

City of Roanoke

Line of Duty Plan Actuarial Valuation Report as of July 1, 2015

Produced by Cheiron

November 2015

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Letter of Transmittal

November 11, 2015

Andrea F. Trent, Assistant Director of Finance
City of Roanoke
Department of Finance
Noel C. Taylor Municipal Building
215 Church Avenue, SW Room 461
Roanoke, Virginia 24011

Re: City of Roanoke Line of Duty Benefit Plan GASB 43/45 Valuation as of July 1, 2015

Dear Andrea:

As requested by the City, we have performed an actuarial valuation of the Line of Duty death and disability benefits (Plan) under the State of Virginia's Line of Duty Act (LODA) provided by the City of Roanoke as of July 1, 2015. The following report contains our findings and disclosures required by the Governmental Accounting Standards Board (GASB). This report is for the use of the City of Roanoke and its auditors in preparing financial reports in accordance with applicable law and accounting requirements. These actuarial computations are calculated based on our understanding of GASB 43 and 45 and are for purposes of fulfilling Plan and employer financial accounting requirements. Determinations for purposes other than meeting Plan and employer financial accounting requirements may be significantly different from the results in this report.

Appendix A describes the participant data, assumptions, and methods used in calculating the figures throughout the report. In preparing our report, we relied on information (some oral and some written) supplied by the Plan's staff. This information includes, but is not limited to, the plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice #23. The demographic and economic assumptions used in this report are the same as those used in the July 1, 2014 OPEB report, with the exception of the claims, premiums and expenses.

Appendix B contains our understanding of the substantive plan provisions based on the information provided by your office.

The results of this report rely on future plan experience conforming to the underlying assumptions and methods. To the extent that the actual plan experience deviates from the underlying assumptions and methods, or there are any changes in plan provisions or applicable laws, the results would vary accordingly.

This report reflects the additional fees that are payable for three years for Transitional Reinsurance of \$44 per covered life in 2015 and \$27 per covered life in 2016, and also reflects the Patient-Centered Research Institute (PCORI fees) of \$2.08 per member per year payable

Ms. Andrea F. Trent
City of Roanoke
November 11, 2015

during an eight-year period, pursuant to the Affordable Care Act. However, this report does not reflect other future changes in benefits, penalties, taxes, or administrative costs that may be required as a result of the Patient Protection and Affordable Care Act of 2010, related legislation, or regulations.

To the best of our knowledge, this actuarial valuation report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys and our firm does not provide any legal services or advice.

This actuarial valuation report was prepared exclusively for the City of Roanoke for the purpose described herein. Other users of this valuation report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any other user.

Sincerely,
Cheiron, Inc.



Margaret Tempkin, FSA, EA, MAAA
Principal Consulting Actuary



Alison M. Chafin, ASA, EA, MAAA
Associate Actuary



Michele Domash, FSA, FCA, MAAA
Principal Consulting Actuary

CITY OF ROANOKE
JULY 1, 2015 LINE OF DUTY BENEFIT VALUATION

**SECTION I
SUMMARY**

The City of Roanoke, Virginia engaged Cheiron to provide an analysis of the Line of Duty death and disability benefits under the State of Virginia's Line of Duty Act (LODA) provided by the City of Roanoke as of July 1, 2015. The primary purposes of performing this actuarial valuation are to:

- **Determine the annual required contribution (ARC)** and the net other postemployment benefit (OPEB) obligation (NOO) of the retiree health benefit under GASB Statements 43 and 45 and the current funding strategy;
- **Provide disclosures** for financial statements; and
- **Provide projections** for ARC, NOO and actuarial liabilities.

We have determined costs, liabilities and trends for the substantive plan using actuarial assumptions and methods that we consider reasonable.

GASB's OPEB Requirements

GASB's Statement 43 refers to the financial reporting for postemployment benefit plans other than pension plans and Statement 45 refers to the employer accounting for these plans. Statement 43 is generally applicable where an entity has a separate trust or fund for OPEB benefits. We understand that the City has a trust used to fund future OPEB obligations. Statement 45, which was adopted in the fiscal year ending (FYE) June 30, 2011, requires the plan sponsor to book the actuarial cost (net of employee, retiree, and their dependents' contributions) of the plan as an expense on its financial statements and then accrue a liability to the extent actual contributions were less than this expense. Additional disclosures include a description of the substantive plan, summary of significant accounting policies (not included in this report), contributions, and a statement of funding progress, along with the methods and assumptions used for those disclosures.

This report does not reflect any changes in postemployment benefit accounting requirements from GASB No. 74 and 75 Statements for OPEB plans. GASB No. 74 is effective for the plan year ending June 30, 2017, and GASB 75 is effective for employers' fiscal years ending after June 30, 2018. All references and calculations with respect to GASB reflect current Statements No. 43 and 45.

Funding Policy

The City's funding policy is to fully fund the actuarially determined Other Postemployment Benefits (OPEB) costs, which include both normal costs and amortization of unfunded actuarial liability, by contributing to the Virginia Pooled OPEB Trust Fund (OPEB Trust Fund). The OPEB Trust Fund investments are recorded at fair value. The Trust's Board of Trustees establishes investment objectives, risk tolerance and asset allocation policies in light of the investment policy, market and economic conditions, and generally prevailing prudent investment practices.

CITY OF ROANOKE
JULY 1, 2015 LINE OF DUTY BENEFIT VALUATION

SECTION I
SUMMARY

Valuation Results

The table below presents the key results of the July 1, 2015 valuation compared to those of the July 1, 2014 actuarial valuation.

