buckconsultants

xerox

City of Milwaukee Policemen's Annuity and Benefit Fund

Actuarial Valuation Report

As of January 1, 2016

May 2016

Larry Langer
Principal and
Consulting Actuary

Buck Consultants, LLC.
123 North Wacker Drive
Suite 1000
Chicago, IL 60606

larry.langer@xerox.com
tel 312.846.3669
fax 312.846.3502

May 31, 2016

Annuity and Pension Board
Employes' Retirement System
of the City of Milwaukee
789 N. Water Street, #300
Milwaukee, WI 53202

Members of the Board:

This report presents the results of the annual actuarial valuation of the assets and liabilities of the Policemen's Annuity and Benefit Fund of Milwaukee (PABF) as of January 1, 2016, prepared in accordance with Chapter 36, Part 15(15) of the Milwaukee City Charter. The valuation takes into account all of the promised benefits to which members were entitled as of January 1, 2016.

The valuation was based on the actuarial assumptions and methods as adopted by the Board of Trustees, and as specified by the Charter. Actuarial Standards of Practice now require that the likelihood and extent of future mortality improvements be considered for valuations performed on or after June 30, 2011. We have reflected future mortality improvements in this valuation.

Assets and Membership Data

The individual data for members of the PABF as of the valuation date were reported to the actuary by the Employes' Retirement System (ERS). While we did not verify the data at their source, we did perform tests for internal consistency and reasonability. The amount of assets in the trust fund taken into account in the valuation was based on statements prepared for us by the ERS.

Financing Objective and Employer Contribution

The results of the January 1, 2016 valuation determine the employer contribution for the year ending December 31, 2016.

Based on the provisions of Chapter 35, the annual contribution consists of an amount sufficient to amortize the unfunded actuarial liability (the amount by which the actuarial liability exceeds the assets on the valuation date) over a ten-year period with a series of level dollar payments; plus budgeted administrative expenses for the year.

On this basis, the contribution for the 2016 plan year, to be paid January 31, 2017, would amount to $132,723, plus budgeted administrative expenses for the year.

Financial Results and Membership Data

Detailed summaries of the financial results of the valuation, including a 20-year projection of assets, liabilities, benefit payments and contribution requirements (excluding future administrative expense requirements), and of the membership data used in preparing the valuation are shown in the valuation report.

The City contributed $353,368 under the PAYGO basis during year ended December 31, 2015

It is not uncommon for a fund that is closed to new entrants where a large percentage of the assets are paid out in benefits to become insolvent before all benefit payments are made. That is the case for the PABF. For PABF, the insolvency was exacerbated by the downturn in asset values during calendar year 2008. Consideration could be given to reviewing the current funding policy to ensure that it is still in line with the Board's funding and solvency objectives. Given the small magnitude of the benefit payments to be made after the projected insolvency date in 2016, it would not be unreasonable to consider allowing the plan sponsor to fund the plan as benefit payments come due. An illustration of fund on a PAYGO approach is shown in Table 8.

To the best of our knowledge, this report is complete and accurate and has been prepared in accordance with generally accepted actuarial principles and practice.

Respectfully submitted,

Larry Langer, ASA, EA, MAAA
Principal, Consulting Actuary

Chih-Hung Peng

Kevin (Chih Hung) Peng, ASA, EA, MAAA
Consultant, Retirement

Patryk Tabernacki
Senior Associate, Retirement

12736/C8581RET01-2016-PABF-Valuation_Final.docx

Introduction

The law governing the Policemen's Annuity and Benefit Fund (PABF) requires the Actuary, as the technical advisor to the Annuity and Pension Board, to make an annual valuation of the funds and liabilities of the Fund, and to determine and certify the annual contribution to be derived from the tax levy. {Chapter 35, Part 1(12)}. Buck Consultants, as Actuary, has completed the annual actuarial valuation of the System as of January 1, 2016.

