1, 2017 and July 1, 2018. Below is a summary of the results. In the first year GASB Statement No. 45 is adopted, the annual OPEB cost is equal to the ARC. In subsequent years, if there is a Net OPEB Obligation (NOO, see below), the annual OPEB cost is equal to the ARC for the fiscal year plus one year's interest on the Net OPEB Obligation plus an adjustment to the ARC.

Please note that for the fiscal year ending June 30, 2017, GASB Statement No. 43 will be replaced by GASB Statement No. 74. As such, there will no longer be an "Annual Required Contribution" calculated in the GASB reports. Therefore, we have shown the "Annual Recommended Contribution" for subsequent years.

Actual premiums paid on behalf of retirees may be treated as employer contributions in relation to the ARC and act to reduce the NOO. The ARCs and estimated retiree claims shown below include an adjustment for any implicit rate subsidy present in your pre-65 rates.

	Annual Recommended Funding Contribution*	Estimated Claims Paid for Retirees
Fiscal Year Beginning 2017	\$ 389,082	\$ 7,827,422
Fiscal Year Beginning 2018	369,967	8,322,272

** Based on a 7.75% long-term rate of investment return.*

For additional details please see the Section titled "Valuation Results."

EXECUTIVE SUMMARY

Additional OPEB Reporting Requirements – Net OPEB Obligation

In addition to the annual cost described on the previous page, employers will have to disclose a Net OPEB Obligation (or asset). The NOO is the cumulative difference between annual OPEB cost and annual employer contributions in relation to the ARC accumulated from the implementation of Statement No. 45. The NOO is zero as of the beginning of the fiscal year that Statement No. 45 is implemented, unless the employer chooses to recognize a beginning balance. The requirements for determining the employer’s contributions in relation to the ARC are described in paragraph 13g. of Statement No. 45. Additional information required to be disclosed in the employer’s financial statements is detailed in paragraphs 24 through 27 of Statement No. 45.

Liabilities and Assets

1. Present Value of Future Benefit Payments	\$126,157,176
2. Actuarial Accrued Liability	121,508,729
3. Plan Assets	124,839,786
4. Unfunded Actuarial Accrued Liability (3) – (2)	(3,331,057)
5. Funded Ratio (3)/(2)	102.7%

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 ANNUAL RECOMMENDED CONTRIBUTION
FOR THE OTHER POSTEMPLOYMENT BENEFITS
FISCAL YEARS BEGINNING JULY 1, 2017 AND JULY 1, 2018**

Contributions for	Development of the Annual Recommended Contribution for July 1, 2017 - June 30, 2018		
	General	Police & Fire	Total
Normal Cost			
Normal Retirement	\$ 318,269	\$ 352,884	\$ 671,153
Early Retirement	0	0	0
Termination Benefits	0	7,964	7,964
Death-in-Service	3,726	3,063	6,789
Disability	0	11,640	11,640
Future Refund of Member Contributions	0	0	0
Total Normal Cost	\$ 321,995	\$ 375,551	\$ 697,546
Annual Active Member Contribution	0	0	0
Employer Normal Cost	321,995	375,551	697,546
Amortization of Unfunded Actuarial Accrued Liabilities (Amortized over 22 years)	(127,734)	(180,730)	(308,464)
Annual Recommended Contribution (ARC)	194,261	194,821	389,082

Contributions for	Annual Recommended Contribution for July 1, 2018 - June 30, 2019		
	General	Police & Fire	Total
Annual Recommended Contribution (ARC)	\$ 182,256	\$ 187,711	\$ 369,967

The unfunded actuarial accrued liabilities were amortized as a level dollar amount over a period of 22 years for the fiscal year beginning July 1, 2017 and 21 years for the fiscal year beginning July 1, 2018. A 30-year amortization period for unfunded actuarial accrued liabilities is the maximum period that complies with GASB requirements. Plan results reflect bond issuance of \$107.97 million subsequent to the measurement date of June 30, 2016.

**DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY
AS OF JUNE 30, 2016**

	General	Police & Fire	Total
A. Present Value of Future Benefits			
1. Retirees and Beneficiaries	\$38,591,887	\$58,788,964	\$ 97,380,851
2. Vested Terminated Members	114,210	0	114,210
3. Active Members	<u>13,683,841</u>	<u>14,978,274</u>	<u>28,662,115</u>
Total Present Value of Future Benefits	\$52,389,938	\$73,767,238	\$126,157,176
B. Present Value of Future Employer Normal Costs	2,044,028	2,604,419	4,648,447
C. Present Value of Future Contributions from Current Active Members	0	0	0
D. Actuarial Accrued Liability (A.-B.-C.)	50,345,910	71,162,819	121,508,729
E. Actuarial Value of Assets*	51,726,100	73,113,686	124,839,786
F. Unfunded Actuarial Accrued Liability (D.-E.)	(1,380,190)	(1,950,867)	(3,331,057)

* Includes bond issuance of \$107.97 million subsequent to the measurement date of June 30, 2016.