Table I-1 Summary of Key Valuation Results		
Valuation Year Ending	July 1, 2014	July 1, 2015
Actuarial Liability (AL)	\$ 3,518,200	\$ 3,492,300
Assets	841,700	1,133,600
Unfunded Actuarial Liability (UAL)	\$ 2,676,500	\$ 2,358,700
Fiscal Year Ending	June 30, 2015	June 30, 2016
Annual Required Contribution	\$ 370,900	\$ 367,100
Actual / <i>Expected</i> Contribution	370,900	367,100
Expected Net Benefit Payments	96,200	83,600
Actual / <i>Expected</i> Net OPEB Obligation at End of Fiscal Year	(158,000)	(159,000)

Rounded to hundreds

The figures provided in this report are highly sensitive to the assumptions used. This report reflects claims, premiums and expenses determined as of July 1, 2015. There have been no significant changes in experience, population or plan design since the last valuation. The fiscal year ending June 30, 2016 annual required contribution has been revised to reflect assets and participant data as of July 1, 2015. The annual required contribution for the fiscal year ending June 30, 2016 decreased slightly compared to the expected provided in the July 1, 2014 report due to updated participant data, claim experience and trend updates.

CITY OF ROANOKE
JULY 1, 2015 LINE OF DUTY BENEFIT VALUATION

SECTION II
ASSETS

The Plan's preceding valuation of liabilities was performed as of July 1, 2014. Table II-1 below shows the reconciliation of assets for the fiscal year ending June 30, 2015 that were used to develop the FYE 2016 ARC and projected FYE 2017 ARC. The market value of assets returned 1.8% over the fiscal year. The City contributes to the Trust the difference between the annual required contributions and the benefit payments. The actual contributions to the Trust were \$274,700.

Table II-1	
Reconciliation of Assets	
Valuation Assets as of July 1, 2014	\$ 841,700
Contributions	370,900
Benefit Payments	(96,200)
Expenses	0
Investment Earnings	17,200
Valuation Assets as of July 1, 2015	\$ 1,133,600

Rounded to hundreds

CITY OF ROANOKE
JULY 1, 2015 LINE OF DUTY BENEFIT VALUATION

SECTION III
VALUATION RESULTS

This section of the report calculates the current and expected future contribution requirements under the City's funding policy. Table III-1 below shows the actuarial liabilities for the Plan as of July 1, 2014 and July 1, 2015.

Table III-1		
Unfunded Actuarial Liability - GASB Basis		
	July 1, 2014	July 1, 2015
Medical Benefits		
Active Employees	\$ 1,798,800	\$ 1,822,700
Retirees and Beneficiaries	1,700,700	1,652,300
Total	\$ 3,499,500	\$ 3,475,000
Life Insurance		
Active Employees	\$ 13,800	\$ 14,000
Retirees and Beneficiaries	4,900	3,300
Total	\$ 18,700	\$ 17,300
Actuarial Liability	\$ 3,518,200	\$ 3,492,300
Assets	841,700	1,133,600
Unfunded Actuarial Liability	\$ 2,676,500	\$ 2,358,700
\$100,000 LOD Active Death Benefit	\$ 68,300	\$ 66,400

Rounded to hundreds

The liability associated with the \$100,000 LOD active death benefit is not covered by the requirements of GASB Statement No. 45 and the amount above is shown for information only. The rest of this report will reflect LOD benefits only applicable to GASB Statement No. 45.

Please note, however, that GASB only requires disclosure of the above actuarial liability in the notes to financial statements and does not require immediate recognition of the entire liability on the balance sheet. GASB's requirement is to book the annual OPEB expense (the ARC adjusted for the difference between the amortization of the NOO and interest on the NOO), and the cumulative difference between the annual OPEB expense and actual contributions, beginning in the FYE June 30, 2012 as the NOO on the balance sheet.

The ARC consists of two parts: (1) the *normal cost*, which represents the annual cost attributable to service earned in a given year and (2) the 30-year amortization of the UAL as a level percentage of payroll over a closed period from July 1, 2008. Under the City's current funding policy, the City contributes the entire ARC. The difference between the actual contributions made (benefits provided) and the annual OPEB cost is the increase in expense on the financial statements of the City.

CITY OF ROANOKE
JULY 1, 2015 LINE OF DUTY BENEFIT VALUATION

SECTION III
VALUATION RESULTS

In Table III-2 below, we show the FYE 2015, FYE 2016, and the expected FYE 2017 Annual Required Contribution under the City’s funding policy and a 7.0% assumed discount rate. It is assumed the City’s funding policy is to pay the full ARC. The UAL amortization is based on a closed 30-year amortization period from July 1, 2008.

Table III-2 GASB ARC			
Fiscal Year Ending	June 30, 2015	June 30, 2016	<i>Expected</i> June 30, 2017
Medical Normal Cost at BOY	\$ 178,500	\$ 190,800	\$ 208,400
Life Normal Cost at BOY	1,100	1,200	1,200
City Total Normal Cost at BOY	\$ 179,600	\$ 192,000	\$ 209,600
UAL Amortization at BOY	167,000	151,100	155,500
Interest to End of Year	24,300	24,000	25,600
Total ARC	\$ 370,900	\$ 367,100	\$ 390,700
Less Employer Net Expected Benefit Payments	(96,200)	(83,600)	(103,200)
Remaining Employer ARC	\$ 274,700	\$ 283,500	\$ 287,500

Rounded to hundreds

Table III-3 shows the expected benefit payments through the fiscal year ending June 30, 2024. In calculating the liabilities, we project these figures for the life of each existing participant. This projects the anticipated eligible retirees and the change in both claims and premiums, combined with a smaller overall retiree group with coverage.

Table III-3 Expected Benefit Payments		
Fiscal Year Ending		
June 30,	Total	
2016	\$	83,600
2017		103,200
2018		114,700
2019		136,200
2020		161,200
2021		188,800
2022		219,000
2023		251,100
2024		269,000

Rounded to hundreds

CITY OF ROANOKE
JULY 1, 2015 LINE OF DUTY BENEFIT VALUATION

**SECTION III
VALUATION RESULTS**

Reconciliation

Table III-4 provides an estimate of the major factors contributing to the change in liability since the last actuarial valuation at July 1, 2014.

