

Wayne County Employees'  
Retirement System  
(Excluding Wayne County Airport Authority)  
Annual Actuarial Valuation Report  
September 30, 2017



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May 23, 2018

Retirement Commission (Board)  
Wayne County Employees' Retirement System  
Detroit, Michigan

Dear Commission Members:

The results of the Annual Actuarial Valuation of the assets, actuarial present values and contribution rates needed to fund benefits provided by the Wayne County Employees' Retirement System (WCERS), excluding the Wayne County Airport Authority (WCAA) (except where otherwise noted), are presented in this report. The results for the WCAA are provided in a separate report.

The date of the valuation was September 30, 2017. The report was prepared at the request of the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the Retirement System only in its entirety and only with the permission of the Board. Use of this report by a third party does not create a relationship between GRS and the party. GRS is not responsible for unauthorized use of this report.

The valuation was based upon data, furnished by WCERS staff, concerning financial operations and active members, vested former members, retirees, and beneficiaries. We acknowledge the help of WCERS staff with appreciation. We checked the data for internal and year-to-year consistency, but did not audit the data. We are not responsible for the completeness or accuracy of the data.

The purpose of the valuation is to measure the System's funding progress and to determine the County contribution rates for the fiscal year beginning October 1, 2018 in accordance with the WCERS funding policy. Information related to the Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68 is provided in a separate document. The results of the valuation are not applicable for other purposes.

Valuation results and comments are presented in Section A. The computed contributions shown on page A-2 may be considered a minimum contribution rate that complies with the Board's funding policy. Users of this report should be aware that contributions made at that rate do not guarantee benefit security. Given the importance of benefit security to any retirement system, we suggest that contributions to the System in excess of those presented in this report be considered.

The computed contributions shown in this report are determined using the actuarial assumptions and methods disclosed in Section C of this report. This report includes risk metrics on page D-1 but does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment. We encourage a review and assessment of investment and other significant risks that may have a material effect on the plan's financial condition.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of the actuary's assignment, the actuary did not perform an analysis of the potential range of such future measurements.

This report was prepared by actuaries who have substantial experience valuing public employee retirement plans. To the best of our knowledge, this report is complete and accurate and the valuation was conducted in accordance with standards of practice promulgated by the Actuarial Standards Board. In our opinion, the assumptions used for the valuation are reasonable for the purpose of the measurement being taken.

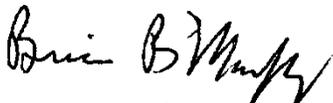
The signing actuaries are independent of the plan sponsor.

Judith A. Kermans, Brian B. Murphy and Jeffrey T. Tebeau are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,



Judith A. Kermans, EA, FCA, MAAA



Brian B. Murphy, FSA, EA, FCA, MAAA



Jeffrey T. Tebeau, ASA, EA, MAAA

JAK/BBM:rmn



## **SECTION A**

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### **VALUATION RESULTS AND COMMENTS**

## Funding Objective

The funding objective for the Retirement System is to establish and receive contributions which, when invested at the assumed rate of return, will accumulate assets over each member's working years that will be sufficient to pay expected retirement benefits.

## Contribution Rates

The Retirement System is supported by member contributions, employer contributions and investment income on Retirement System assets. Members contribute percentages of their pay (by Ordinance and/or collective bargaining agreement) and the employer contributes the actuarially determined remainder needed to meet the funding objective.

Contributions are determined by the actuarial valuation and are sufficient to:

- (1) Cover the actuarial costs allocated to the current year by the actuarial cost method (the normal cost); and
- (2) Finance over a period of future years the actuarial costs not covered by present assets and anticipated future normal costs (unfunded actuarial accrued liability).

**Contribution requirements** for the fiscal year ending September 30, 2019 are shown on page A-2.

## Contributions as a Percent-of-Payroll to Finance the County's Defined Benefit Plans of the Retirement System

Defined Benefit Plans - Contributions for	Fiscal Year Ending September 30, 2019
Total Normal Cost <sup>^</sup>	9.05 %
Less Portion Paid by Members*	6.98 %
County Defined Benefit Normal Cost	2.07 %
Unfunded Actuarial Accrued Liability <sup>#</sup>	50.19 %
<b>Total Computed Employer Rate</b>	<b>52.26 %</b>
<b>Minimum Dollar Amounts</b>	<b>\$56,869,257</b>

\* Weighted average of the various contribution rates.

# Amortized as a level percent of payroll according to the schedule below.

^ Includes Plan 4 Disability benefits for certain CBAs.

Historical contribution rates for prior fiscal years are shown on page A-4.

**The total computed employer contribution rate shown above should be applied to Defined Benefit Plan payroll to determine dollar contributions to be deposited into the Retirement System for Fiscal Year 2019; however, such amount should not be less than the dollar amount shown above assuming payment occurs by mid-year. If payment occurs later, interest would need to be added.**

**The contribution rate and dollar amount shown above was calculated in accordance with the Board's funding policy (Unfunded Actuarial Accrued Liability (UAAL) amortized as a level percent-of-payroll over 10 years for assumption changes (9 years remaining for 2016 assumption changes), 10 years for MOA (8 years remaining), 5 years for Separation Agreements (3 years remaining for 2015 separation agreements and 5 years remaining for 2017 separation agreements), and 18 years for remaining UAAL.**

For specific information on the funding policy, please refer to Appendix D. The chart below shows the various sources of unfunded liabilities, the remaining amortization periods and the associated unfunded liability payment.

Source	Remaining Period	9/30/2017 Amount	FY 2018 Contribution	Projected 9/30/2018 Amount	FY 2019 Contribution
Base	18	\$ 546,325,641	\$ 41,651,865	\$ 542,798,922	\$ 43,074,817
2016 Assumption Changes	9	88,517,217	10,920,268	83,625,514	11,248,187
MOA	8	231,732	31,170	216,253	32,106
2015 Separation Agreements	3	284,260	78,102	223,986	80,451
2017 Separation Agreements	5	752,846	-	807,428	180,990
<b>Total</b>		<b>\$ 636,111,697</b>	<b>\$ 52,681,405</b>	<b>\$ 627,672,102</b>	<b>\$ 54,616,551</b>
<b>Projected Payroll</b>					<b>\$ 108,826,400</b>
<b>UAAL Contribution Rate</b>					<b>50.19%</b>

WCAA contributions made towards the combined retiree liability are recognized in the valuation after they are actually made.

## Contributions as a Percent-of-Payroll to Finance the County's Defined Benefit Plans of the Retirement System

Defined Benefit Plans - Contributions for	Contributions for Fiscal Year Ending September 30, 2018						
	Sheriff		Sewer/Drain	Road	Circuit Court	Other County	Total County
	POAM	Local 3317					
Total Normal Cost	9.69 %	9.22 %	8.24 %	8.63 %	9.92 %	8.63 %	9.05 %
Less Portion Paid by Members*							6.98 %
County Defined Benefit Normal Cost							2.07 %
Unfunded Actuarial Accrued Liability#	n/a	n/a	n/a	n/a	n/a	n/a	50.19 %
<b>Total Computed Employer Rate</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>52.26 %</b>
<b>Minimum Dollar Amounts</b>							<b>\$56,869,257</b>

\* Weighted average of the various contribution rates.

# Unfunded Actuarial Accrued Liability (UAAL) amortized as a level percent-of-payroll as described on page A-2 in accordance with the Board's funding policy.

***The Wayne County Commission established the payment of a monthly stipend benefit to pre-Medicare eligible retirees that previously received health insurance from the County. Section 141-44(g) of the WCRO indicates that if the County does not pay the stipend payment in advance to WCERS, it will not be provided to retirees. The stipend liability is NOT included in any of the calculations shown above. If there is any doubt about the operation of the stipend, this report may need to be revised. Please see page A-9 for information on stipend liability.***

## Historical Schedule of Normal Cost Rates and Unfunded Actuarial Accrued Liabilities Contribution Amounts as Percents of Payroll for Defined Benefit Plans

Fiscal Year Ending	Valuation Date September 30 <sup>@!</sup>	Contribution Rates		
		Employer Normal Cost	UAAL	Total
2010	2008	10.09 %	17.73 %	27.82 %
2011	2009	10.08 %	20.18 %	30.26 %
2012	2010	11.06 %	28.62 %	39.68 %
2013	2011 #	9.11 %	39.63 %	48.74 %
2014	2012 *	9.16 %	41.50 %	50.66 %
2015	2013	8.85 %	40.10 %	48.95 %
2016	2014	7.10 %	43.58 %	50.68 %
2017	2015*&	0.03 %	46.69 %	46.72 %
2018	2016&#	2.31 %	50.68 %	52.99 %
<b>2019</b>	<b>2017&amp;#</b>	<b>2.07 %</b>	<b>50.19 %</b>	<b>52.26 %</b>

\* After benefit changes.

& Amounts are percents of base wages; pensionable wages used in prior years.

@ Reflects transfers from DC to DB, if any.

# After assumption changes (adopted after Experience Study for 2011 and 2016).

! Does not include stipend liability.

## Funding Progress Indicators

The funding progress and status of the defined benefit plans is measured by the following indicators:

- **The ratio of the funding value of assets to accrued liabilities.** The ratio is expected to hold steady or gradually move toward 100% in the absence of benefit changes, assumption changes or valuation method changes.
- **The ratio of the unfunded actuarial accrued liability to member payroll.** In a soundly financed retirement system, the amount of the unfunded actuarial accrued liabilities will be controlled and prevented from increasing in the absence of benefit improvements. The ratio is a relative indicator of the condition in an inflationary environment.

