

# City of Milwaukee Policemen's Annuity and Benefit Fund

## Actuarial Valuation Report

As of January 1, 2017  
June 2017

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

Dear 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, 2017, 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, 2017.

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.

Where presented, references to "funded ratio" and "unfunded accrued liability" typically are measured on an actuarial value of assets basis. It should be noted that the same measurements using market value of assets would result in different funded ratios and unfunded accrued liabilities. Moreover, the funded ratio presented is appropriate for evaluating the need and level of future contributions but makes no assessment regarding the funded status of the plan if the plan were to settle (i.e. purchase annuities) for a portion or all of its liabilities.

### **Assets and Membership Data**

The individual data for members of the PABF as of the valuation date were reported to the actuary by the Employee's' 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, 2017 valuation determine the employer contribution for the year ending December 31, 2017.

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 2017 plan year, to be paid January 31, 2018, would amount to \$110,695, 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 \$122,600 under the provisions of Chapter 35 during year ended December 31, 2016

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 2017, 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.

Sincerely,

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Principal, Consulting Actuary

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

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Senior Consultant, Retirement Actuary

## 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)}. Conduent, as Actuary, has completed the annual actuarial valuation of the System as of January 1, 2017.

In this report we present the results of the January 1, 2017 valuation and the contribution to be derived from the tax levy for the year ending December 31, 2017. 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 Employee's 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, 2017. Comparable results from the January 1, 2016 valuation are also shown.

Item	January 1, 2017	January 1, 2016
<b>Number of Participants</b>		
➤ Active Members	0	0
➤ Annuitants	4	6
➤ Widow Annuitants	<u>23</u>	<u>30</u>
➤ Total Number of Participants	27	36
<b>Benefits Paid in the Prior Year</b>	\$ 293,358	\$ 421,971
<b>Asset Values</b> (includes contributions receivable)		
➤ Actuarial Value	\$ 2,500	\$ 184,559
➤ Market Value	\$ 2,500	\$ 184,559
<b>Actuarially Determined Employer Contribution</b>	Due 1/31/2018	Due 1/31/2017
➤ Annual Cost*	\$ 110,695	\$ 132,723
➤ As % of Prior Year Benefits Paid	37.73%	31.45%
*Plus budgeted administrative expenses		
<b>Funded Status</b>		
➤ Accrued Liability	\$ 732,131	\$ 1,059,389
➤ Actuarial (and Market) Value of Assets	<u>2,500</u>	<u>184,559</u>
➤ Unfunded (Overfunded) Accrued Liability	\$ 729,631	\$ 874,830
➤ Funded Ratio Based on Actuarial Value of Assets	0.3%	17.4%

### Reasons for Change in the Funded Ratio

The funded ratio decreased from 17.4% as of January 1, 2016 to 0.3% as of January 1, 2017. The funded ratio was expected to decrease from 17.4% to 0.27% as of January 1, 2017 based on the projection from the January 1, 2016 actuarial valuation. The plan experienced mortality gain during 2016 as a result of increase in the funded ratio by 0.03%. The city contribution and tax levy received also increased the funded ratio by 0.03%.

**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 0.3% as of January 1, 2017. The funded ratio is based on an actuarial value of assets of \$2,500 including a \$122,600 receivable contribution for the 2016 plan year, and an accrued liability of \$732,131.

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)
2017	\$2,500	\$732,131	\$729,631	0.3%	\$293,358	248.7%
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%

Table 1 - Summary of Market Value of Plan Assets as of January 1, 2017 (in dollars)

Item	Amount
1. Market Value of Assets as of January 1, 2016	\$ 184,559
2. Contributions During Year	
a. Member	-
b. Employer	122,600
c. Tax Levy (receivable 1/31/2017)	-
d. Total	<u>122,600</u>
3. Disbursements During Year	
a. Benefits Paid	293,358
b. Refunds of contributions	-
c. Total	<u>293,358</u>
4. Investment Return	
a. Net Appreciation, Interest , Dividends and Administrative Expenses	(11,301)
5. Market Value of Assets as of 1/1/2017 (Unaudited) (1) + (2d) - (3c) + (4)	\$ 2,500
6. Net Rate of Return	
a. Actual	0.04%
b. Expected	8.25%
c. Rate of Return Greater Than / (Less Than) Expected (a - b)	-8.21%
d. Dollar Amount of Gain / (Loss) on Assets	\$ (3,348)



## 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 3.20% to 3.71% 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 12/31/2016 prepared based on data as of 1/1/2016.

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

The total pension liability as of December 31, 2016 was determined by rolling forward the total pension liability as of January 1, 2016 to December 31, 2016 using the following actuarial methods and assumptions, applied to all periods included in the measurement.