Table III-4	
Reconciliation of Actuarial Liability - Funding Basis	
Actuarial Liability at July 1, 2014	\$ 3,518,200
Normal Cost	179,600
Expected Benefit Payments	(96,200)
Interest	255,500
Expected Actuarial Liability at July 1, 2015	\$ 3,857,100
Actuarial Liability at July 1, 2015	3,492,300
Gain or (Loss)	\$ 364,800
Gain or (Loss) due to:	
Census changes	\$ 199,400
Change in discount rate	0
Change in demographic assumptions	0
Change in claims and trend assumptions	165,400
Total changes	\$ 364,800

Rounded to hundreds

Below is a brief description of each of the above components:

- *Expected Values* refer to the change that would have occurred had experience matched all the assumptions between July 1, 2014 and July 1, 2015.
- *Census Changes* refer to the impact of population changes between July 1, 2014 and July 1, 2015.
- *Change in Discount Rate* refers to the impact that a change in discount rate had on the liability between July 1, 2014 and July 1, 2015. There were no discount rate assumption changes.
- *Change in Demographic Assumptions* refers to the change in assumptions other than the discount rate and not related to current or future claims costs. There were no demographic assumption changes.
- *Change in Claims and Trend Assumptions* refers to the change in expected current and future healthcare claims and expense costs. This year's valuation produced a gain in liabilities due to the adjustment of the claim curves and trends.

CITY OF ROANOKE
JULY 1, 2015 LINE OF DUTY BENEFIT VALUATION

SECTION IV
SENSITIVITY

The liabilities and ARC produced in this report are sensitive to the assumptions used. The tables below show the impact of a 1% increase or decrease in the healthcare trend rates on the GASB actuarial liability and the ARC to provide some measure of sensitivity.

Table IV-1			
Sensitivity to Healthcare Trend Rates - Unfunded Actuarial Liability			
Healthcare Trend Rate	-1%	Base	+1%
Medical Benefits			
Active Employees	\$ 1,546,900	\$ 1,822,700	\$ 2,167,400
Retirees and Beneficiaries	<u>1,434,700</u>	<u>1,652,300</u>	<u>1,933,100</u>
Total	\$ 2,981,600	\$ 3,475,000	\$ 4,100,500
Life Insurance			
Active Employees	\$ 14,000	\$ 14,000	\$ 14,000
Retirees and Beneficiaries	<u>3,300</u>	<u>3,300</u>	<u>3,300</u>
Total	\$ 17,300	\$ 17,300	\$ 17,300
Actuarial Liability	\$ 2,998,900	\$ 3,492,300	\$ 4,117,800
Assets	<u>1,133,600</u>	<u>1,133,600</u>	<u>1,133,600</u>
Unfunded Actuarial Liability	\$ 1,865,300	\$ 2,358,700	\$ 2,984,200

Rounded to hundreds

Table IV-2			
Sensitivity to Healthcare Trend Rates - GASB ARC for FYE 2016			
Healthcare Trend Rate	-1%	Base	+1%
Medical Normal Cost at BOY	\$ 157,200	\$ 190,800	\$ 234,200
Life Normal Cost at BOY	<u>1,200</u>	<u>1,200</u>	<u>1,200</u>
City Total Normal Cost at BOY	\$ 158,400	\$ 192,000	\$ 235,400
UAL Amortization at BOY	119,500	151,100	191,100
Interest to End of Year	<u>19,500</u>	<u>24,000</u>	<u>29,900</u>
Total ARC	\$ 297,400	\$ 367,100	\$ 456,400

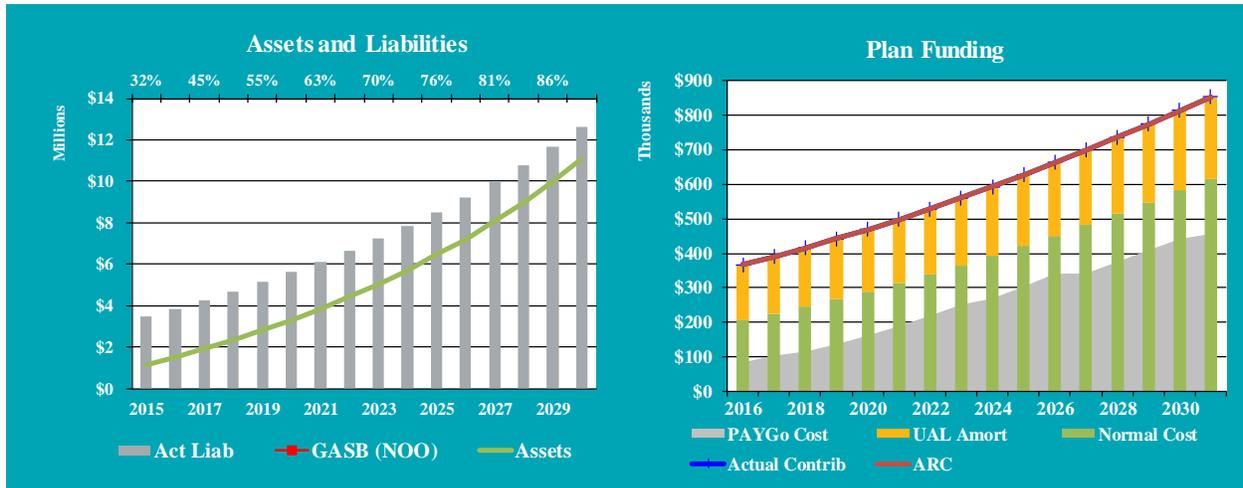
Rounded to hundreds

CITY OF ROANOKE
JULY 1, 2015 LINE OF DUTY BENEFIT VALUATION

SECTION IV
SENSITIVITY

Projected Liabilities

Looking beyond 2015, the expense and liability on the financial statements increase under the actuarial funding method. The charts below project the assets and liabilities and the funding costs for the next 15 years under the current GASB 43/45 requirements.



The left-hand chart shows the projected Actuarial Liability (grey bars) increasing from \$3.5 million to \$12.6 million over the next 15 years. The beginning of year NOO (i.e., the figure that appears on the City’s financial statements) will remain negative, increasing from \$(158) thousand to approximately \$(122) thousand over the same time period under the current assumptions. The NOO is not shown in the chart since the value is always below zero. The green line projects the assets in the Plan, which is expected to increase from about \$1.1 million to just under \$11.1 million at July 1, 2030. The funded percentage is expected to grow from 32.5% to over 87.7% by the end of the projection period.