Valuation Date	Accrued Liability <sup>!</sup>	Funding Value of Assets <sup>@</sup>	Funded Ratio	Defined Benefit Member	Unfunded Actuarial Accrued Liability	
				Payroll	Dollars	% of Payroll
September 30						
(\$ in thousands)						
2008	\$1,256,869	\$926,432	74%	\$138,952	\$330,437	238 %
2009	1,350,826	907,238	67%	128,915	443,588	344 %
2010	1,403,934	839,740	60%	118,937	564,195	474 %
2011#	1,483,736	734,104	49%	118,173	749,632	634 %
2012*	1,507,526	682,431	45%	125,159	825,095	659 %
2013	1,512,840	672,284	44%	125,485	840,556	670 %
2014	1,499,542	681,573	45%	117,308	817,969	697 %
2015*	1,376,742	740,195	54%	94,850	636,547	671 %
2016#	1,436,560	782,839	54%	97,973	653,721	667 %
<b>2017#</b>	<b>1,416,754</b>	<b>780,642</b>	<b>55%</b>	<b>102,579</b>	<b>636,112</b>	<b>620 %</b>

\* After benefit changes.

@ Reflects transfers to DB Plan, if any.

# After changes in assumptions (adopted after Experience Study for 2011 and 2016).

! Does not include stipend liability.

## Short Condition Test

If the contributions to WCERS are level in concept and soundly executed, the System will **pay all promised benefits when due – the ultimate test of financial soundness**. Testing for level contribution rates is **the long-term test**. A **short condition test** is one means of checking a system’s progress under its funding program. In a short condition test, the plan’s present assets (cash and investments) are compared with:

- 1) Active member contributions on deposit;
- 2) The liabilities for future benefits to present retired lives; and
- 3) The liabilities for service already rendered by active members.

The test is shown below. As of September 30, 2017, there were 100% of the assets needed to cover liabilities related to member contributions on deposit. Almost every system has assets at least equal to member contributions. **Beyond that, there were only 58% of the assets needed to cover retiree liabilities and none at all to cover the employer portion of active member liabilities. It is very important that rapid progress be made in funding the retiree liability to 100%.**

Valuation Date	Aggregate Actuarial Accrued Liabilities for			Valuation Assets (Funding Value)	Portion of Accrued Liabilities Covered by Assets		
	(1)	(2)	(3)		(1)	(2)	(3)
	Member Contributions	Retirees and Beneficiaries	Members (Employer Financed Portion)				
	(... \$1,000s ...)						
9/30/2014	\$ 100,218	\$ 1,128,348	\$ 270,976	\$ 681,573	100%	52%	0%
9/30/2015	91,806	1,142,343	142,593	740,195	100%	57%	0%
9/30/2016	92,970	1,207,108	136,482	782,839	100%	57%	0%
9/30/2017	93,312	1,187,208	136,234	780,642	100%	58%	0%

The chart above does NOT include the retiree pre-Medicare stipend liability. It does include any refunds due active members that have terminated employment but who have not collected a refund of member contributions.

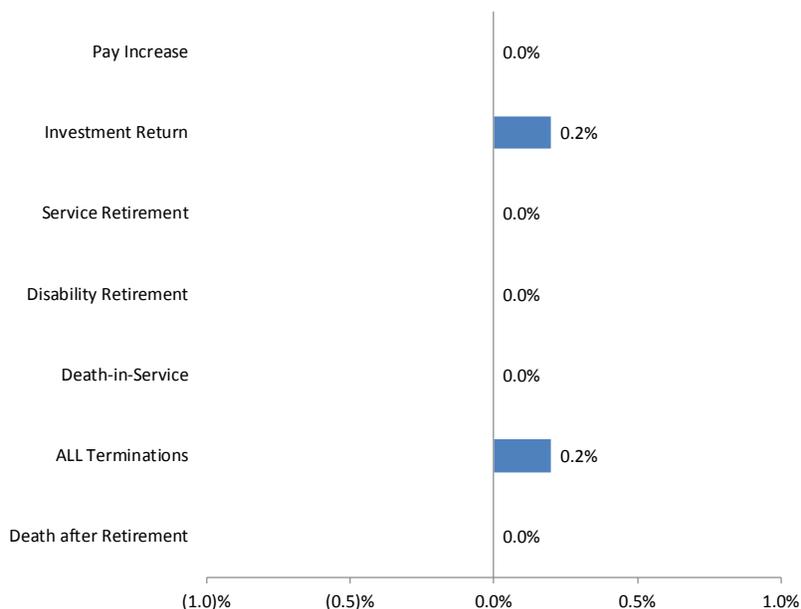
## Derivation of Experience Gain (Loss) Year Ended September 30, 2017

Actual experience will never (except by coincidence) coincide exactly with assumed experience. Gains and losses often cancel each other over a period of years, but sizable year-to-year fluctuations are common. Detail on the derivation of the experience gain (loss) is shown below.

	Actuarial Accrued Liability (AAL) (A)	Actuarial Value of Assets (AVA) (B)	Unfunded Actuarial Accrued Liability (UAAL) (C) = (A) - (B)
(1) Beginning of Year (BOY)	\$ 1,436,559,656	\$ 782,839,227	\$ 653,720,429
(2) Total Normal Cost (including service and annuity purchases)	8,656,437	-	8,656,437
(3) Total Contributions (including transfers and net of pre-Medicare stipend)	-	70,662,251	(70,662,251)
(4) Benefit Payments and Refunds (net of pre-Medicare stipend)	(128,652,699)	(128,652,699)	-
(5) Administrative Expenses	-	(2,332,368)	2,332,368
(6) Interest: $\{(1) + 1/2 [(2) + (3) + (4) + (5)]\} \times 7.25\%$	99,800,711	54,569,142	45,231,569
(7) Expected Before Changes: (1) + (2) + (3) + (4) + (5) + (6)	\$ 1,416,364,104	\$ 777,085,553	\$ 639,278,551
(8) Change from revised actuarial assumptions/methods	-	-	-
(9) Expected After Changes: (7) + (8)	\$ 1,416,364,104	\$ 777,085,553	\$ 639,278,551
(10) Actual End of Year (EOY)	1,416,753,774	780,642,077	636,111,697
(11) Gain or Loss: (9)-(10)	\$ (389,670)	\$ (3,556,524)	\$ 3,166,854
(12) Direction	Loss	Gain	Gain
(13) Percent of BOY AAL (11)/(1A)	(0.0)%	(0.2)%	0.2%

## Gain (Loss) by Source

Type of Risk Area	Gain (Loss) in Period	
	Totals \$ in millions	Percent of Liabilities
<b>Risks Related to Assumptions</b>		
<b>Economic Risk Areas:</b>		
<b>Pay Increases</b> If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	\$ 0.6	0.0%
<b>Investment Return</b> If there is greater investment return recognition than assumed, there is a gain. If less return recognition, a loss.	3.6	0.2%
<b>Demographic Risk Areas:</b>		
<b>Full and Reduced Service Retirements</b> If members retire at older ages, there is a gain. If younger ages, a loss.	0.6	0.0%
<b>Vested Deferred Retirements</b> If more liabilities are released than assumed, there is a gain. If fewer releases, a loss.	(0.8)	(0.1)%
<b>Ordinary Death Benefits</b> If there are fewer than assumed, there is a gain. If more, a loss.	0.2	0.0%
<b>Service-Connected Death Benefits</b> If there are fewer than assumed, there is a gain. If more, a loss.	0.0	0.0%
<b>Ordinary Disability Benefits</b> If there are fewer disabilities than assumed, there is a gain. If more, a loss.	0.3	0.0%
<b>Service-Connected Disability Benefits</b> If there are fewer disabilities than assumed, there is a gain. If more, a loss.	0.3	0.0%
<b>Terminated with Refund</b> If more liabilities are released by other separations than assumed, there is a gain. If fewer releases, a loss.	3.3	0.2%
<b>Post-Retirement Mortality</b> If there are more deaths than assumed, there is a gain. If fewer, a loss.	0.2	0.0%
<b>Total Gain (or Loss) Related to Assumptions:</b>	<b>8.3</b>	<b>0.6%</b>



## Comments on the Actuarial Valuation

- 1. New Plan / Frozen Benefits:** Effective October 1, 2015 (October 1, 2016 for Circuit Court GAA and JAA (Excluding Executives)), benefits going forward were reduced for nearly all WCERS County plan members. Accrued benefits were frozen on the same date. See Section B for a detailed description of the changes.
- 2. Experience (Total Plan):** The Market Value rate of return during fiscal year 2017 was 12.0%, and the fund gained \$102.0 million in investment income. The fund was assumed to earn 7.25% or \$62.6 million in total. This means that this year's asset gain was \$39.4 million. Under the asset valuation method, investment gains and losses are spread over a 4-year period. The net result of this year's gain, and carryover gains and losses from prior years, is a net recognized gain of \$4.1 million (see page B-12). As of September 30, 2017, the Market Value of assets exceeds the Funding Value by \$21.5 million and the Funding Value rate of return was 7.7%. The County groups receive a proportionate share of each year's Funding Value of Assets; see page B-13. An aggregate gain/(loss) analysis (for County alone) is shown on page A-7. Additional detail on gains and losses is shown on page A-8.
- 3. Status:** Computed actuarial accrued liabilities exceed the Funding Value of assets by \$636.1 million for the County. Unfunded Actuarial Accrued Liabilities (UAAL) are currently being amortized in accordance with the schedule shown on page A-2. The remaining base UAAL amortization years will decrease by 2 years each annual valuation cycle in accordance with the Funding Policy; therefore, in next year's valuation, there will be 16 years remaining in the schedule. The County group of the Wayne County Employees' Retirement System (WCERS) is 55% funded, based upon the Funding Value of Assets. Based on the Market Value of Assets, the County group is 56% funded.