The Unfunded Actuarial Accrued Liability (UAAL) is not booked as an expense all in one year and does not appear in the Employer's Statement of Net Assets. Nevertheless, it is reported in the Notes to the Financial Statements and in the Required Supplementary Information. These are information sections within the employer's financial statements.

The long-term rate of investment return used in this valuation is 7.75%.

COMMENTS

COMMENT A: 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 ARC. Lower returns will tend to increase the computed ARC. Based on information from the plan sponsor, we have calculated the liability and the resulting ARC using an assumed long-term rate of investment return of 7.75% similar to the Retirement System. If the plan sponsor chooses to pre-fund with contributions less than the ARC (or not pre-fund at all), GASB requires the use of a lower rate of return on assets. Use of such an interest rate could increase the ARC and the Net OPEB Obligation that is disclosed on the employer's financial statement.

COMMENT B: Based on the number of plan members as of this valuation, the plan sponsor is required by GASB to perform actuarial valuations at least biennially. This permits fluctuations and trends in experience to be reflected in the contribution on a regular basis. It is our understanding that the City will need to comply with GASB Statement No. 74 reporting effective with the fiscal year ending June 30, 2017, and GASB Statement No. 75 with the fiscal year ending June 30, 2018. Please verify this with the auditor. In the future, the City will need "funding" valuations every two years and "GASB" valuations completed annually.

COMMENT C: The ARC decreased from \$11,750,408 in the June 30, 2014 valuation to \$389,082 in the June 30, 2016 valuation. Factors contributing to this decrease include, but are not limited to:

- Large increase in assets attributable to the issuance of bonds in February of 2017;
- Lower medical rates than projected; and
- Updates to benefit eligibility for various groups.

Partially offsetting these factors were increases due to:

- Resetting the health care trend cost rate.

COMMENTS (CONTINUED)

COMMENT D: The updates to benefit eligibility for General groups decreased actuarial accrued liabilities by approximately \$178,000. The updates to benefit eligibility for Fire members increased actuarial accrued liabilities by approximately \$113,000. In total, changes to benefit eligibility decreased actuarial accrued liabilities by approximately \$65,000.

COMMENT E: GASB Statement No. 45 stipulates that Plan assets must be placed in a trust or equivalent arrangement that meets the following criteria:

- Employer contributions to the Plan are irrevocable
- Assets are dedicated to providing benefits to retirants and their beneficiaries
- Assets are legally protected from creditors

Our calculations assume that the City established a qualified trust in which to deposit contributions.

COMMENT F: The recommended contributions calculated in the report reflect the issuance of OPEB bonds in the amount of \$107,971,344 on February 21, 2017. Although these amounts were added to the assets subsequent to the measurement date of June 30, 2016, Actuarial Standards of Practice recommend reflecting any known significant event between the end of the measurement date and the date of the actuarial report.

COMMENT G: Due to the influx of assets described in Comment F, we recommend that future valuations adopt 5-year smoothing of assets. This will help control the volatility of future contributions.

COMMENTS (CONCLUDED)

COMMENT H: The “Cadillac” tax is a 40% excise tax paid by the coverage provider (employer and/or insurer) on the value of health plan costs in excess of certain thresholds. The thresholds are \$10,200 for one-person coverage or \$27,500 for family coverage in 2020. Many plans are below the thresholds today, but are likely to exceed them in the next decade. The thresholds will be indexed at CPI-U, which is lower than the medical inflation rates affecting the cost of the plans. There is considerable uncertainty about how the tax would be applied, and considerable latitude in grouping of participants for tax purposes. Combining early retiree and Medicare eligible (post-65) retiree costs is allowed and can keep plans under the thresholds for a longer period of time. For this valuation, a 3.5% load was applied to current retiree liabilities for the future excise tax, based on the current plan provisions and assumptions. We have not identified any other specific provision of health care reform that would be expected to have a significant impact on the measured obligation. As additional guidance on the legislation is issued, we will review and monitor the impact.