The right-hand chart shows the annual costs. Benefit payments are shown by the grey area and are projected to increase from approximately \$83 thousand to \$457 thousand for the fiscal year ending 2031. The blue line, which is hidden by the red line, represents the City’s contributions. Based on the City’s current funding policy, contributions are set to match the ARC. The ARC, shown by the red line, is projected to increase from \$367 thousand in fiscal year ending June 30, 2016 to approximately \$853 thousand in fiscal year ending June 30, 2031.

Please note that GASB No. 74 and 75 statements would materially alter the disclosures for fiscal years beginning after June 30, 2017. The changes from the GASB No. 74 and 75 statements are not reflected in the report.

CITY OF ROANOKE
JULY 1, 2015 LINE OF DUTY BENEFIT VALUATION

SECTION V
ACCOUNTING DISCLOSURES

Statements No. 43 and 45 of the Governmental Accounting Standards Board (GASB) established standards for accounting and financial reporting of Other Postemployment Benefit (OPEB) information by governmental employers and plans. In accordance with those statements, we have prepared the following disclosures.

Net OPEB Obligation

The table below shows the development of the Net OPEB Obligation (NOO) for the fiscal year ending June 30, 2015 and projects the Net OPEB Obligation for the fiscal years ending June 30, 2016 and June 30, 2017.

Table V-1 Development of Net OPEB Obligation			
Fiscal Year Ending	June 30, 2015	June 30, 2016	<i>Projected Expected June 30, 2017</i>
1. Interest rate	7.00%	7.00%	7.00%
2. Net OPEB Obligation (NOO) at beginning of fiscal year	\$ (156,800)	\$ (158,000)	\$ (159,000)
3. Annual Required Contribution (ARC)	\$ 370,900	\$ 367,100	\$ 390,700
4. Interest on NOO at discount rate to end of fiscal year	(11,000)	(11,100)	(11,100)
5. Adjustment to the ARC	(9,800)	(10,100)	(10,500)
6. Annual OPEB Cost (3) + (4) - (5)	\$ 369,700	\$ 366,100	\$ 390,100
7. Net employer contribution	370,900	\$ 367,100	TBD
8. Change in Net OPEB Obligation (6) - (7)	\$ (1,200)	\$ (1,000)	TBD
9. Net OPEB Obligation at end of fiscal year (2) + (8)	\$ (158,000)	\$ (159,000)	TBD

Rounded to hundreds

The Net OPEB Obligation at June 30, 2015 was provided in the July 1, 2014 actuarial valuation for the fiscal year ending June 30, 2015. The Annual Required Contribution for the fiscal year ending June 30, 2016 is based on the July 1, 2015 valuation. The projected Annual Required Contribution for the fiscal year ending June 30, 2017 is based on the July 1, 2015 actuarial valuation with liabilities and assets projected to July 1, 2016 (these amounts will update based on the July 1, 2016 actuarial valuation). The interest on Net OPEB Obligation is calculated using the 7.0% assumed discount rate. The adjustment to the ARC is a closed 30-year amortization from July 1, 2008 of the NOO. The remaining amortization period at July 1, 2015 is 23 years. The employer contributions were provided by the City for the fiscal year ending June 30, 2015 and assumed equal to the ARC in fiscal year ending June 30, 2016. The contribution is yet to be determined for the fiscal year ending June 30, 2017.

CITY OF ROANOKE
JULY 1, 2015 LINE OF DUTY BENEFIT VALUATION

SECTION V
ACCOUNTING DISCLOSURES

Schedule of Funding Progress

The schedule of funding progress compares the assets used for funding purposes to the comparable liabilities to determine how well the Plan is funded and how this status has changed over the past several years. The actuarial liability is compared to the actuarial value of assets to determine the funding ratio. The actuarial liability under GASB is determined assuming that the Plan is ongoing and participants continue to terminate employment, retire, etc., in accordance with the actuarial assumptions.

Table V-2 Schedule of Funding Progress							
Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Liability (b)	Unfunded Actuarial Liability (UAL) (b-a)	Funded Ratio (a/b)	Annual Covered Payroll (c)	UAL as Percentage of Covered Payroll ((b-a)/c)	
7/1/2015	\$ 1,133,600	\$ 3,492,300	\$ 2,358,700	32%	\$ 32,577,300	7.2%	
7/1/2014	841,700	3,518,200	2,676,500	24%	33,055,600	8.1%	
7/1/2013	509,600	3,147,700	2,638,100	16%	31,425,600	8.4%	
7/1/2011	0	2,119,200	2,119,200	0%	29,618,000	7.2%	

* Figures prior to July 1, 2013 calculated by prior actuary
Establishment of Line of Duty OPEB occurred July 1, 2011.

Schedule of Employer Contributions

The schedule of employer contributions shows whether the employer has made contributions that are consistent with the parameters established by GASB for calculating the ARC and the annual OPEB expense.

Table V-3 Schedule of Employer Contributions				
Fiscal Year Ending	Annual OPEB Cost (AOC)	City Contributions	Percentage of AOC Contributed	Net OPEB Obligation
2016	\$ 366,100	<i>TBD</i>	<i>TBD</i>	<i>TBD</i>
2015	369,700	\$ 370,900	100%	\$ (158,000)
2014	347,700	349,100	100%	(156,800)
2013	247,000	330,000	134%	(155,400)
2012	238,800	311,200	130%	(72,400)

* Figures prior to FYE June 30, 2014 calculated by the prior actuary.
Establishment of Line of Duty OPEB occurred July 1, 2011.

**CITY OF ROANOKE
JULY 1, 2015 LINE OF DUTY BENEFIT VALUATION**

**SECTION V
ACCOUNTING DISCLOSURES**

We have also provided a *Note to Required Supplementary Information* for the financial statements in Table V-4.