Valuation Date	January 1, 2016
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, 2016 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	\$	948
Plan fiduciary net position		<u>3</u>
Net pension liability (asset)	\$	<u>945</u>

Plan fiduciary net position as a percentage of total pension liability 0.32%

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 3.71 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 3.71 percent rate equals the S&P Municipal Bond 20-Year High Grade Rate Index (yield to maturity) at Dec. 30, 2016

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 3.71 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 (2.71 percent) or 1-percentage-point higher (4.71 percent) than the current rate:

	1% Decrease 2.71%	Current Discount 3.71%	1% Increase 4.71%
PABF's net pension liability	\$ 973	\$ 945	\$ 919

## Table 4 – Schedule of Changes in the Net Pension Liability (\$ in thousands)

Total pension liability		
Service cost	\$	0
Interest		40
Changes in benefit items		0
Differences between expected and actual experience		(14)
Changes of assumptions		(18)
Benefit payments including refunds of member contributions		<u>(293)</u>
Net change in total pension liability		(285)
Total pension liability - beginning		<u>1,233</u>
Total pension liability - ending	\$	<u><u>948</u></u>
Plan fiduciary net position		
Contributions - employer	\$	122
Contributions - member		0
Net investment income		0
Benefit payments, including refunds of member contributions		(293)
Administrative expense		(11)
Other		<u>0</u>
Net change in plan fiduciary net pension		(182)
Plan fiduciary net position - beginning		<u>185</u>
Plan fiduciary net position - ending	\$	<u><u>3</u></u>
Net pension liability (asset) - ending	\$	<u>945</u>

## Table 5 – Schedule of Employees’ Retirement Systems’ Contributions (\$ in thousands)

Last 10 Fiscal Years  
(Dollar Amounts in thousands)

	<u>2016</u>	<u>2015</u>	<u>2014</u>	<u>2013</u>	<u>2012</u>	<u>2011</u>	<u>2010</u>	<u>2009</u>	<u>2008</u>	<u>2007</u>
Actuarially Determined Contributions	\$ 133	\$ 188	\$ 207	\$ 228	\$ 222	\$ 209	\$ 269	\$ 330	\$ 41	\$ 57
Contributions in relation to the actuarially determined contribution	133	188	207	228	222	209	269	330	41	57
Contribution deficiency (excess)	\$ <u>-</u>	\$ <u>-</u>	\$ <u>-</u>	\$ <u>-</u>	\$ <u>-</u>	\$ <u>-</u>	\$ <u>-</u>	\$ <u>-</u>	\$ <u>-</u>	\$ <u>-</u>
Covered Employee Payroll	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered-employee payroll	-	-	-	-	-	-	-	-	-	-

GASB 67 is applicable for fiscal years ending 2015 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, 2016 was contributed for the fiscal year ending December 31, 2016).

## Table 6 – GASB 68 Information

Collective Pension Expense (\$ in thousands)

Item	Measurement Year Ending Dec. 31, 2016	Measurement Year Ending Dec. 31, 2015
<b>Pension Expense</b>		
Service cost	\$ -	\$ -
Interest cost on total pension liability	40.0	45.0
Projected earnings on plan investments	(8.0)	(14.0)
Contributions - Member	-	-
Administrative expense	11.0	83.0
Current period	-	-
Plan changes	-	-
Changes in assumptions	(18.0)	7.0
Differences between expected and actual liab. experience	(14.0)	(30.0)
Difference between projected and actual earnings	1.6	2.6
Recognition of prior years'	-	-
Deferred outflows	3.0	0.4
Deferred inflows	-	-
Other changes in fiduciary net position	-	-
Pension expense	15.6	94.0

Table 6a – GASB 68 Information (Continue)

Details of the recognized and deferred inflows and outflows of resources

<b>Amortization of Difference between Projected and Actual Earnings (\$ in thousands)</b>						
Measurement Year	2014	2015	2016	Outflows	Inflows	Total
Amount Established	2	13	8			
Recognition Period	5.00	5.00	5.00			
Annual Recognition	0.4	2.6	1.6			
<b>Amount Recognized</b>						
2014	0.4			0.4	-	0.4
2015	0.4	2.6		3.0	-	3.0
2016	0.4	2.6	1.6	4.6	-	4.6
2017	0.4	2.6	1.6	4.6	-	4.6
2018	0.4	2.6	1.6	4.6	-	4.6
2019	-	2.6	1.6	4.2	-	4.2
2020	-	-	1.6	1.6	-	1.6
2021	-	-	-	-	-	-
<b>Deferred Balance</b>						
2014	1.6			1.6	-	1.6
2015	1.2	10.4		11.6	-	11.6
2016	0.8	7.8	6.4	15.0	-	15.0
2017	0.4	5.2	4.8	10.4	-	10.4
2018	-	2.6	3.2	5.8	-	5.8
2019	-	-	1.6	1.6	-	1.6
2020	-	-	-	-	-	-
2021	-	-	-	-	-	-

Table 6b – GASB 68 Information (Continue)

Schedule of Pension Amounts by Employer (\$ in thousands)