COMMENT I: The GASB issued Statements Nos. 74 and 75 for OPEB valuations similar to the new pension standards. GASB Statement No. 74 for the plan OPEB disclosures is effective for fiscal years beginning after June 15, 2016. GASB Statement No. 75 for employer OPEB disclosures is effective for employer fiscal years beginning after June 15, 2017. The GASB has not yet issued implementation guides for these new standards. These guides will provide additional clarification related to the implementation of Statements No. 74 and No. 75. Our understanding of the application of the recent GASB Statements is stated below; however, GRS consultants are not auditors and we recommend consultation with your auditor for final determination of which standards will be applicable. The City currently pre-funds the benefits, and has assets set aside in a qualified trust. As a result, the City will need to comply with GASB Statement No. 74 and GASB Statement No. 75. The information necessary for GASB Statement No. 74 for the June 30, 2017 fiscal year end will be provided at a later date, following the availability of the necessary information and the end of the fiscal year. The basis for the GASB Statement No. 74 information will be this June 30, 2016 valuation with roll-forward techniques applied.

SECTION B

RETIREE PREMIUM RATE DEVELOPMENT

RETIREE PREMIUM 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 2013 to March 2016 and paid through June 2016 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 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 Advantage 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 (CONCLUDED)

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

For Those Not Eligible for Medicare (Pre-65)				
Age	Future Retirees		Current Retirees	
	Male	Female	Male	Female
40	\$ 282.72	\$ 459.40	\$ 403.83	\$ 656.19
50	458.29	564.56	654.60	806.41
60	778.88	766.93	1,112.52	1,095.45
64	947.13	893.84	1,352.86	1,276.73

For Those Eligible for Medicare (Post-65)				
Age	Future Retirees		Current Retirees	
	Male	Female	Male	Female
65	\$ 364.42	\$ 343.72	\$ 613.75	\$ 578.89
75	426.37	416.05	718.08	700.69
85	450.86	456.17	759.33	768.27

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 \$35.19 for pre-65 participants and \$34.67 for post-65 participants.

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

CITY OF ROYAL OAK RETIREE HEALTH CARE PLAN

SUMMARY OF BENEFITS AS OF JUNE 30, 2016

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;
- 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, 2016**

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 PARTICIPANT DATA

**TOTAL ACTIVE MEMBERS AS OF JUNE 30, 2016
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
20-24									
25-29									
30-34		1	3					4	\$ 266,469
35-39		4	12	3				19	1,275,135
40-44		2	7	9	4			22	1,560,609
45-49			8	21	12	1		42	2,927,679
50-54			8	12	16	5	1	42	2,921,169
55-59			4	11	8	9	2	34	2,170,967
60-64			2	4	2	1	1	10	553,423
65 & Over			2	1			1	4	357,040
Totals		7	46	61	42	16	5	177	\$12,032,491

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

Age: 49.3 years
Service: 18.5 years
Annual Pay: \$67,980

**GENERAL ACTIVE MEMBERS AS OF JUNE 30, 2016
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
20-24									
25-29									
30-34			1					1	\$ 42,646
35-39		1	4	1				6	356,154
40-44		1	2	3	2			8	520,806
45-49			5	7	2			14	738,268
50-54			6	7	7	2	1	23	1,418,203
55-59			4	11	6	7	2	30	1,770,084
60-64			2	4	1	1	1	9	460,340
65 & Over			2	1			1	4	357,040
Totals		2	26	34	18	10	5	95	\$5,663,541

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

Age: 52.4 years
Service: 19.1 years
Annual Pay: \$59,616

POLICE AND FIRE ACTIVE MEMBERS AS OF JUNE 30, 2016
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
20-24									
25-29									
30-34		1	2					3	\$ 223,823
35-39		3	8	2				13	918,981
40-44		1	5	6	2			14	1,039,803
45-49			3	14	10	1		28	2,189,411
50-54			2	5	9	3		19	1,502,966
55-59					2	2		4	400,883
60-64					1			1	93,083
65 & Over									
Totals		5	20	27	24	6		82	\$6,368,950

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

Age: 45.7 years
Service: 17.9 years
Annual Pay: \$77,670

TOTAL RETIRED AND DEFERRED MEMBERS AS OF JUNE 30, 2016
BY AGE

Age	Retired Members	
	General	Police/Fire
Under 55	5	40
55-59	12	27
60-64	37	22
65 & Over	152	140
Totals	206	229

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, 2016
Actuarial Cost Method	Individual Entry Age
Amortization Method	Level Dollar Closed
Remaining Amortization Periods	22 Years
Asset Valuation Method	Market Value
Actuarial Assumptions:	
Investment Rate of Return	7.75%
Projected Salary Increases	3.0% - 5.9%
Health Care Cost Trend Rate	9% Initial 3.0% Ultimate

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 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.

Actuarial Value of System Assets. Market value of assets were reported to us to be used in conjunction with this valuation. Assets were allocated between the General and Police/Fire Groups based on total liability as of the valuation date.

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

7.75% Interest	Fiscal Year Beginning	
	July 01, 2017	July 01, 2018
General (Level Dollar)	10.8039	10.6029
Police & Fire (Level Dollar)	10.8039	10.6029

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 26, 2013, for the period of July 1, 2006 through June 30, 2012.