Table V-4 NOTE TO REQUIRED SUPPLEMENTARY INFORMATION	
The information presented in the required supplementary schedules was determined as part of the actuarial valuation at the date indicated. Additional information as of the latest actuarial valuation follows.	
Valuation Date	July 1, 2015
Actuarial Cost Method	Projected Unit Credit
Amortization Method	Level Percentage of Pay, Closed Period
Remaining Amortization Period	23 years as of July 1, 2015
Asset Valuation Method	Market Value
Actuarial Assumptions:	
Investment Rate of Return	7.00%
Rate of Salary Increases	3.00%
Ultimate Rate of Medical Inflation	5.50%
Inflation	2.50%

CITY OF ROANOKE
JULY 1, 2015 LINE OF DUTY BENEFIT VALUATION

APPENDIX A
PARTICIPANT DATA, ASSUMPTIONS AND METHODS

Member Data

Valuation Date	July 1, 2014	July 1, 2015
Active Employees		
Count	700	713
Average Age	38.81	38.67
Average Service	11.76	11.24
Covered Payroll	\$ 33,055,600	\$ 32,577,300
With Medical Coverage		
Disableds	5	5
Spouses	5	5
Dependent Children	2	2
Total Medical	12	12
With Life Insurance *	3	2
With Dental Coverage	12	12

* Disableds who are entitled to the \$25,000 death benefit within their first five years of disablement.

Eligible Active Employees as of July 1, 2015									
Years of Service									
Age Group	< 5	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 +	Total
Under 25	64	0	0	0	0	0	0	0	64
25 to 30	99	23	0	0	0	0	0	0	122
30 to 35	35	41	25	0	0	0	0	0	101
35 to 40	14	25	45	15	0	0	0	0	99
40 to 45	8	22	25	48	12	0	0	0	115
45 to 50	8	12	14	33	28	10	0	0	105
50 to 55	1	1	12	13	12	19	7	0	65
55 to 60	3	1	2	4	2	5	8	2	27
60 to 65	2	1	2	0	0	4	0	3	12
Over 65	0	0	1	1	0	0	0	1	3
Total	234	126	126	114	54	38	15	6	713

Status Reconciliation					
	Active	Spouses	Dependent		Total
			Children	Disabled	
Members on July 1, 2014	700	5	2	5	712
New Hires	68	0	0	0	68
Became Disabled	0	0	0	0	0
Died or Terminated	(55)	0	0	0	(55)
Members on July 1, 2015	713	5	2	5	725

CITY OF ROANOKE
JULY 1, 2015 LINE OF DUTY BENEFIT VALUATION

APPENDIX A
PARTICIPANT DATA, ASSUMPTIONS AND METHODS

Economic Assumptions

1. **Measurement Date:** July 1, 2015
2. **Discount Rate:** 7.00% per year, net of investment expenses and administrative expenses
3. **Inflation:** 2.50%
4. **Annual Rate of Payroll Growth:** For purposes of amortizing the Unfunded Actuarial Liability as a level percent of payroll, a 3.00% annual rate of pay growth is assumed.
5. **Salary Increase:** Representative values of the assumed annual salary increases are shown below. The rates include the following components: 2.75% for inflation, 0.5% for national productivity and 0.25% for merit or seniority increases (adopted June 30, 2011).

Age	Annual Rate of Salary Increase
20	5.00%
25	4.50
30	4.00
35	3.50
40	3.50
45	3.25
50	3.00
55	2.75
60	2.50
64	2.50

6. Changes Since Prior Valuation:

None.

CITY OF ROANOKE
JULY 1, 2015 LINE OF DUTY BENEFIT VALUATION

APPENDIX A
PARTICIPANT DATA, ASSUMPTIONS AND METHODS

Demographic Assumptions

VRS participants are assumed to follow ESRS rates of retirement, disablement, and withdrawal.

- 1. Rates of Retirement:** Percent of eligible active members retiring within the next year, based on assumptions adopted June 30, 2011 for ESRS and June 30, 2006 for ERS and provided by the prior actuary for the postretirement valuation.

Public Safety:

Age	ESRS Early and Normal Retirement	ERS Early Retirement	ERS Normal Retirement
40	n/a	0.99 %	n/a
45	20.00 %	0.48	10.00 %
50	20.00	0.12	10.00
51	20.00	0.10	20.00
52	20.00	0.09	20.00
53	20.00	0.07	20.00
54	20.00	0.04	20.00
55	20.00	0.03	20.00
56	20.00	0.02	30.00
57	20.00	0.01	30.00
58	20.00	0.01	30.00
59	20.00	0.01	30.00
60	20.00	n/a	35.00
61	20.00	n/a	40.00
62	20.00	n/a	40.00
63	20.00	n/a	40.00
64	20.00	n/a	40.00
65	100.00	n/a	100.00

NOTE: Rates apply to each member based on eligibility requirements as defined in the Summary of Benefit and Contribution Provisions.

- 2. Percent of Retirees Electing Coverage:** 100% of eligible retirees and their spouses are assumed to participate at disablement or death.
- 3. Family Composition:** Assume 70% of members are married at disablement.

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- 4. Rates of Withdrawal:** Percent of eligible active members terminating employment (not due to retirement, death, or disability) within the next year.

The following assumptions were adopted June 30, 2011 for ESRS.

Service	Public Safety
0	11.00 %
1	10.00
2	9.00
3	8.00
4	7.50
5	7.00
10	4.50
15	2.50
20	1.25
24	0.25
25	0.00
26+	0.00

The following assumptions were adopted June 30, 2006 for ERS.

Age	Public Safety
20	11.26 %
25	7.99
30	4.54
35	1.99
40	1.09
45	0.53
50	0.14
54	0.05
55	0.04
59	0.01
60	n/a
61	n/a
62	n/a
63	n/a
64	n/a

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5. Rates of Disability Retirement: Sample rates are as follows:

The following assumptions were adopted June 30, 2011 for ESRS.