**We remain concerned about potential cash flow problems for the WCERS. The assets in the plan are not sufficient to cover current retiree liabilities and the ratio of assets (Market Value) to retiree benefit payroll is 6.2. This means that approximately six years of retiree benefit payments can be paid from current assets; the ability to make such payments beyond that period is heavily dependent upon future contributions and future investment return.** The WCERS Funding Policy promotes accelerated funding by shortening the amount of time in which the unfunded liabilities should be paid off. Under the current funding policy the contribution rate is expected to increase each year until the plan becomes fully funded. In the absence of significant market losses or benefit increases, and if the Funding Policy is adhered to by the Employer, the ratio of assets to retiree benefit payroll should improve in the future. See Section D for a copy of the funding policy.

- 4. Pre-Medicare Stipend:** Effective December 2015, certain current and future retirees are eligible to receive a pre-Medicare stipend. The provisions of the stipend are outlined in the Settlement Agreement dated June 18, 2015, the WCRO, and our supplemental report dated November 18, 2015. Although WCERS is not obligated to pay the monthly stipend if it is not paid in advance by the County, Section 141-44(g) of the WCRO states in part, "The retirement system's actuary shall separately track within the system's annual valuation the funding status of the stipend subaccount." As a result, the unfunded liability of the *pension* portion of WCERS is *not* affected, while the unfunded liability of WCERS as a whole is affected by the pay-as-you-go pre-Medicare stipend. The liability for the stipend as of September 30, 2017 is \$34.5 million. The funded status of the pension portion of WCERS is 55%, while the funded status of WCERS as a whole (with the stipend) is 54%.

## Comments on the Actuarial Valuation

5. **GASB Reporting:** Information regarding GASB Statements No. 67 and No. 68 is provided in a separate report.
6. **Experience Study:** The last comprehensive study of plan experience in WCERS was completed after the September 30, 2015 valuation. The changes in assumptions as a result of that study were first effective for the September 30, 2016 valuation.
7. **Combined Pre-2002 Retiree Liability:** Effective with the September 30, 2007 actuarial valuation of the Wayne County Employees' Retirement System (WCERS), a separate employer contribution rate was computed each year for the Wayne County Airport Authority (WCAA). The original calculations were based on certain concepts that were agreed to by staff of the interested parties (County, WCAA and WCERS) at that time, one of which was that the Combined Pre-2002 Retiree liability would be funded and benefits paid by the County but would be tracked by the actuary each year so that adjustments could be made if, at some point in the future, the Combined Pre-2002 Retiree obligation became unfunded.

Retiree liability for all WCERS retirees (County and Airport) is approximately 61% funded. The Combined Pre-2002 Retiree liability as of September 30, 2017 is \$333.2 million. The WCAA committed to an accelerated payment schedule for the WCAA's theoretical share (10.25%) of the Combined Pre-2002 Retiree Liability based on assumptions and methods agreed to by the interested parties.

At the end of the 5-year period (September 30, 2020), the resulting UAAL, if any, would either be paid in a lump sum or amortized in a manner to be determined at that time. The actual UAAL as of September 30, 2020 will depend on actual accrued liability and actual assets, both of which will be impacted by experience that occurs each year. In addition, an Experience Study will be performed during this time, which will also ultimately impact the calculated liabilities.

### A reconciliation of the WCAA's Theoretical Portion of the Combined Pre-2002 Retiree Liability as of September 30, 2017 is shown below:

	Fiscal Year (September 30)						
	2015	2016	2017	2018	2019	2020	2021
(1) Assets BOY	\$15,278,397	\$15,302,135	\$16,222,390	\$17,870,902			
(2) One-time IEF Award Credit <sup>#</sup>	5,326,760	-	-	-			
<b>(3) WCAA Payments*</b>	-	4,400,000	4,400,000	4,400,000	\$4,400,000	\$4,400,000	Not Determined
(4) Benefits Paid to Retirees	5,363,501	4,895,385	4,681,749				
(5) Investment Return Rate (MV)	0.48%	9.40%	12.00%				
(6) Investment Return Amount	60,479	1,415,640	1,930,261				
(7) Assets EOY: 1+2+3-4+6	\$15,302,135	\$16,222,390	\$17,870,902				
(8) Accrued Liability EOY	35,974,521	36,089,136	34,157,962				
(9) UAAL EOY: (8)-(7)	\$20,672,386	\$19,866,746	\$16,287,060				

\* Actual payments received during Fiscal Year 2016 and 2017; expected payments during the remaining fiscal years.

# In 2015, the WCAA received credit for a portion (\$5,326,760) of the Inflation Equity Fund (IEF) award to be used to offset the payments towards the Combined Pre-2002 Retiree liability.

## Comments on the Actuarial Valuation and Recommendation

- 8. Additional Data for Future Valuations:** If possible, for future valuations we would appreciate receiving historical base wages for each person for our estimate of the 10 year Final Average Compensation. We would also appreciate receiving deferred benefit amounts for all members that are currently receiving their old frozen plan benefit but have a deferred new plan benefit.
- 9. Recognition of Accelerated Contributions:** Any accelerated contributions made by various divisions (Airport, Sewer, Roads) are recognized in the valuation after they are actually made and act to reduce the required contribution in the future. In the 2017 fiscal year, the Airport division contributed \$4.4 million, the Sewer division contributed \$1.1 million and the Roads division contributed \$4.7 million in additional contributions. These amounts affected the FY 2019 contribution shown on page A-2.
- 10. Change in Employee Rate:** The employee contribution rate as a percentage of base pay was 7.40% in the last valuation. It dropped to 6.98% in this valuation. Employees actually contribute based on gross pay (pensionable wages) rather than base wages (upon which pensions are based). Employee contribution rates based on gross pay must be converted into rates as a percentage of base pay. The apparent drop in the employee contribution rate most likely is a reflection of gross pay being closer to base pay this year than it was last year, and not necessarily a reflection of an actual change in employee contribution rates.
- 11. Change in Total Normal Cost Rate:** The total normal cost was 9.71% of pay in the last valuation. It dropped to 9.05% in this valuation. There are two primary reasons for the drop. First, the employee rate is a relatively high percentage of the total normal cost. That means that there will be some people whose total contributions are more valuable than their defined benefit, and their normal cost will be determined by the contribution value and not by the defined benefit. So if their contribution rate as percentage of base pay goes down, as it did this year, the normal cost will go down. Compounding that issue is the fact that the interest rate credited to employee contributions was reduced to 1.5%. Most of the decrease in the total normal cost was caused by these two factors – lower employee contribution rate as a percentage of base pay, and reduced interest crediting.
- 12. Interest Crediting on Employee Contributions:** In this valuation we have assumed that the 1.5% interest crediting rate will stay in place indefinitely. If the Board makes frequent changes to this rate, we will need to seek the Board's thoughts regarding whether or not we should use some type of long term average crediting rate in the valuation.

### Recommendation

**Given the low funded status of the WCERS retiree liability (see page A-6); we suggest that every action possible be taken to increase the funding to the WCERS plan.**

## Other Observations

**General Implications of Funding Policy on Future Expected Plan Contributions and Funded Status:** Given the plan's Funding Policy, if all actuarial assumptions are met (including the assumption of the plan earning 7.25% on the actuarial value of assets), it is expected that:

- 1) The employer normal cost as a percentage of pay should remain relatively level as time passes since nearly all of the active population is covered by the new provisions,
- 2) The contribution rate will increase materially from present levels by the end of the amortization period,
- 3) The unfunded actuarial accrued liabilities will be fully amortized after the amortization periods end, and
- 4) The funded status of the plan will increase gradually toward a 100% funded ratio.

**Limitations of Funded Status Measurements:** Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the actuarial (Funding) value of assets. Unless otherwise indicated, with regard to any funded status measurements in this report:

- 1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations; in other words, of transferring obligations to an unrelated third party in an arm's length market value type transaction.
- 2) The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
- 3) The measurement would produce a different result if the market value of assets were used instead of the actuarial value of assets, unless the market value of assets is used in the measurement.

**Limitation of Project Scope:** Actuarial standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entity to make required contributions to the plan when due. Such an evaluation was not within the scope of this project and is not within the actuary's domain of expertise. Consequently, the actuary performed no such evaluation.