In this report we present the results of the January 1, 2016 valuation and the contribution to be derived from the tax levy for the year ending December 31, 2016. For purposes of disclosure, the report also includes the schedule of funding progress as required by GASB Statement No. 25. – only to be used for comparison of relevant Statement No. 67 information. The benefit provisions recognized in this valuation are those in place as of the valuation date.

The valuation was completed based upon membership and financial data provided by the administrative staff of the System. The mortality and investment return assumptions used to prepare the valuation were adopted as of January 1, 2013, and are based on the experience study prepared by the Actuary and approved by the Board for the City of Milwaukee Employes' Retirement System for the five-year period ended December 31, 2011. The actuarial asset valuation method was adopted as of January 1, 2005.

Changes Since Last Year

There were no changes in actuarial assumptions and methods or plan provisions since the prior valuation.

Summary of Principal Results

Summarized below are the principal financial results for the Policeman's Annuity and Benefit Fund of Milwaukee based upon the actuarial valuation as of January 1, 2016. Comparable results from the January 1, 2015 valuation are also shown.

Item	January 1, 2016	January 1, 2015
Number of Participants		
➢ Active Members	0	0
➢ Annuitants	6	11
➢ Widow Annuitants	30	32
➢ Total Number of Participants	36	43
Benefits Paid in the Prior Year	$ 421,971	$ 492,713
Asset Values (includes contributions receivable)		
➢ Actuarial Value	$ 184,559	$ 146,998
➢ Market Value	$ 184,559	$ 146,998
Actuarially Determined Employer Contribution	Due 1/31/2017	Due 1/31/2016
➢ Annual Cost*	$ 132,723	$ 188,214
➢ As % of Prior Year Benefits Paid	31.45%	38.20%
*Plus budgeted administrative expenses		
Funded Status		
➢ Accrued Liability	$ 1,059,389	$ 1,387,588
➢ Actuarial (and Market) Value of Assets	184,559	146,998
➢ Unfunded (Overfunded) Accrued Liability	$ 874,830	$ 1,240,590
➢ Funded Ratio Based on Actuarial Value of Assets	17.4%	10.6%

Reasons for Change in the Funded Ratio

The funded ratio increased from 10.6% as of January 1, 2015 to 17.4% as of January 1, 2016. The funded ratio was expected to decrease from 10.6% to 3.6% as of January 1, 2016 based on the projection from the January 1, 2015 actuarial valuation. Participant mortality experience in the form of slightly fewer benefits being payable as of January 1, 2016 increased the funded ratio from 3.6% to 3.7%%. The city contribution and tax levy received are more than benefits paid during 2015. This then increased the funded ratio from 3.7% to 17.4%.

Schedule of Funding Progress

The "Schedule of Funding Progress" shows historical trend information about the Fund's actuarial value of assets, the actuarial accrued liability and the unfunded actuarial accrued liability. The actuarial funded status is measured by comparing the actuarial value of assets (based on market value) with the accrued liability. The accrued liability is the present value of benefits accumulated to date under the PABF's funding method. On this basis, the PABF's funded ratio is 17.4% as of January 1, 2016. The funded ratio is based on an actuarial value of assets of $184,559 including a $188,214 receivable contribution for the 2015 plan year, and an accrued liability of $1,059,389.

Valuation as of January 1	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL)	Unfunded AAL (UAAL) (a-AAL)	Funded Ratio (a/AAL)	Annuity Payroll (b)	UAAL as a Percentage of Annuity Payroll (UAAL / b)
2016	$184,559	$1,059,389	$874,830	17.4%	$421,971	207.3%
2015	$146,998	$1,387,588	$1,240,590	10.6%	$492,713	251.8%
2014	$412,093	$1,777,824	$1,365,731	23.2%	$589,196	231.8%
2013	$650,910	$2,152,402	$1,501,492	30.2%	$715,206	209.9%
2012	$1,007,534	$2,451,276	$1,443,742	41.1%	$765,365	188.6%

TABLE 1 - Summary of Market Value of Plan Assets As of January 1, 2016 (in dollars)