Public Safety		
Age	Non-Occupational	Occupational
20	0.02 %	0.02 %
25	0.02	0.03
30	0.03	0.03
35	0.04	0.05
40	0.07	0.07
45	0.12	0.13
50	0.21	0.22
55	0.30	0.32
60	0.00	0.45
61	0.00	0.52
62	0.00	0.56
63	0.00	0.60
64	0.00	0.63
65+	0.00	0.00

6. Rate of Mortality:

Pre-Retirement: 125% of RP-2000 Combined Healthy Mortality for males and females with generational mortality projection using Scale AA*

Healthy Annuitants: 125% of RP-2000 Combined Healthy Mortality for males and females with generational mortality projection using Scale AA

Disableds: 70% of PBGC Disabled Mortality Table 5A for males and 90% of PBGC Disabled Mortality Table 6A for females

** For Public Safety, occupational deaths are assumed to increase from 28.7% / 22.3% (for females / males) of total deaths to a maximum of 54.2% / 35.2% (for females / males) of total deaths at age 32, and then decrease to 0.0% at age 65.*

7. Dependent Age: For current active employees, males are assumed to be three-years older than their spouses. For current retirees, actual spouse date of birth was used, if known.

8. Changes since Prior Valuation: None

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Claim and Expense Assumptions

1. **Average Annual Claims and Expense Assumptions:** The following claim and expense assumptions are applicable from July 1, 2015 to June 30, 2016. Subsequent years' costs are based on the first-year cost adjusted with trend.

Pre-Medicare Retirees:

<u>Age</u>	<u>Medical</u>		<u>Pharmacy</u>		<u>Reinsurance</u>	<u>Dental</u>	<u>Total</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>All</u>	<u>All</u>	<u>Male</u>	<u>Female</u>
40	\$2,678	\$5,026	\$761	\$1,122	\$156	\$528	\$4,123	\$6,832
45	\$3,269	\$5,109	\$1,026	\$1,372	\$156	\$528	\$4,979	\$7,164
50	\$4,264	\$5,849	\$1,417	\$1,810	\$156	\$528	\$6,364	\$8,342
55	\$5,567	\$6,771	\$1,893	\$2,330	\$156	\$528	\$8,143	\$9,784
60	\$7,266	\$8,013	\$2,434	\$2,842	\$156	\$528	\$10,384	\$11,538
64	\$9,117	\$9,387	\$2,831	\$3,091	\$156	\$528	\$12,632	\$13,161

Pre-Medicare Spouses:

<u>Age</u>	<u>Medical</u>		<u>Pharmacy</u>		<u>Reinsurance</u>	<u>Dental</u>	<u>Total</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>All</u>	<u>All</u>	<u>Male</u>	<u>Female</u>
40	\$2,169	\$4,070	\$688	\$1,015	\$156	\$528	\$3,541	\$5,769
45	\$2,648	\$4,138	\$929	\$1,241	\$156	\$528	\$4,260	\$6,063
50	\$3,453	\$4,737	\$1,282	\$1,638	\$156	\$528	\$5,419	\$7,058
55	\$4,509	\$5,484	\$1,712	\$2,108	\$156	\$528	\$6,905	\$8,276
60	\$5,885	\$6,490	\$2,203	\$2,572	\$156	\$528	\$8,771	\$9,745
64	\$7,384	\$7,603	\$2,561	\$2,796	\$156	\$528	\$10,629	\$11,083

Medicare-Eligible Retirees and Spouses:

<u>Age</u>	<u>Medical</u>		<u>Pharmacy</u>		<u>Reinsurance</u>	<u>Dental</u>	<u>Total</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>All</u>	<u>All</u>	<u>Male</u>	<u>Female</u>
65	\$1,371	\$1,371	\$602	\$602	\$156	\$528	\$2,657	\$2,657

Administrative Expense: \$247.87 annually, increasing with 3% trend.

ACA Tax: \$16 with no future increases projected during temporary period applicable.

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- 2. Annual Trend:** The following annual trend rates were applied to the Average Annual Claims and Expense Assumptions to project these costs into the future.

Beginning July 1,	Pre- Medicare Trend	Beginning July 1,	Medicare Trend
2015	9.250%	2015	7.1%
2016	9.016	2016	7.0
2017	8.781	2017	6.9
2018	8.547	2018	6.8
2019	8.313	2019	6.7
2020	8.078	2020	6.6
2021	7.844	2021	6.5
2022	7.609	2022	6.4
2023	7.375	2023	6.3
2024	7.141	2024	6.2
2025	6.906	2025	6.1
2026	6.672	2026	6.0
2027	6.438	2027	5.9
2028	6.203	2028	5.8
2029	5.969	2029	5.7
2030	5.734	2030	5.6
2031+	5.500	2031+	5.5

- 3. Dependent Children:** Retiree claims below age 65 have been loaded for the cost of children enrolled as dependents of eligible retirees. The medical claims were loaded 23.5% and the pharmacy claims 10.5%. This figure is based on the expected cost for children of the current population enrolled. This assumption implicitly assumes that future retirees will have the same child distribution as the current population. The retirees are assumed to cover the cost of dependent children, and the claims of retiree spouses do not contain this load.
- 4. Medicare Eligibility:** Age 65
- 5. Annual Limits:** Assumed to increase at the same rate as medical trend.
- 6. Lifetime Maximums:** Unlimited
- 7. Geography:** Implicitly assumed to remain the same as current retirees.
- 8. Changes since Last Valuation:** The annual claim curves were updated to reflect the most recent claim experience. The health care trends were updated to reflect the current market place.

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PARTICIPANT DATA, ASSUMPTIONS AND METHODS

Methodology

Actuarial Cost Method: The Projected Unit Credit Actuarial Cost Method was used to value the Plan's actuarial liabilities and to set the normal cost. Under this method, benefits are projected for life, and their present value is determined. The present value is divided into equal parts, which are earned from date of hire to each decrement age.

A closed 30-year amortization period from July 1, 2008 was used. The remaining amortization period at July 1, 2015 is 23 years. The amortization method is a level percentage of payroll amortization method.

Asset Valuation Method: Assets are valued at market value.

Claims Method: For medical and pharmacy, we used historical claims and census records assembled and provided by Anthem through June 30, 2015. We analyzed medical and prescription experience for Non-Medicare eligible (NME) (actives and retired covered persons). We distributed the cost based on the current covered population and Cheiron's standard age curves which vary by age and gender. Children costs are converted to a load on the Non-Medicare (NME) retirees which implicitly assumes that future retirees will have the same child distribution as the current population. Administrative and ACA Taxes were based on contractual rates and projected costs. From this data, we developed per person per month (PPPM) costs and then adjusted those using age curves. The rates were then trended forward to the period July 1, 2015 to June 30, 2016 using an annual trend assumption of 9% for medical and 8% for pharmacy.