## Actuarial Balance Sheet - September 30, 2017

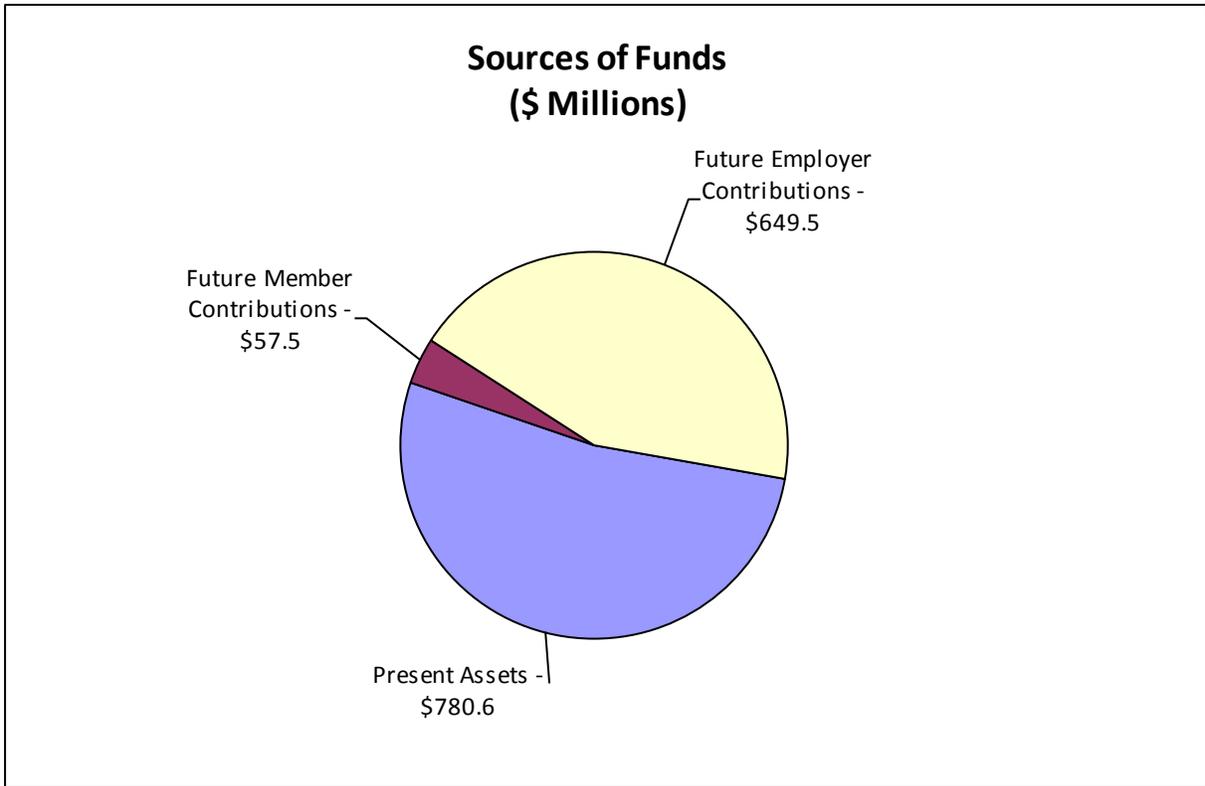
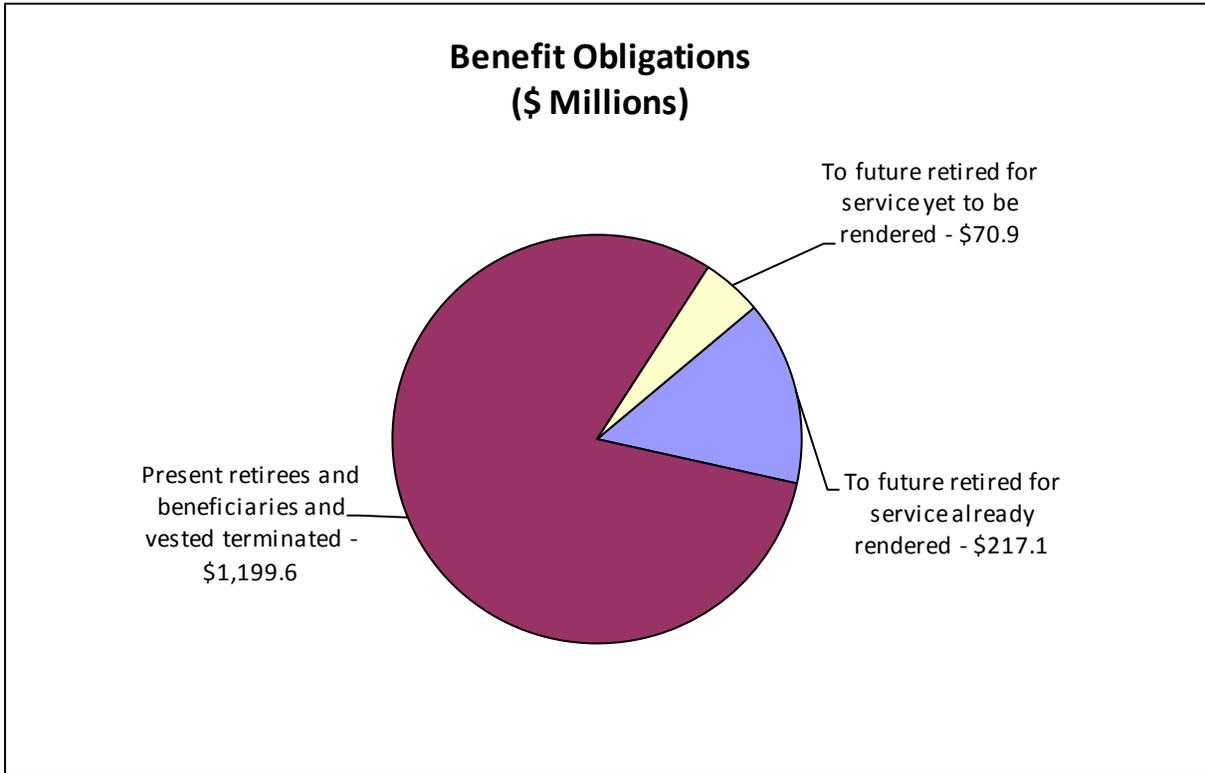
### *Present Resources and Expected Future Resources*

A. Valuation assets	
1. Net assets at market value	\$ 799,345,415
2. Valuation adjustment	(18,703,338)
3. Valuation assets	780,642,077
B. Actuarial present value of expected future employer contributions	
1. For normal costs	13,350,114
2. For unfunded actuarial accrued liabilities	636,111,697
3. Total	649,461,811
C. Actuarial present value of expected future member contributions	57,525,777
D. Total Actuarial Present Value of Present and Expected Future Resources	\$1,487,629,665

### *Actuarial Present Value of Expected Future Benefit Payments and Reserves*

A. To retired members and beneficiaries	\$1,187,207,786
B. To vested terminated members	12,439,968
C. To present active members	
1. Allocated to service rendered prior to valuation date	217,106,020
2. Allocated to service likely to be rendered after valuation date	70,875,891
3. Total	287,981,911
D. Total Actuarial Present Value of Expected Future Benefit Payments and Reserves	\$1,487,629,665

# Financing \$1,487.6 Million of Benefit Promises September 30, 2017



## **SECTION B**

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### **SUMMARY OF BENEFIT PROVISIONS AND VALUATION DATA**

# Brief Summary of Benefit Provisions as of September 30, 2017

## FROZEN BENEFITS (accrued through September 30, 2015)

### Defined Benefit Plan 1

#### **Availability:**

Defined Benefit Plan 1 was closed to new hires on August 15, 1983 (or on the date in a negotiated agreement). With the exception of certain bargaining groups, service accrued on/after October 1, 2015 counts toward eligibility only.

#### **Normal Retirement** (no reduction factor for age):

*Eligibility* - Sheriff: 25 years of service.

Others: Age 50 with 25 years of service, age 60 with 5 years of service or any age with 30 years of service.

*Pension Amount* - Total service times 2.65% of average final compensation.

Maximum pension is 75% of AFC (less worker's compensation payments). Minimum monthly pension is \$5 times years of service.

*Average Final Compensation (AFC)* - Monthly average of covered compensations for best 4 years of credited service. Some lump sums, overtime & premium pay are included.

#### **Vested Termination** (deferred retirement):

*Eligibility* - 8 years of service. Pension begins at age 60.

*Pension Amount* - Computed as normal retirement but based upon service and AFC at time of termination.

#### **Duty Disability Retirement:**

*Eligibility* - No age or service requirements.

*Pension Amount* - Computed as normal retirement with additional service credit granted from date of retirement to age 60. Minimum pension is \$4,800 annually. Maximum pension is the lesser of 75% of AFC, and 100% of AFC less outside earnings and social security disability benefits. Worker's compensation payments offset the maximum.

#### **Non-Duty Disability Retirement:**

*Eligibility* - 10 years of service.

*Pension Amount* - Computed as normal retirement but based on service and AFC at time of retirement.

# Brief Summary of Benefit Provisions as of September 30, 2017

## FROZEN BENEFITS (accrued through September 30, 2015)

### Defined Benefit Plan 1

***Duty Death Before Retirement:***

*Eligibility* - No age or service requirements.

*Pension Amount* - Pension to the spouse is computed as a normal retirement but actuarially reduced in accordance with a 100% joint and survivor election. Additional service credit is granted from date of death to date the deceased member would have attained 60 years of age. If there is no eligible spouse, unmarried children under age 18 receive equal shares of 50% of normal retirement pension. Spouse's pension shall not be less than \$4,800. Worker's compensation payments and social security offset the maximum.

***Non-Duty Death Before Retirement:***

*Eligibility* - 10 years of service.

*Pension Amount* - Pension to the spouse is computed as a normal retirement but actuarially reduced in accordance with a 100% joint and survivor election. If there is no eligible spouse, unmarried children under age 18 receive equal shares of 50% of normal retirement pension.