Item		Amount
1. Market Value of Assets as of January 1, 2015	$	146,998
2. Contributions During Year		
a. Member		-
b. Employer		353,368
c. Tax Levy (receivable 1/31/2016)		188,214
d. Total		541,582
3. Disbursements During Year		
a. Benefits Paid		421,971
b. Refunds of contributions		-
c. Total		421,971
4. Investment Return		
a. Net Appreciation, Interest , Dividends and Admimistrative Expenses		(82,050)
5. Market Value of Assets as of 1/1/2016 (Unaudited) (1) + (2d) - (3c) + (4)	$	184,559
6. Net Rate of Return		
a. Actual		-1.53%
b. Expected		8.25%
c. Rate of Return Greater Than / (Less Than) Expected (a - b)		-9.78%
d. Dollar Amount of Gain / (Loss) on Assets	$	5,926

GASB No. 67/68 Disclosure

The disclosure under GASB 67/68 is to be determined as of the end of the Governmental Employers' fiscal year. It is permissible for the actuary to project the total pension liability to the end of year, based on beginning of the year results; however, the actuary should take into account any significant events that occurred during the year, such as plan changes. The plan fiduciary net position under GASB 67/68 disclosure should be the actual market value of assets as of the end of the year. The Actuarial cost method for GASB 67/68 disclosure is Entry Age Normal Cost Method. The discount rate changed from 3.34% to 3.20% to reflect the municipal bond rate change.

Tables 2 through 6 show the required accounting and financial reporting and disclosure items for fiscal year ending 12/31/2015 prepared based on data as of 1/1/2015.

TABLE 2 – Actuarial Methods and Assumptions for GASB 67/68 Disclosure Purposes

The total pension liability as of December 31, 2015 was determined by rolling forward the total pension liability as of January 1, 2015 to December 31, 2015 using the following actuarial methods and assumptions, applied to all periods included in the measurement.

Valuation Date	January 1, 2015
Actuarial Cost Method	Entry Age Normal – Level dollar amount
Amortization Method	For pension expense; the difference between expected and actual liability experience and changes of assumptions are recognized immediately. The differences between projected and actual earnings are amortized over a closed period of five years.
Asset Valuation Method	Market Value
Actuarial Assumptions:	
Investment Rate of Return	8.25% for calendar years through 2017, and 8.50% beginning with calendar year 2018
Projected Salary Increases	None - The Plan is Closed
Inflation Assumption	3.00%
Mortality Table	For regular retirees and for survivors, the RP-2000 Combined Mortality Table with nine years of projected improvements for males and females, include full generational projection using mortality improvement Scale AA.
Experience Study	The actuarial assumptions used in the December 31, 2015 valuation were based on the results of an actuarial experience study for the period January 1, 2007-December 31, 2011.

TABLE 3 – Schedule of the Net Pension Liability
(in thousands)

Total pension liability	$	1,233
Plan fiduciary net position		185
Net pension liability (asset)	$	1,048
Plan fiduciary net position as a percentage of total pension liability		15.00%
Covered employee payroll	$	-
Net pension liability (asset) as a percentage of covered employee payroll		N/A

Discount rate: The discount rate used to measure the total pension liability was 3.20 percent. Since the PABF is closed to new members and PABF's fiduciary net position was projected to be insufficient to make all projected future benefit payments of current annuitants. Therefore, the 20 year Municipal Bond Rate was applied to all periods of projected benefit payments to determine the total pension liability. The 3.20 percent rate equals the S&P Municipal Bond 20-Year High Grade Rate Index (yield to maturity) at Dec. 31, 2015

Sensitivity of the net pension liability to changes in the discount rate. The following presents the net pension liability of the PABF calculated using the discount rate of 3.20 percent, as well as what the PABF's net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (2.20 percent) or 1-percentage-point higher (4.20 percent) than the current rate:

	1% Decrease (2.20%)	Current Discount (3.20%)	1% Increase (4.20%)
PABF's net pension liability	$ 1,089	$ 1,048	$ 1,010

TABLE 4 – Schedule of Changes in the Net Pension Liability

($ in thousands)

Total pension liability		
Service cost	$	0
Interest		45
Changes in benefit items		0
Differences between expected and actual experience		(30)
Changes of assumptions		7
Benefit payments including refunds of member contributions		(420)
Net change in total pension liability		(398)
Total pension liability - beginning		1,631
Total pension liability - ending	$	1,233
Plan fiduciary net position		
Contributions - employer	$	541
Contributions - member		0
Net investment income		1
Benefit payments, including refunds of member contributions		(420)
Administrative expense		(83)
Other		0
Net change in plan fiduciary net pension		39
Plan fiduciary net position - beginning		146
Plan fiduciary net position - ending	$	185
Net pension liability (asset) - ending	$	1,048

Table 5 – Schedule of Employes' Retirement Systems' Contributions

($ in thousands)

Last 10 Fiscal Years
(Dollar Amounts in thousands)

	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
Actuarially Determined Contributions	$ 188	$ 207	$ 228	$ 222	$ 209	$ 269	$ 330	$ 41	$ 57	$ 308
Contributions in relation to the actuarially determined contribution	188	207	228	222	209	269	330	41	57	308
Contribution deficiency (excess)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Covered Employee Payroll	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Contributions as a percentage of covered-employee payroll	-	-	-	-	-	-	-	-	-	-

GASB 67 is applicable for fiscal years ending 2014 and later.
The information presented above was determined as part of the actuarial valuation as of one year prior to the dates indicated (i.e., the contribution determined by the valuation completed as of January 1, 2015 was contributed for the fiscal year ending December 31, 2015).

Table 6 –GASB68 Information

Collective Pension Expense

($ in thousands)

Item	Measurement Year Ending Dec. 31, 2015	Measurement Year Ending Dec. 31, 2014
Pension Expense		
Service cost	$ -	$ -
Interest cost on total pension liability	45.0	61.0
Projected earnings on plan investments	(14.0)	(22.0)
Contributions - Member	-	-
Administrative expense	83.0	34.0
Current period	-	-
Plan changes	-	-
Changes in assumptions	7.0	-
Differences between expected and actual liab. experience	(30.0)	-
Difference between projected and actual earnings	2.6	0.4
Recognition of prior years'	-	-
Deferred outflows	0.4	-
Deferred inflows	-	-
Other changes in fiduciary net position	-	-
Pension expense	94.0	73.4

Table 6a –GASB68 Information (Continue)

Details of the recognized and deferred inflows and outflows of resources

Amortization of Difference between Projected and Actual Earnings

($ in thousands)

Measurement Year	2014	2015	Outflows	Inflows	Total
Amount Established	2	13			
Recognition Period	5.00	5.00			
Annual Recognition	0.4	2.6			
Amount Recognized					
2014	0.4	-	0.4	-	0.4
2015	0.4	2.6	3.0	-	3.0
2016	0.4	2.6	3.0	-	3.0
2017	0.4	2.6	3.0	-	3.0
2018	0.4	2.6	3.0	-	3.0
2019	-	2.6	2.6	-	2.6
2020	-	-	-	-	-
Deferred Balance					
2014	1.6	-	1.6	-	1.6
2015	1.2	10.4	11.6	-	11.6
2016	0.8	7.8	8.6	-	8.6
2017	0.4	5.2	5.6	-	5.6
2018	-	2.6	2.6	-	2.6
2019	-	-	-	-	-

Table 6b –GASB68 Information (Continue)
Schedule of Pension Amounts by Employer
($ in thousands)