The rate of investment return was 7.75% 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 7.75% nominal rate translates to a net real return of 4.75% 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.

Sample Ages	% Increase in Salary at Sample Ages				
	Merit and Seniority		Base (Economic)	Increase Next Year	
	General	Police/Fire		General	Police/Fire
20	2.88%	2.25%	3.00%	5.88%	5.25%
25	2.34%	2.25%	3.00%	5.34%	5.25%
30	2.01%	2.25%	3.00%	5.01%	5.25%
35	1.78%	1.58%	3.00%	4.78%	4.58%
40	1.60%	0.59%	3.00%	4.60%	3.59%
45	1.26%	0.18%	3.00%	4.26%	3.18%
50	0.85%	0.11%	3.00%	3.85%	3.11%
55	0.50%	0.03%	3.00%	3.50%	3.03%
60	0.12%	0.00%	3.00%	3.12%	3.00%
65	0.00%	0.00%	3.00%	3.00%	3.00%
Ref	417	418	0.03		

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

ACTUARIAL ASSUMPTIONS (CONTINUED)

The mortality table used was the RP-2000 Mortality Table, projected 20 years (multiplied by 110%). This assumption is used to measure the probabilities of members dying before retirement and the probabilities of each benefit payment being made after retirement. Rates for disabled members were set forward 10 years.

Sample Attained Ages	Probability of Dying Next Year		Future Life Expectancy (years)	
	Men	Women	Men	Women
45	0.128%	0.090%	36.73	38.58
50	0.164%	0.131%	31.97	33.76
55	0.272%	0.255%	27.27	29.03
60	0.538%	0.503%	22.72	24.49
65	1.057%	0.966%	18.47	20.24
70	1.805%	1.666%	14.58	16.34
75	3.139%	2.633%	11.01	12.82
80	5.791%	4.385%	7.93	9.66
Ref	#454x1.1sb0yrs	#455x1.1sb0yrs		

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

Retirement Age	Percent of Eligible Active Members Retiring Within the Next Year		
	General	Police Service Aides	Fire Hired After 10/1/09
50	20%	20%	40%
51	15%	15%	40%
52	15%	15%	40%
53	15%	15%	25%
54	15%	15%	25%
55	15%	15%	25%
56	15%	15%	25%
57	15%	15%	25%
58	15%	15%	25%
59	15%	15%	25%
60	15%	15%	25%
61	15%	15%	25%
62	35%	35%	25%
63	20%	20%	25%
64	20%	20%	25%
65	55%	100%	100%
66	45%		
67	45%		
68	45%		
69	45%		
70	100%		
Ref	2321	2322	2323

ACTUARIAL ASSUMPTIONS (CONTINUED)

Retirement Service	Percent of Eligible Active Members Retiring	
	Police Officers, Detectives, Command, & Fire Hired Before 10/1/09	
25	40%	
26	40%	
27	40%	
28	25%	
29	25%	
30	25%	
31	25%	
32	25%	
33	25%	
34	25%	
35	25%	
36	25%	
37	25%	
38	25%	
39	25%	
40	100%	
Ref	2323	

Rates of disability among active members.

Sample Ages	Percent Becoming Disabled Within Next Year			
	General		Police/Fire	
	Males	Females	Males	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

ACTUARIAL ASSUMPTIONS (CONCLUDED)

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		Police/Fire	
		Males	Females	Males	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%	3.00%	3.00%
25		4.50%	4.50%	3.00%	3.00%
30		4.00%	4.00%	2.50%	2.50%
35		3.50%	3.50%	1.50%	1.50%
40		2.50%	2.50%	1.00%	1.00%
45		2.00%	2.00%	0.75%	0.75%
50		1.50%	1.50%	0.50%	0.50%
55		1.00%	1.00%	0.25%	0.25%
Ref		29	29	30	30
		#1300x1	#1300x1	#1301x1	#1301x1

Health cost increases – See table below.

Year Beginning	Year Beginning		
	July 1,*	Medical & Drug	Dental & Vision
2017		9.00%	3.00%
2018		8.25	3.00
2019		7.50	3.00
2020		6.75	3.00
2021		6.00	3.00
2022		5.25	3.00
2023		4.50	3.00
2024		4.00	3.00
2025		3.50	3.00
2026 & Later		3.00	3.00

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

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, 75% of males and 75% of females in the General groups were assumed to elect two-person coverage and 85% of males and 85% 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 A

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.

Annual Required Contribution (ARC). The ARC is the normal cost plus the portion of the unfunded actuarial accrued liability to be amortized in the current period. The ARC 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.

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.