***Member Contributions:***

Sheriff Command Officers and Deputies: 5.00% of annual compensation. Effective May 2014, the rate for POAM members increases by 5.10% (to 10.10%). Contribution balances are credited with interest annually in an amount determined by the retirement commission (1.5% as of September 30, 2017).

Others:

Credited Service	Contribution Rate*
0 yrs. thru 8 yrs.	6.00% or 6.58% of compensation
9 yrs. thru 12 yrs.	4.00% or 4.58% of compensation
13 yrs. thru 16 yrs.	3.00% or 3.58% of compensation
17 yrs. or more	2.00% or 2.58% of compensation

\* Contribution rate is determined by coverage group from Collective Bargaining Agreement (CBA).

# Brief Summary of Benefit Provisions as of September 30, 2017

## FROZEN BENEFITS (accrued through September 30, 2015)

### Defined Benefit Plan 2

**Availability** - Defined Benefit Plan 2 was available to persons hired after August 15, 1983 and to DBP 1 and DBP 3 members who elected to be covered by DBP 2. **Eligibility to enter this Plan ceased as of October 1, 2001.** With the exception of certain bargaining groups, service accrued on/after October 1, 2015 counts toward eligibility only.

**Normal Retirement** (no reduction factor for age):

*Eligibility* - Age 55 with 25 years of service; or age 60 with 15 or 20 years of service; or age 65 with 8 years of service. POAM and Sheriff Command may retire at 30 years of service regardless of age.

*Pension Amount* - Average final compensation multiplied by the sum of a) 1% of credited service up to 20 years; and, b) 1.25% of credited service over 20 years. Maximum County financed portion is 75% of AFC.

*Average Final Compensation (AFC)* - Monthly average of covered compensation for the best 5 years of credited service. Covered compensation includes overtime, premium and holiday pay, but not lump sums.

**Vested Termination** (deferred retirement):

*Eligibility* - 8 years of service. Pension begins at age 65.

*Pension Amount* - Computed as normal retirement based on service and AFC at time of termination.

**Duty Disability Retirement:**

*Eligibility* - No age or service requirements.

*Pension Amount* - Computed as normal retirement with additional service credit granted from date of retirement to age 60. Maximum pension is the lesser of 75% of AFC, and 100% of AFC less outside earnings and social security disability benefits. Worker's compensation payments, social security benefit payments, and outside earnings offset the maximum. Minimum pension for select unions is 75% of AFC.

**Non-Duty Disability Retirement:**

*Eligibility* - 10 years of service.

*Pension Amount* - Computed as normal retirement but based on service and AFC at time of termination. Social security benefit payments and outside earnings offset the maximum.

**Death Before Retirement:**

*Eligibility* - 10 years of service; or age 65 and 8 years of service (any amount of service if Duty related).

*Pension Amount* - Pension to the spouse is computed as a normal retirement but actuarially reduced in accordance with a 100% joint and survivor election. If there is no eligible spouse, unmarried children under 18 receive equal shares of 50% of normal retirement pension.

**Member Contributions:**

None. Effective May 2014, the rate for POAM members increases to 5.10%. Contribution balances are credited with interest annually in an amount determined by the retirement commission (1.5% as of September 30, 2017).

# Brief Summary of Benefit Provisions as of September 30, 2017

## FROZEN BENEFITS (accrued through September 30, 2015)

### Defined Benefit Plan 3

**Availability** - Plan 3 was available to persons last hired after August 15, 1983; and, to other persons if offered by Collective Bargaining Agreement (CBA). **Eligibility to enter this Plan ceased as of March 31, 1986.** With the exception of certain bargaining groups, service accrued on/after October 1, 2015 counts toward eligibility only.

**Normal Retirement** (no reduction factor for age):

*Eligibility* - Age 55 with 25 years of service; or age 60 with 15 or 20 years of service; or age 65 with 5 years of service. Sheriff Command Officers may retire with 25 years of service regardless of age. Select negotiated CBAs may retire with 30 years of service regardless of age.

*Pension Amount* - Average final compensation multiplied by the sum of:

*For select negotiated CBAs:* a) 2.0% of credited service up to 20 years; and b) 2.5% of credited service between 20 and 25 years; and c) 3.0% of credited service over 25 years. Certain CBA's also had the option to upgrade (via purchase) to a 2.5% multiplier for the first 20 years of service.

*Others:* a) 1.5% of credited service up to 20 years; and b) 2.0% of credited service between 20 and 25 years; and, c) 2.5% of credited service over 25 years.

Maximum County financed portion is 75% of AFC (less worker's compensation payments).

*Average Final Compensation (AFC)* - Monthly average of covered compensation for the best 5 years of credited service.

*For select negotiated CBAs:* Covered compensation includes overtime, premium and holiday pay, 75% of accumulated sick leave and 100% of accumulated vacation time.

*Others:* Covered compensation includes overtime, premium and holiday pay, up to 320 hours of lump sum payments for unused sick leave and up to 120 hours of lump sum payments for unused vacation time.

**Vested Termination** (deferred retirement):

*Eligibility* - 8 years of service. Pension begins at age 65.

*Pension Amount* - Computed as normal retirement but based upon service and AFC at time of termination.

**Duty Disability Retirement:**

Select Unions (Sheriff Command Officers) receive 75% of AFC. Worker's compensation, social security benefit payments, and outside earnings may offset pension.

Others: covered outside of Retirement System.

**Non-Duty Disability Retirement:**

Covered outside of Retirement System.

**Death Before Retirement:**

*Eligibility* - 10 years of service; or, age 65 with 5 years of service (any amount of service if Duty related).

*Pension Amount* - Pension to the spouse is computed as a normal retirement but actuarially reduced in accordance with a 100% joint and survivor election. If there is no eligible spouse, unmarried children under age 18 receive equal shares of 50% of normal retirement pension.

**Member Contributions:**

3% of covered compensation. Effective May 2014, the rate for POAM members increases by 5.10% (to 8.10%). Contribution balances are credited with interest annually in an amount determined by the retirement commission (1.5% as of September 30, 2017).

# Brief Summary of Benefit Provisions as of September 30, 2017

## FROZEN BENEFITS (accrued through September 30, 2015)

### Defined Contribution Plan 4

Defined Contribution Plan 4 is not included in this valuation with the exception of the following provision covered under the Defined Benefit Plans:

#### ***Duty Disability Retirement:***

Eligibility - No age or service requirements.

The Duty Disability benefit is partially funded by the member's account balance. For select negotiated CBAs, benefit is equal to 75% of the employee's average final compensation as otherwise provided in Defined Benefit Plan 1. The employee is required to surrender all funds in Defined Contribution Plan 4 and pay any outstanding loans.

In the past members in Plan 4 were eligible to roll account balances into Defined Benefit Plan 5 to receive a defined benefit during periods as specified in CBAs. This benefit was based on the amount of service that could have been purchased by the member's account balance.

# Brief Summary of Benefit Provisions as of September 30, 2017

## FROZEN BENEFITS (accrued through September 30, 2015)

### Hybrid Plan 5

**Availability** - Hybrid Plan 5 is obligatory for new employees hired after October 1, 2001, except Exempt County employees may choose between Plan 5 and Plan 4. Members may transfer into Plan 5 when allowed by CBA. With the exception of certain bargaining groups, service accrued on/after October 1, 2015 counts toward eligibility only.

#### Defined Benefit Provisions

**Normal Retirement** (no reduction for age):

*Eligibility* - Age 55 with 25 years of service; or age 60 with 20 years of service; or age 65 with 8 years of service; or 30 years of service regardless of age. Members that transfer into Plan 5 under select negotiated CBAs may retire with 25 years of service regardless of age (if attained certain requirements upon date of transfer).

*Pension Amount* -

*For select negotiated CBAs* - Average final compensation multiplied by 2.0% of credited service (1.5% for select Circuit Court coverage groups). Maximum pension is 75% of AFC (less worker's compensation payments).

*Others* - Average final compensation multiplied by the sum of a) 1.25% of credited service up to 20 years; and b) 1.5% of credited service over 20 years. Maximum pension is 75% of AFC (less worker's compensation payments).

*Average Final Compensation (AFC)* - Monthly average of covered compensation for the last 5 years of credited service, with the exception of Sheriff Command Officers and Executives where AFC is for the best 5 years of credited service. Covered compensation includes overtime and premium pay, and also includes payout of sick and annual leave banks for select negotiated CBAs.

**Vested Termination** (deferred retirement):

*Eligibility* - 8 years of service. Pension begins at age 65.

*Pension Amount* - Computed as normal retirement but based upon service and AFC at time of termination.

**Duty Disability Retirement:**

*Eligibility* - No age or service requirements.

*Pension Amount* - Computed as normal retirement with additional service credit granted from date of retirement to age 60. Worker's compensation payments, Social Security benefit payments and outside earnings offset the defined benefit portion of the pension. For select negotiated CBAs, the benefit is equal to 75% of AFC as otherwise provided in Defined Benefit Plan 1. The employee is required to surrender all Defined Contribution funds in Hybrid Plan 5 and pay any outstanding loans.

**Non-Duty Disability Retirement:**

*Eligibility* - 10 years of service.

*Pension Amount* - Computed as normal retirement but based on service and AFC at time of termination. Social security benefit payments and outside earnings offset the maximum.