Medicare claims were assumed to cost similar to the average cost of a Medicare Supplement plan and a Medicare Part D plan. The individuals can purchase a choice of plans that are similar to benefits provided by the City's Pre-Medicare plan and the City will cover them in full.

This report reflects the additional fees that are payable for three years for Transitional Reinsurance of \$44 per covered life in 2015 and \$27 per covered life in 2016, and also reflects the Patient-Centered Research Institute (PCORI fees) of \$2.08 per member per year payable during an eight year period, pursuant to the Affordable Care Act. However, this report does not reflect future changes in benefits, subsidies, penalties, or administrative costs that may be required as a result of the Patient Protection and Affordable Care Act of 2010 related legislation, and/or regulations. The Affordable Care Act Tax is assumed to end in 2016.

Changes since Last Valuation: There were no changes to actuarial methods since the prior valuation. However, claims were updated to reflect the most recent experience.

CITY OF ROANOKE
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**APPENDIX B
SUBSTANTIVE PLAN PROVISIONS**

Eligibility

Employees are eligible to retire and receive Line of Duty medical and dental insurance benefits if they become disabled or die in the line of duty.

Benefits

For non-Medicare Eligible Retirees, this Plan provides the City health plan (currently the Anthem Key Care PPO 20 Plan), which includes both in- and out-of-network benefits. Medicare eligible retirees are offered benefits similar to the Pre-Medicare plan. Participants can choose which supplemental plan to enroll in. We have assumed they enroll in the Supplemental Plan N. Participants can choose which Part D plan as well. Also, eligible retirees and their families are provided dental benefits through the City's active dental plan with Delta Dental.

Line of Duty retirees, spouses, widows, and dependent children are eligible to continue their current coverage at no cost for life. These benefits are determined under Section 9.1-400 of the Virginia Code. Benefits are provided to first responders who die or become disabled in the line of duty. The benefits are summarized as follows:

- Death benefit
 - \$100,000 for death occurring as a direct or proximate result of duties ¹
 - \$25,000 for death by presumptive clause or within five years of retirement
- Continued health insurance coverage
 - Disabled employee
 - Spouse and dependent children

The City of Roanoke employees that we have considered to be covered by these benefits include:

- Firefighters, Police Officers, and Sheriffs covered under the City OPEB plan
- City Firefighters, Police Officers, and Sheriffs covered under VRS

¹ The liability associated with the \$100,000 LOD active death benefit is not covered by the requirements of GASB Statement No. 45, and this description is shown for information only.

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APPENDIX B
SUBSTANTIVE PLAN PROVISIONS

City of Roanoke OPEB

Plan Last Modified:	7/1/2011
Group Covered	LODA
Provider Network:	KeyCare PPO
Affordable Care Act Status:	Grandfathered
<u>In-Network (INN) Benefits</u>	
Deductible (Individual / Family)	\$0 / \$0
Coinsurance	20%
Copays	
Office Visit (OV)-Primary Care (PCP)	\$20
OV - Specialist Care Provider (SCP)	\$40
Preventive Care	Fully Insured
Urgent Care (UC)	\$40
Hospital Emergency Room (ER)	\$100
Outpatient Surgery	20% w/ 100 Copay
Hospital Inpatient	20% w/ 400 Copay
Out-of-Pocket Max (Individual / Family)	\$3,000 / \$6,000
<u>Out-of-Network (OON) Benefits</u>	
Deductible (Individual / Family)	\$500 / \$1,000
Coinsurance	30%
Out-of-Pocket (OOP) Max (Individual/ Family)	\$4,500 / \$9,000
<u>Maximum (INN/OON)</u>	
N/A	
<u>Prescription Drugs</u>	
Retail (31 Days) - Generic / Formulary / Non-Form. Copay	\$10 / \$30 / \$50
Mail Order (90 Days) - Generic / Form. / Non-Form. Copay	\$20 / \$60 / \$100
<u>Detail Benefits</u>	
Mental Health (MH) / Substance Abuse (SA):	INN - 20% & \$40 Copay / OON - 30%
- MH Annual / Lifetime Visit Maximum (Inpatient / Outpatient)	Unlimited
- SA Annual / Lifetime Visit Maximum (Inpatient / Outpatient)	Unlimited
- Annual / Lifetime Dollar Maximum (MH / SA)	Unlimited / Unlimited
Rehabilitation (i.e., speech, occup. physical):	OV Copay
- Speech Therapy Annual Maximum	\$500
- Physical & Occupational Therapy Annual Maximum	\$2,000
Chiropractor:	OV Copay
Home Health	INN - 0% / OON - 30% (90 visits per year)
Durable Medical Equipment (DME)	DC (\$5,000 limit per year)
Chemotherapy	DC
Hearing Aids	Not Covered
<u>Medical Management</u>	
PCP referral to specialists required:	No
Inpatient	No
Outpatient	No
Case Management	Yes
Disease Management	Yes
Wellness	Yes
Nurse-Line / Informed Decision Support	Yes
<u>Medicare Integration:</u>	
Coordination of Benefits	
<u>Vision Care Services</u>	
Exam	One per covered person per calendar year
- Copay (INN / OON)	\$15 / \$30
Lens	Not Covered
Frames	Not Covered
Contacts	Not Covered
<u>Dental</u>	
Annual Deductible	\$25
Coinsurance (Prevent / Prosthetic / Restoration)	100%
Annual Maximum Covered	\$1,500
Orthodontics	Not Covered
<u>Life Insurance</u>	
\$100,000 for death in line of duty \$25,000 for death within five years of becoming disabled in line of duty	
<u>Post-65 Supplement</u>	
Covers close to pre-Medicare plan, Supplemental Plan N	
<u>Medicare Part D</u>	
Covers the same as pre-Medicare in Part D plan	

¹ DC = Deductible and coinsurance applies.