Entity	Deferred Outflows of Resources						Deferred Inflows of Resources					Pension Expense	
	Net Pension Liability	Difference Between Expected and Actual Experience	Net Difference Between Projected and Actual Investment Earnings on Pension Plan	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	Changes of Assumptions	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	Total Deferred Outflows of Resources	Proportionate Share of Pension Expense	Net Amortization Deferred Amount from Changes in Proportion and Differences Between Employer Contributions and Proportional Share of Contributions
Police	945	-	15.0	-	-	15.0	-	-	-	-	-	15.6	-
Total for all entities	\$ 945	-	15.0	-	-	15.0	-	-	-	-	-	15.6	-



Table 7 - Projection of Actuarial Liability and Assets from January 1, 2017 to December 31, 2036. 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)
2017	\$ 2,500	\$ 732,131	\$ 729,631	\$ 223,889	\$ (8,846)	\$ 110,695	\$ (119,540)
2018	(119,540)	559,590	679,130	175,402	(17,743)	103,033	(209,652)
2019	(209,652)	423,262	632,914	135,545	(23,511)	96,021	(272,687)
2020	(272,687)	317,156	589,843	103,478	(27,365)	89,487	(314,043)
2021	(314,043)	235,659	549,702	78,197	(29,708)	83,397	(338,551)
2022	(338,551)	173,742	512,293	58,628	(30,895)	77,722	(350,352)
2023	(350,352)	127,077	477,429	43,628	(31,222)	72,432	(352,770)
2024	(352,770)	92,169	444,939	32,236	(30,923)	67,503	(348,426)
2025	(348,426)	66,234	414,660	23,678	(30,184)	62,909	(339,379)
2026	(339,379)	47,063	386,442	17,066	(29,137)	58,628	(326,954)
2027	(326,954)	33,190	360,144	12,191	(27,884)	54,639	(312,390)
2028	(312,390)	23,244	335,634	8,735	(26,515)	50,920	(296,720)
2029	(296,720)	16,073	312,793	6,160	(25,091)	47,455	(280,516)
2030	(280,516)	10,990	291,506	4,328	(23,656)	44,225	(264,275)
2031	(264,275)	7,394	271,669	3,000	(22,239)	41,216	(248,298)
2032	(248,298)	4,883	253,181	2,031	(20,860)	38,411	(232,778)
2033	(232,778)	3,173	235,951	1,304	(19,531)	35,797	(217,816)
2034	(217,816)	2,078	219,894	861	(18,260)	33,361	(203,576)
2035	(203,576)	1,354	204,930	605	(17,057)	31,091	(190,147)
2036	(190,147)	836	190,983	398	(15,925)	28,975	(177,495)

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

Table 8 - Projection of Actuarial Liability and Assets from January 1, 2017 to December 31, 2036. 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)
2017	\$ 2,500	\$ 732,131	\$ 729,631	\$ 223,889	\$ -	243,778	\$ 22,389
2018	22,389	559,590	537,201	175,402	-	170,553	17,540
2019	17,540	423,262	405,722	135,545	-	131,559	13,555
2020	13,555	317,156	303,602	103,478	-	100,271	10,348
2021	10,348	235,659	225,311	78,197	-	75,669	7,820
2022	7,820	173,742	165,922	58,628	-	56,671	5,863
2023	5,863	127,077	121,214	43,628	-	42,128	4,363
2024	4,363	92,169	87,806	32,236	-	31,097	3,224
2025	3,224	66,234	63,010	23,678	-	22,822	2,368
2026	2,368	47,063	44,695	17,066	-	16,405	1,707
2027	1,707	33,190	31,483	12,191	-	11,704	1,219
2028	1,219	23,244	22,025	8,735	-	8,389	874
2029	874	16,073	15,200	6,160	-	5,903	616
2030	616	10,990	10,374	4,328	-	4,145	433
2031	433	7,394	6,961	3,000	-	2,867	300
2032	300	4,883	4,583	2,031	-	1,934	203
2033	203	3,173	2,970	1,304	-	1,231	130
2034	130	2,078	1,948	861	-	817	86
2035	86	1,354	1,268	605	-	579	61
2036	61	836	776	398	-	377	40

\* The interest rate is 8.25% for calendar years 2013 through 2017 and 8.50% beginning with calendar 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, 2017

Age	Annuitants		Widows		Totals	
	Number	Annuities	Number	Annuities	Number	Annuities
84		\$	1	\$ 6,000	1	\$ 6,000
85						
86						
87						
88			2	12,000	2	12,000
89						
90			2	12,000	2	12,000
91			2	18,932	2	18,932
92						
93						
94			4	24,000	4	24,000
95	2	74,861	3	20,463	5	95,324
96			1	6,000	1	6,000
97			3	18,000	3	18,000
98			1	6,073	1	6,073
99	1	9,132	2	12,000	3	21,132
100						
101	1	18,907	2	12,000	3	30,907
<b>Total</b>	<b>4</b>	<b>\$ 102,900</b>	<b>23</b>	<b>\$ 147,468</b>	<b>27</b>	<b>\$ 250,368</b>