# Brief Summary of Benefit Provisions as of September 30, 2017

## FROZEN BENEFITS (accrued through September 30, 2015)

### Hybrid Plan 5

#### ***Duty Death Before Retirement:***

*Eligibility* - No age or service requirements.

*Pension Amount* - Pension to the spouse is computed as a normal retirement but actuarially reduced in accordance with a 100% joint and survivor election. Additional service credit is granted from date of death to date the deceased member would have attained 60 years of age. If there is no eligible spouse, unmarried children under age 18 receive equal shares of 50% of normal retirement pension. Worker's compensation payments offset the maximum.

#### ***Non-Duty Death Before Retirement:***

*Eligibility* - 10 years of service, or age 65 with 8 years of service.

*Pension Amount* - Pension to the spouse is computed as a normal retirement but actuarially reduced in accordance with a 100% joint and survivor election. If there is no eligible spouse, unmarried children under age 18 receive equal shares of 50% of normal retirement pension.

#### ***Member Contributions:***

Individuals with 1.25%/1.5% multiplier contribute 0% of covered compensation, depending on CBA. Individuals with 2% multiplier contribute 1% or 5% of covered compensation, depending on CBA. Effective May 2014, the rate for POAM members increases by 5.10%. Contribution balances are credited with interest annually in an amount determined by the retirement commission (1.5% as of September 30, 2017).

## **Defined Contribution Provisions**

#### ***Contributions:***

Either 4% of base compensation (2% member (contribution rate is determined by coverage group from collective bargaining agreement (CBA)) plus 2% employer) or voluntary amount for members (subject to IRS regulations) plus 0% employer for County. 6% of base compensation (3% member plus 3% employer) for Circuit Court. Contributions are invested by the members based on investment options established by the Retirement Commission. Contribution balances are credited with actual net market rates of return of the selected investments.

#### ***Vesting:***

*Member portion* - 100% immediately.

*Employer portion* - 50% after 1 year of total service; 75% after 2 years; 100% after 3 years.

#### ***Distribution Options:***

Terminating members may choose between:

- Lump sum distribution of vested account balance, or
- Rollover of vested account balance to a qualified plan, or
- Annuitized vested account balance if the member is also eligible for a defined benefit pension.

# Brief Summary of Benefit Provisions as of September 30, 2017

## FROZEN BENEFITS (accrued through September 30, 2015)

### Hybrid Plan 6

**Availability** - Hybrid Plan 6 is available effective October 1, 2008 for County members of Hybrid Plan 5 who are allowed to transfer and pay the required contribution for each year of service, when allowed by CBA. With the exception of certain bargaining groups, service accrued on/after October 1, 2015 counts toward eligibility only.

#### Defined Benefit Provisions

**Normal Retirement** (no reduction for age):

*Eligibility* - Age 55 with 25 years of service; or age 60 with 20 years of service; or age 65 with 8 years of service; or 30 years of service regardless of age. Members that transfer into Plan 5 under select negotiated CBAs may retire with 25 years of service regardless of age (if attained certain requirements upon date of transfer).

*Pension Amount* - Average final compensation multiplied by 2.5% for all years of credited service. Maximum pension is 75% of AFC (less worker's compensation payments).

*Average Final Compensation (AFC)* - Monthly average of covered compensation for the best 5 years of the last 7 years of credited service. Covered compensation includes overtime and premium pay, and also includes payout of sick and annual leave banks for select negotiated CBAs.

**Vested Termination** (deferred retirement):

*Eligibility* - 8 years of service. Pension begins at age 65.

*Pension Amount* - Computed as normal retirement but based upon service and AFC at time of termination.

**Duty Disability Retirement:**

*Eligibility* - No age or service requirements.

*Pension Amount* - Computed as normal retirement with additional service credit granted from date of retirement to age 60. Worker's compensation payments, Social Security benefit payments and outside earnings offset the defined benefit portion of the pension. For select negotiated CBAs, the benefit is equal to 75% of AFC as otherwise provided in Defined Benefit Plan 1. The employee is required to surrender all Defined Contribution funds in Hybrid Plan 6 and pay any outstanding loans.

**Non-Duty Disability Retirement:**

*Eligibility* - 10 years of service.

*Pension Amount* - Computed as normal retirement but based on service and AFC at time of termination. Social security benefit payments and outside earnings offset the maximum.

# Brief Summary of Benefit Provisions as of September 30, 2017

## FROZEN BENEFITS (accrued through September 30, 2015)

### Hybrid Plan 6

#### ***Duty Death Before Retirement:***

*Eligibility* - No age or service requirements.

*Pension Amount* - Pension to the spouse is computed as a normal retirement but actuarially reduced in accordance with a 100% joint and survivor election. Additional service credit is granted from date of death to date the deceased member would have attained 60 years of age. If there is no eligible spouse, unmarried children under age 18 receive equal shares of 50% of normal retirement pension. Worker's compensation payments offset the maximum.

#### ***Non-Duty Death Before Retirement:***

*Eligibility* - 10 years of service, or age 65 with 8 years of service.

*Pension Amount* - Pension to the spouse is computed as a normal retirement but actuarially reduced in accordance with a 100% joint and survivor election. If there is no eligible spouse, unmarried children under age 18 receive equal shares of 50% of normal retirement pension.

#### ***Member Contributions:***

4.0% of covered compensation. Effective May 2014, the rate for POAM members increases by 5.10% (to 9.10%). Contribution balances are credited with interest annually in an amount determined by the retirement commission (1.5% as of September 30, 2017).

## **Defined Contribution Provisions**

#### ***Contributions:***

Voluntary for member (subject to IRS regulations), 0% employer. Contributions are invested by the members based on investment options established by the Retirement Commission. Contribution balances are credited with actual net market rates of return of the selected investments.

#### ***Vesting:***

*Member portion* - 100% immediately.

#### ***Distribution Options:***

Terminating members may choose between:

- Lump sum distribution of vested account balance, or
- Rollover of vested account balance to a qualified plan, or
- Annuitized vested account balance if the member is also eligible for a defined benefit pension.

# Brief Summary of Benefit Provisions as of September 30, 2017

## Benefit Accruals on/after October 1, 2015

**Availability** - With the exception of certain bargaining groups, all current Defined Benefit members (regardless of prior Plan) and future hires participate.

**Normal Retirement** (no reduction for age):

*Eligibility* - Age 62 with 10 years of service. A graduated eligibility scale (between ages 60-62) applies to members age 52 or older as of October 1, 2015. Sheriffs (Local 3317 and POAM) may also retire at age 55 with 30 years of service.

### Graduated Eligibility Scale (Ages in Years)

Age as of October 1, 2015	Normal Retirement Age
61	60
60	60
59	60.3
58	60.6
57	60.9
56	61
55	61.3
54	61.6
53	61.9
52	62

*Pension Amount - Future hires and members classified in the prior Plans 1, 3, 5 and 6* - Average final compensation multiplied by 1.25% for all years of credited service. Maximum pension is 75% of AFC.

*Members classified in the prior Plan 2* - Average final compensation multiplied by the sum of a) 1% of credited service up to 20 years; and, b) 1.25% of credited service over 20 years. Maximum pension is 75% of AFC.

*Average Final Compensation (AFC)* - Monthly average of base wages for the last 10 years of credited service.

**Early Retirement:**

*Eligibility* - Age 55 with 30 years of service for non-Sheriff members.

*Pension Amount* - Computed as normal retirement but reduced by 0.8% for each month that the early retirement precedes age 62.

**Vested Termination** (deferred retirement):

*Eligibility* - 10 years of service. Pension begins at age 65.

*Pension Amount* - Computed as normal retirement but based upon service and AFC at time of termination.

# Brief Summary of Benefit Provisions as of September 30, 2017

## Benefit Accruals on/after October 1, 2015

### **Duty Disability Retirement:**

*Eligibility* - No age or service requirements.

*Pension Amount* - Computed as normal retirement with additional service credit granted from date of retirement to age 60. Worker's compensation payments, Social Security benefit payments and outside earnings offset the defined benefit portion of the pension. Maximum benefit is 60% of AFC.

For Plan 4 members in select negotiated CBAs, benefit is equal to 60% of the employee's average final compensation as otherwise provided in Defined Benefit Plan 1. The employee is required to surrender all funds in Defined Contribution Plan 4 and pay any outstanding loans.

### **Non-Duty Disability Retirement:**

*Eligibility* - 10 years of service.

*Pension Amount* - Computed as normal retirement but based on service and AFC at time of termination. Social security benefit payments and outside earnings offset the maximum.

### **Duty Death Before Retirement:**

*Eligibility* - No age or service requirements.

*Pension Amount* - Pension to the spouse is computed as a normal retirement but actuarially reduced in accordance with a 100% joint and survivor election. Additional service credit is granted from date of death to date the deceased member would have attained 60 years of age. If there is no eligible spouse, unmarried children under age 18 receive equal shares of 50% of normal retirement pension. Worker's compensation payments offset the maximum.

### **Non-Duty Death Before Retirement:**

*Eligibility* - 10 years of service.

*Pension Amount* - Pension to the spouse is computed as a normal retirement but actuarially reduced in accordance with a 100% joint and survivor election. If there is no eligible spouse, unmarried children under age 18 receive equal shares of 50% of normal retirement pension.