		Deferred Outflows of Resources					Deferred Inflows of Resources					Pension Expense	
Entity	Net Pension Liability	Difference Between Expected and Actual Experience	Net Difference Between Projected and Actual Investment Earnings on Pension Plan Investments	Changes of Assumptions	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	Total Deferred Outflows of Resources	Difference Between Expected and Actual Experience	Net Difference Between Projected and Actual Investment Earnings on Pension Plan Investments	Changes of Assumptions	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	Total Deferred Outflows of Resources	Proportionate Share of Plan Pension Expense	Net Amortization Deferred Amount from Changes in Proportion and Differences Between Employer Contributions and Proportional Share of Contributions
Police	1,048	-	11.6	-	-	11.6	-	-	-	-	-	94.0	-
Total for all entities	$ 1,048	-	11.6	-	-	11.6	-	-	-	-	-	94.0	-

TABLE 7 - Projection Of Actuarial Liability And Assets
From January 1, 2016 To December 31, 2035
Based On Rolling 10-Year Level Dollar Amortization Of Unfunded Actuarial Liability
And 8.25% - 8.50%* Per Annum Investment Returns

Calendar Year	(A) Beg.-of-Year (BOY) Assets	(B) BOY Actuarial Liability	(C) Unfunded Actuarial Liability (B) - (A)	(D) Expected Benefit Payments	(E) Investment Earnings at 8.25%	(F) Contribution Receivable Jan 31 Next Year	(G) End-of-Year Assets (A) - (D) + (E) + (F)
2016	$ 184,559	$ 1,059,389	$ 874,830	$ 316,136	$ 1,102	$ 132,723	$ 2,248
2017	2,248	817,870	815,622	251,476	(10,928)	123,741	(136,415)
2018	(136,415)	623,700	760,115	196,650	(20,087)	115,319	(237,833)
2019	(237,833)	470,554	708,387	151,621	(26,574)	107,472	(308,556)
2020	(308,556)	351,623	660,179	115,457	(30,890)	100,158	(354,745)
2021	(354,745)	260,507	615,252	87,025	(33,499)	93,342	(381,927)
2022	(381,927)	191,455	573,382	65,068	(34,805)	86,990	(394,810)
2023	(394,810)	139,551	534,361	48,299	(35,145)	81,070	(397,184)
2024	(397,184)	100,812	497,996	35,607	(34,785)	75,553	(392,023)
2025	(392,023)	72,082	464,105	26,089	(33,935)	70,411	(381,636)
2026	(381,636)	50,885	432,521	18,694	(32,743)	65,619	(367,454)
2027	(367,454)	35,633	403,087	13,251	(31,318)	61,154	(350,869)
2028	(350,869)	24,786	375,655	9,441	(29,764)	56,992	(333,082)
2029	(333,082)	17,008	350,090	6,621	(28,153)	53,113	(314,743)
2030	(314,743)	11,522	326,265	4,646	(26,533)	49,499	(296,423)
2031	(296,423)	7,639	304,062	3,210	(24,937)	46,130	(278,440)
2032	(278,440)	4,929	283,369	2,154	(23,387)	42,991	(260,990)
2033	(260,990)	3,095	264,085	1,340	(21,892)	40,065	(244,157)
2034	(244,157)	1,956	246,113	829	(20,462)	37,339	(228,109)
2035	(228,109)	1,255	229,364	562	(19,108)	34,798	(212,981)

* The interest rate is 8.25% for calender years 2013 through 2017 and 8.50% beginning with calender year 2018.

TABLE 8 - Projection Of Actuarial Liability And Assets
From January 1, 2016 To December 31, 2035
Based On PAY-AS-YOU-GO BASIS
And 8.25% - 8.50%* Per Annum Investment Returns