CITY OF ROANOKE
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APPENDIX B
SUBSTANTIVE PLAN PROVISIONS

Cost Sharing

Line of Duty benefits are provided at no cost to the retiree, spouse, or widow.

Life Insurance

The death benefits are provided at no cost to the retiree or employee.

City of Roanoke Health Plan Covered Group

Active, COBRA, and retired members from the City of Roanoke and the Roanoke Valley Detention Commission participate in the City health plan (currently the Anthem Key Care PPO 20 Plan). In addition, Sheriff employees and retirees and those retired under the Line of Duty Act are eligible to participate in the City health plan.

The City of Roanoke School Board, the Roanoke Valley Resource Authority, the Roanoke Regional Airport Commission, and the Western Virginia Water Authority have each developed their own health plans and do not participate in the City health plan, as either active or inactive members.

Only participants who have retired or will be retiring under the Line of Duty Plan are included in the liabilities contained in this report. However, the claim cost development recognizes all participants of the City health plan.

Vendors

Eligibility Administrator:	Anthem Blue Cross and Blue Shield
Medical Claims Administrator:	Anthem Blue Cross and Blue Shield
Medical Network:	Anthem Blue Cross and Blue Shield
Mental Health Network:	Anthem Blue Cross and Blue Shield
Medical Manager:	Anthem Blue Cross and Blue Shield
Pharmacy Benefit Manager:	Anthem Blue Cross and Blue Shield
Dental Network & Claim Administrator:	Delta Dental (Delta Premier)
Vision Network & Claim Administrator:	Anthem Blue Cross and Blue Shield
Life Insurer:	Minnesota Life
Consultant:	Wells Fargo Insurance Services USA, Inc.
Actuary:	Cheiron, Inc.
Auditor:	KPMG LLP

Changes since Last Valuation

None.

**APPENDIX C
 GLOSSARY OF TERMS**

1. Actuarial Assumptions

Assumptions as to the occurrence of future events affecting costs, such as: mortality, withdrawal, disablement and retirement; changes in compensation and Government provided benefits; rates of investment earnings and asset appreciation or depreciation; procedures used to determine the Actuarial Value of Assets; characteristics of future entrants for Open Group Actuarial Cost Methods; and other relevant items.

2. Actuarial Cost Method

A procedure for determining the Actuarial Present Value of Plan benefits and expenses and for developing an actuarially equivalent allocation of such value to time periods, usually in the form of a Normal Cost and an Actuarial Accrued Liability.

3. Actuarial Gain (Loss) (Called Actuarial Experience Gain and Loss)

A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions during the period between two Actuarial Valuation dates, as determined in accordance with a particular Actuarial Cost Method.

4. Actuarial Liability, i.e., Actuarial Accrued Liability

That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of projected benefits which will not be paid by future Normal Costs.

5. Actuarial Present Value (Present Value)

The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. For purposes of this standard, each such amount or series of amounts is:

- a. adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, Social Security, marital status, etc.),
- b. multiplied by the probability of the occurrence of the event (such as survival, death, disability, termination of employment, etc.) on which the payment is conditioned, and
- c. discounted according to an assumed rate (or rates) of return to reflect the time value of money.

As a simple example: assume you owe \$100 to a friend one year from now. Also, assume there is a 1% probability of your friend dying over the next year, in which case you won't be obligated to pay him. If the assumed investment return is 10%, the actuarial present value is:

Amount		Probability		$\frac{1}{(1+\text{Discount Rate})}$	
\$100	x	of Payment	x	$\frac{1}{1/(1+.1)}$	= \$90
		(1 - .01)			

APPENDIX C
GLOSSARY OF TERMS

6. Actuarial Valuation

The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for the Plan.

7. Actuarial Value of Assets

The value of cash, investments and other property belonging to a Plan, as used by the actuary for the purpose of an Actuarial Valuation. The purpose of an Actuarial Value of Assets is to smooth out fluctuations in market values. This way, long-term costs are not distorted by short-term fluctuations in the market.

8. Amortization

The portion of the Plan contribution which is designed to pay interest on and to amortize the Unfunded Actuarial Liability.

9. Discount Rate

The estimated long-term interest yield on the investments that are expected to be used to finance the payment of benefits, with consideration given to the nature and mix of current and expected investments and the basis used to determine the Actuarial Value of Assets.

10. Funded Ratio

The Actuarial Value of Assets expressed as a percentage of the Actuarial Accrued Liability.

11. Normal Cost

That portion of the Actuarial Present Value of the Plan benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method.

12. Projected Unit Credit Actuarial Cost Method

A method under which the benefits (projected or un-projected) of each individual included in an actuarial valuation are allocated by a consistent formula to valuation years.

13. Unfunded Actuarial Liability

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets.

14. Per Person Cost Trend, i.e., Healthcare Cost Trend Rate

The rate of change in per capita health claims costs over time as a result of factors such as medical inflation, utilization of healthcare services, plan design, and technological developments.

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APPENDIX D
ABBREVIATION LIST

Actuarial Liability (AL)
Actuarial Valuation Report (AVR)
Annual Required Contribution (ARC)
Coordination of Benefits (COB)
Deductible and Coinsurance (DC)
Durable Medical Equipment (DME)
Employee Assistance Program (EAP)
Employee Benefits Division (EBD)
Fiscal Year Ending (FYE)
Governmental Accounting Standards Board (GASB)
Hospital Emergency Room (ER)
In-Network (INN)
Inpatient (IP)
Line of Duty (LOD)
Medicare Eligible (ME)
Net Other Postemployment Benefit (NOO)
Non-Medicare Eligible (NME)
Not Applicable (NA)
Office Visit (OV)
Other Postemployment Benefit (OPEB)
Out-of-Network (OON)
Out-of-Pocket (OOP)
Outpatient (OP)
Pay-as-you-go (PAYGo)
Per Person Per Month (PPPM)
Pharmacy (Rx)
Preferred Provider Organization (PPO)
Primary Care Physician (PCP)
Specialist Care Provider (SCP)
Summary Plan Description (SPD)
Unfunded Actuarial Liability (UAL)
Urgent Care (UC)