### **Member Contributions:**

With the exception of members classified in the prior Plan 2 and unless indicated otherwise under select negotiated CBAs, 6% of gross wages up to \$52,155, plus 7% of gross wages over \$52,155. For Sheriffs (Local 3317 and POAM) the amount is 7% of gross wages up to \$52,155, plus 8% of gross wages over \$52,155. Any groups contributing more than these rates under their prior Plan will instead contribute at the new rates. Plan 2 will continue to contribute 0%. Contribution balances are credited with interest annually in an amount determined by the retirement commission (1.5% as of September 30, 2017).

## Development of Funding Value of Retirement System Assets (All WCERS)

Year Ended September 30:	2015	2016	2017	2018	2019	2020
Assumed Investment Return	7.75%	7.75%	7.25%	7.25%	7.25%	7.25%
A. Funding Value Beginning of Year	\$768,265,277	\$839,508,097	\$894,845,316			
B. Market Value End of Year	819,072,539	881,038,959	920,751,833			
C. Market Value Beginning of Year	814,619,598	819,072,539	881,038,959			
D. Non-Investment Net Cash Flow	535,064	(14,336,300)	(62,313,497)			
E. Investment Income						
E1. Market Total: B - C - D	3,917,877	76,302,720	102,026,371			
E2. Amount for Immediate Recognition	59,561,293	64,506,346	62,617,421			
E3. Amount for Phased-In Recognition: E1-E2	(55,643,416)	11,796,374	39,408,950			
F. Phased-In Recognition of Investment Income						
F1. Current Year: 0.25 x E3	(13,910,854)	2,949,094	9,852,238			
F2. First Prior Year	5,168,073	(13,910,854)	2,949,094	\$ 9,852,238		
F3. Second Prior Year	10,960,860	5,168,073	(13,910,854)	2,949,094	\$9,852,238	
F4. Third Prior Year	8,928,384	10,960,860	5,168,071	(13,910,854)	2,949,092	\$9,852,236
F5. Total Recognized Investment Gain	11,146,463	5,167,173	4,058,549	(1,109,522)	12,801,330	9,852,236
G. Funding Value End of Year:						
G1. Preliminary: A + D + E2 + F5	839,508,097	894,845,316	899,207,789			
G2. Upper Corridor Limit: 120% x B	982,887,047	1,057,246,751	1,104,902,200			
G3. Lower Corridor Limit: 80% x B	655,258,031	704,831,167	736,601,466			
<b>G4. Funding Value End of Year</b>	<b>\$839,508,097</b>	<b>\$894,845,316</b>	<b>\$899,207,789</b>			
H. Difference between Market & Funding Value	(20,435,558)	(13,806,357)	21,544,044	22,653,566	9,852,236	0
I. <b>Recognized Rate of Return</b>	<b>9.2%</b>	<b>8.4%</b>	<b>7.7%</b>			
J. Market Value Rate of Return	0.48%	9.40%	12.00%			
K. Ratio of Funding Value to Market Value	102.5%	101.6%	97.7%			

The Funding Value of Assets recognizes assumed investment income (line E2) fully each year. Differences between actual and assumed investment income (line E3) are phased-in over a closed 4-year period. During periods when investment performance exceeds the assumed rate, Funding Value of Assets will tend to be less than Market Value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than Market Value. The Funding Value of Assets is *unbiased* with respect to Market Value. At any time it may be either greater or less than Market Value. If assumed rates are exactly realized for 3 consecutive years, it will become equal to Market Value.

## Income Statement and Allocation of Funding Value by Employer

	County	Airport Authority	Total
<b>(1) Market Value Beginning of Year</b>	\$ 770,760,985	\$ 110,277,974	\$ 881,038,959
(2) Employee Contributions	8,831,917	367,168	9,199,085
(3) Employer Contributions*	60,306,187	10,745,861	71,052,048
(4) Benefit Payments & Refunds*	131,528,552	8,359,546	139,888,098
(5) Pre-2002 Combined Retirees Transfer	4,400,000	(4,400,000)	-
(6) Administrative Expenses	2,332,368	344,164	2,676,532
(7) Average Balance: (1) + 0.5 x ((2)+(3)-(4)+(5)-(6))	740,599,577	109,282,634	849,882,211
(8) Net Investment Income Allocation	88,907,246	13,119,125	102,026,371
<b>(9) Market Value End of Year: (1)+(2)+(3)-(4)+(5)-(6)+(8)</b>	<b>\$ 799,345,415</b>	<b>\$ 121,406,418</b>	<b>\$ 920,751,833</b>
<b>(10) Market Value Rate of Return: (8)/(7)</b>	12.0%	12.0%	12.0%
<b>(11) Percentage of WCERS Market Value</b>	86.81%	13.19%	100.00%
<b>(12) Funding Value Allocation: Total x (11)</b>	<b>\$ 780,642,077</b>	<b>\$ 118,565,712</b>	<b>\$ 899,207,789</b>

\*Includes pre-Medicare Stipend amount of \$2,875,853.

## Asset Allocation

	2017
<b>Assets:</b>	
Cash and Short-Term Investments	\$ 44,233,178
<b>Receivables:</b>	
Accrued Interest and Dividends	333,475
Accounts Receivable and Other	956,819
<b>Investments, at fair value:</b>	
Corporate Bonds	37
International Equities	1,566,014
Asset-Backed Securities	88,500
Commingled Fixed Income	86,376,336
Commingled Funds	100,533,413
Stock Mutual Funds	47,357,008
Bond Mutual Funds	16,325,141
Real Estate Hedge Funds	40,624,748
Real Estate Investment Trusts	131,505,585
Investments in Partnerships/Private Equity	73,522,561
Stocks	257,945,551
	755,844,894
<b>Total Assets</b>	<b>\$ 801,368,366</b>
<b>Liabilities</b>	
Payables	2,022,951
<b>Net Assets Held in Trust for Pension Benefits</b>	<b>\$ 799,345,415</b>

## Retired Members and Beneficiaries Added and Removed

Year Ended Sept. 30	Added		Removed		Net Increase		End of Year	
	No.	Annual Pensions	No.	Annual* Pensions	No.	Annual Pensions	No.	Annual Pensions^
2014	151	\$5,743,411	206	\$3,417,098	(55)	\$2,326,313	5,253	\$125,993,903
2015	137	5,816,687	272	4,061,561	(135)	1,755,126	5,118	127,749,029
2016	124	3,941,083	175	3,818,815	(51)	122,268	5,067	127,871,297
<b>2017</b>	<b>74</b>	<b>2,097,370</b>	<b>218</b>	<b>4,000,585</b>	<b>(144)</b>	<b>(1,903,215)</b>	<b>4,923</b>	<b>125,968,082</b>

\* Includes benefit adjustments, if any.

^ For 2017, benefits shown exclude approximately \$50,270 of straight-life benefits that are deferred to a later date for 51 members.

## Retired Members and Beneficiaries Comparative Schedule

Valuation Date Sept. 30	Pensions Being Paid					Average Pension	Active Member Ratio*
	No.	Amount <sup>^</sup> (\$ Thousands)	% of Member Payroll <sup>#</sup>	Annual % Increase			
				No.	Amount		
2014	5,253	\$125,994	107.4 %	(1.0)%	1.9 %	\$23,985	0.7
2015	5,118	127,749	134.7 %	(2.6)%	1.4 %	24,961	0.6
2016	5,067	127,871	130.5 %	(1.0)%	0.1 %	25,236	0.6
<b>2017</b>	<b>4,923</b>	<b>125,968</b>	<b>122.8 %</b>	<b>(2.8)%</b>	<b>(1.5)%</b>	<b>25,588</b>	<b>0.7</b>

\* Number of active members (including defined contribution plan members) divided by number of retired members and beneficiaries.

# Excludes Defined Contribution Plan payroll. Rate based on pensionable wages in 2014 and base wages after.

^ For 2017, benefits shown exclude approximately \$50,270 of straight-life benefits that are deferred to a later date for 51 members.

## Retired Members and Beneficiaries September 30, 2017 by Attained Age Groups

Attained Age Grouping	Number	Annual Pensions <sup>^</sup>
Under 35	2	\$ 32,179
35-39	2	6,112
40-44	6	226,282
45-49	55	2,203,656
50-54	205	8,862,577
55-59	350	16,316,533
60-64	469	19,613,283
65-69	835	25,004,076
70-74	843	20,855,290
75-79	631	11,741,635
80-84	547	9,212,081
85-89	503	7,088,178
90-94	345	3,615,378
95-99	108	1,034,164
100 & Over	22	156,658
<b>Totals</b>	<b>4,923</b>	<b>\$125,968,082</b>

Average age now: 73.8 yrs.  
Average age at retirement: 54.9 yrs.  
Average service at retirement: 24.0 yrs.

<sup>^</sup> Benefits shown exclude approximately \$50,270 of straight-life benefits that are deferred to a later date for 51 members.