Calendar Year	(A) Beg.-of-Year (BOY) Assets	(B) BOY Actuarial Liability	(C) Unfunded Actuarial Liability (B) - (A)	(D) Expected Benefit Payments	(E) Investment Earnings at 8.25%	(F) Contribution Receivable	(G) End-of-Year Assets (A) - (D) + (E) + (F)
2016	$ 184,559	$ 1,059,389	$ 874,830	$ 316,136	$ 1,102	163,191	$ 32,716
2017	32,716	817,870	785,154	251,476	-	243,908	25,148
2018	25,148	623,700	598,552	196,650	-	191,167	19,665
2019	19,665	470,554	450,889	151,621	-	147,118	15,162
2020	15,162	351,623	336,461	115,457	-	111,841	11,546
2021	11,546	260,507	248,961	87,025	-	84,182	8,703
2022	8,703	191,455	182,753	65,068	-	62,872	6,507
2023	6,507	139,551	133,044	48,299	-	46,622	4,830
2024	4,830	100,812	95,982	35,607	-	34,338	3,561
2025	3,561	72,082	68,521	26,089	-	25,137	2,609
2026	2,609	50,885	48,276	18,694	-	17,955	1,869
2027	1,869	35,633	33,764	13,251	-	12,707	1,325
2028	1,325	24,786	23,461	9,441	-	9,060	944
2029	944	17,008	16,064	6,621	-	6,339	662
2030	662	11,522	10,860	4,646	-	4,449	465
2031	465	7,639	7,174	3,210	-	3,066	321
2032	321	4,929	4,608	2,154	-	2,048	215
2033	215	3,095	2,880	1,340	-	1,259	134
2034	134	1,956	1,822	829	-	778	83
2035	83	1,255	1,172	562	-	535	56

* The interest rate is 8.25% for calender years 2013 through 2017 and 8.50% beginning with calender year 2018.

DESCRIPTION OF ACTUARIAL METHODS AND ASSUMPTIONS FOR PENSION FUNDING PURPOSES

Actuarial Cost Method

The method of financing the System is prescribed in Chapter 35, Part 1(12) of the Milwaukee City Charter.

Method: Projected Unit Credit

Since the Fund is closed to new participants and all participants are retired, the Actuarial Accrued Liability (AAL) is equal to the Actuarial Present Value of benefits expected to be paid to and on behalf of current Annuitants and Widow Annuitants. The Unfunded Actuarial Accrued Liability (UAAL) is the difference between the AAL and the Actuarial Value of Assets. Based on the provisions of Chapter 35, the annual contribution consists of an amount sufficient to amortize the UAAL over a ten-year period with a series of level dollar payments, plus budgeted administrative expenses for the year. This funding method was adopted effective January 1, 2006.

Actuarial Value of Assets

The market value of assets is the value of investments if they were to be sold currently, plus the contribution receivable for the plan year just ended. The actuarial value of assets is equal to the market value of assets. This definition of the actuarial value of assets was adopted in 2005.

Amortization Method

Open; Level dollar

Remaining Amortization Period

10 years

Actuarial Assumptions
Adopted Effective January 1, 2013

Interest Rate and Inflation

Interest: 8.50% return for calendar years 2000 through 2012, 8.25% for calendar years 2013 through 2017, and 8.50% beginning with calendar year 2018 (adopted 1/1/2013)

Inflation: 3.0% per annum

Post-Retirement Mortality

Male and Female: RP-2000 Combined Mortality Table with nine years of projected improvements, include full generational projection using mortality improvement Scale AA.

TABLE 9 – The Number and Annual Benefits Payable to Annuitants and widows As of January 1, 2016

Age	Annuitants		Widows		Totals	
	Number	Annuities	Number	Annuities	Number	Annuities
83		$	1	$ 6,000	1	$ 6,000
84						
85						
86						
87			2	12,000	2	12,000
88						
89			2	12,000	2	12,000
90			2	18,932	2	18,932
91						
92			1	9,569	1	9,569
93			7	42,898	7	42,898
94	2	74,861	4	26,619	6	101,480
95	1	13,035	1	6,000	2	19,035
96			3	18,000	3	18,000
97			1	6,073	1	6,073
98	2	48,945	2	12,000	4	60,945
99			1	6,082	1	6,082
100	1	18,907	3	18,918	4	37,825
Total	6	$ 155,748	30	$ 195,091	36	$ 350,839