## Retired Members and Beneficiaries September 30, 2017 by Type of Retirement

Type of Pension Being Paid	Benefits Paid <sup>^</sup>	Number
Age & Service Pensions		
S.S. Equated/Accelerated		
Straight Life	\$ 11,358,952	760
Option 1	1,865,774	61
Option 2	5,358,885	208
Option 3	6,262,383	237
Total	24,845,994	1,266
Not S.S. Equated/Accelerated		
Straight Life	\$ 40,509,644	1,365
Option 1	3,394,137	113
Option 2	21,593,634	596
Option 3	19,211,374	476
Total	84,708,789	2,550
Survivor Beneficiary of Deceased Retired Member	9,258,888	665
<b>Total Age and Service Pensions</b>	<b>\$ 118,813,671</b>	<b>4,481</b>
Casualty Pensions		
Duty Disability	\$ 3,884,894	164
Non-Duty Disability	1,451,228	119
Survivor Beneficiary of		
Deceased Retired Member	928,513	76
Duty Death	156,477	8
Non-Duty Death	733,299	75
<b>Total Casualty Pensions</b>	<b>7,154,411</b>	<b>442</b>
<b>Total Pensions Being Paid</b>	<b>\$ 125,968,082</b>	<b>4,923</b>

<sup>^</sup> Benefits shown exclude approximately \$50,270 of straight-life benefits that are deferred to a later date for 51 members.

## Vested Former Members September 30, 2017 Tabulated by Attained Age Groups

Attained Ages	No.	Estimated Annual Allowances
30-34	2	\$ 16,192
35-39	21	260,575
40-44	21	364,020
45-49	23	240,503
50-54	42	707,329
55-59	38	401,761
60-64	33	353,033
65-69	14	133,217
70 & Up	6	30,432
<b>Totals</b>	<b>200</b>	<b>\$2,507,062</b>

A vested former member is a person who has left the employ of the County after acquiring credited service sufficient for a vested pension and has not withdrawn their accumulated member contributions from the Reserve for Accumulated Member Contributions. A vested former member may retire upon satisfying the conditions for normal retirement.

The above schedule includes 41 Mental Health Authority members with frozen deferred benefits.

## Members Receiving Benefits from the Frozen Plan and Terminated from the October 1, 2015 Benefit Plan

Attained Ages	No.	Estimated Annual Allowances
45-49	1	\$ 2,028
50-54	13	13,305
55-59	35	33,387
60-64	2	1,550
<b>Totals</b>	<b>51</b>	<b>\$50,270</b>

The 51 members in the above schedule are in payment status for the frozen plan benefit but are not yet eligible to receive the new plan benefit.

## Active Members September 30, 2017

Plan	No.	Valuation Payroll (Base)	Average		
			Pay	Age	Service
(in years)					
Pre-September 30, 2015 Plans					
Defined Benefit Plan 1					
General	12	\$ 491,213	\$40,934	66.9	35.6
Sheriff	0	n/a	n/a	n/a	n/a
Total	12	491,213	40,934	66.9	35.6
Defined Benefit Plan 5 & 6					
General	75	5,213,027	69,507	48.5	11.6
Sheriff	0	n/a	n/a	n/a	n/a
Total	75	5,213,027	69,507	48.5	11.6
October 1, 2015 Plan					
General	1,320	63,329,678	47,977	46.0	10.4
Sheriff	613	33,545,401	54,723	42.5	14.9
Total	1,933	96,875,079	50,116	44.9	11.8
Defined Benefit Sub-total*	2,020	102,579,319	50,782	45.1	12.0
Defined Contribution Plan 4^	1,184	77,969,935	65,853	51.9	19.4
<b>Total</b>	<b>3,204</b>	<b>\$180,549,254</b>	<b>\$56,351</b>	<b>47.6</b>	<b>14.7</b>

\* Includes Plan 4 members that transferred into DB Plan after the valuation date, if any.

^ Plan 4 members are not included in the valuation except for Disability benefits for certain CBAs.

## Active and Inactive Members in Valuation Historical Schedule

Valuation Date September 30	Inactive		Active Members (Including Plan 4)^				
	No.	Estimated Pensions	No.	Valuation Payroll <sup>#</sup>	Average		
					Pay	Age	Service
<b>Retirement System Totals</b>							
1970	283	\$ 461,045	8,170	\$ 81,396,280	\$ 9,963	41.7 yrs.	10.2 yrs.
1975	254	579,747	7,906	115,811,211	14,649	42.0	10.5
1980	323	1,107,547	6,832	178,221,092	26,086	42.8	12.1
1985	245	1,229,467	4,758	129,534,998	27,225	41.1	11.0
1990	251	1,286,311	4,999	157,406,461	31,488	41.0	10.9
1995	198	1,114,099	5,407	192,903,829	35,677	41.1	10.3
1999	153	893,028	5,903	256,378,506	43,432	41.9	10.3
2000	152	885,974	5,995	275,626,572	45,976	42.1	10.3
2001	150	860,061	6,076	294,127,729	48,408	42.6	10.4
2002	145	824,488	6,019	308,961,722	51,331	43.1	10.7
2003	140	786,431	5,995	289,250,256	48,249	43.2	10.8
2004	118	956,869	6,987	343,329,533	49,138	44.0	11.0
2005	83	622,669	5,867	298,580,651	50,892	44.1	11.8
2006	139	962,718	5,775	319,610,910	55,344	44.8	12.4
2007	139	965,814	5,667	325,383,059	57,417	45.3	12.8
2008	130	1,045,421	5,508	330,069,425	59,926	45.6	13.3
2009	120	833,979	4,938	297,467,539	60,241	46.2	14.1
2010	114	778,285	4,618	277,390,018	60,067	46.4	14.0
2011	118	827,749	4,455	272,096,139	61,077	47.0	14.8
2012	128	1,168,554	4,340	268,976,237	61,976	47.3	15.3
2013	138	1,262,394	4,293	269,844,562	62,857	47.7	15.3
2014	139	1,434,371	4,023	254,591,941	63,284	47.8	15.5
2015	185	2,066,876	3,227	180,995,012	56,088	47.6	15.4
2016	189	2,262,310	3,174	183,241,874	57,732	47.8	15.2
<b>2017</b>	<b>200</b>	<b>2,507,062</b>	<b>3,204</b>	<b>180,549,254</b>	<b>56,351</b>	<b>47.6</b>	<b>14.7</b>

# Based on base wages starting in 2015 and pensionable wages in prior years.

^ Plan 4 members are not included in the valuation except for Disability benefits for certain CBAs.

## Defined Benefit Active Members September 30, 2017 by Attained Age and Years of Service

Attained Age	Years of Service to Valuation Date*							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Salary
15-19	2							2	\$ 56,983
20-24	76							76	2,530,199
25-29	132	11	1					144	5,440,277
30-34	106	38	10	6				160	7,187,982
35-39	85	60	57	44	7			253	12,676,723
40-44	76	25	59	61	38	9	1	269	14,222,642
45-49	92	30	31	54	74	58	10	349	18,322,857
50-54	85	16	31	42	47	92	15	328	18,385,564
55-59	56	28	24	34	41	43	9	235	12,771,873
60	12	4	3	7	4	4	1	35	1,754,620
61	11	8	7	4	9	4	4	47	2,729,881
62	4	5	3	4	4	3	3	26	1,368,606
63	4	4	2	1	1	3	3	18	1,086,169
64	1	5	2	4		1	3	16	871,332
65	4	2		1	4	1		12	591,900
66	2	1	2	4	1	4	1	15	826,958
67	3	2	1	1	1		3	11	512,910
68	2	2	1		1			6	315,894
69		1	1				3	5	233,318
70			1	1	1		1	4	167,626
71			1					1	55,563
73									
74				1			2	3	181,000
75	1							1	57,800
<b>Totals</b>	<b>755</b>	<b>242</b>	<b>237</b>	<b>269</b>	<b>233</b>	<b>223</b>	<b>61</b>	<b>2,020</b>	<b>\$102,579,319</b>

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

Age: 45.1 years  
Service: 12.0 years  
Annual Pay: \$50,782

\* Includes purchased service, if any.

## SECTION C

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### **METHODS AND ASSUMPTIONS**

# Basic Financial Principles and Operation of the Retirement System

***Benefit Promises Made Which Must Be Paid For.*** A retirement program is an orderly means of handing out, keeping track of, and financing pension promises to a group of employees. As each member of the retirement program acquires a unit of service credit the member is, in effect, handed an “IOU” which reads: “The Retirement System promises to pay you one unit of retirement benefits, payments in cash commencing when you retire.”

The principal related financial question is: When shall the money required to cover the “IOU” be contributed? This year, when the benefit of the member’s service is received? Or, some future year when the “IOU” becomes a cash demand?

The Constitution of the State of Michigan is directed to the question:

“Financial benefits arising on account of service rendered in each fiscal year shall be funded during that year and such funding shall not be used for financing unfunded accrued liabilities.”

This Retirement System meets this requirement by having as its financial objective the establishment and receipt of contributions, expressed as percents of active member payroll, which will remain approximately level from year to year, and will not have to be increased for future generations of taxpayers.

Translated into actuarial terminology, a level percent-of-payroll contribution objective means that the contribution rate must be at least:

Normal Cost (the present value of future benefits assigned to members’ service being rendered in the current year)

. . . plus . . .

Interest on the Unfunded Actuarial Accrued Liability (the difference between the actuarial accrued liability and current system assets).

The accumulation of invested assets is a byproduct of level percent-of-payroll contributions, not the objective. Investment income becomes the third major contributor to the retirement program, and the amount is directly reacted to the amount of contributions and investment performance.

If contributions to the retirement program are less than the preceding amount, the difference, plus investment earnings not realized thereon, will have to be contributed at some later time, or, benefits will have to be reduced, to satisfy the fundamental fiscal equation under which all retirement programs must operate:

$$B = C + I - E$$

The aggregate amount of **B**enefit payments to any group of members and their beneficiaries cannot exceed the sum of:

The aggregate amount of **C**ontributions received on behalf of the group

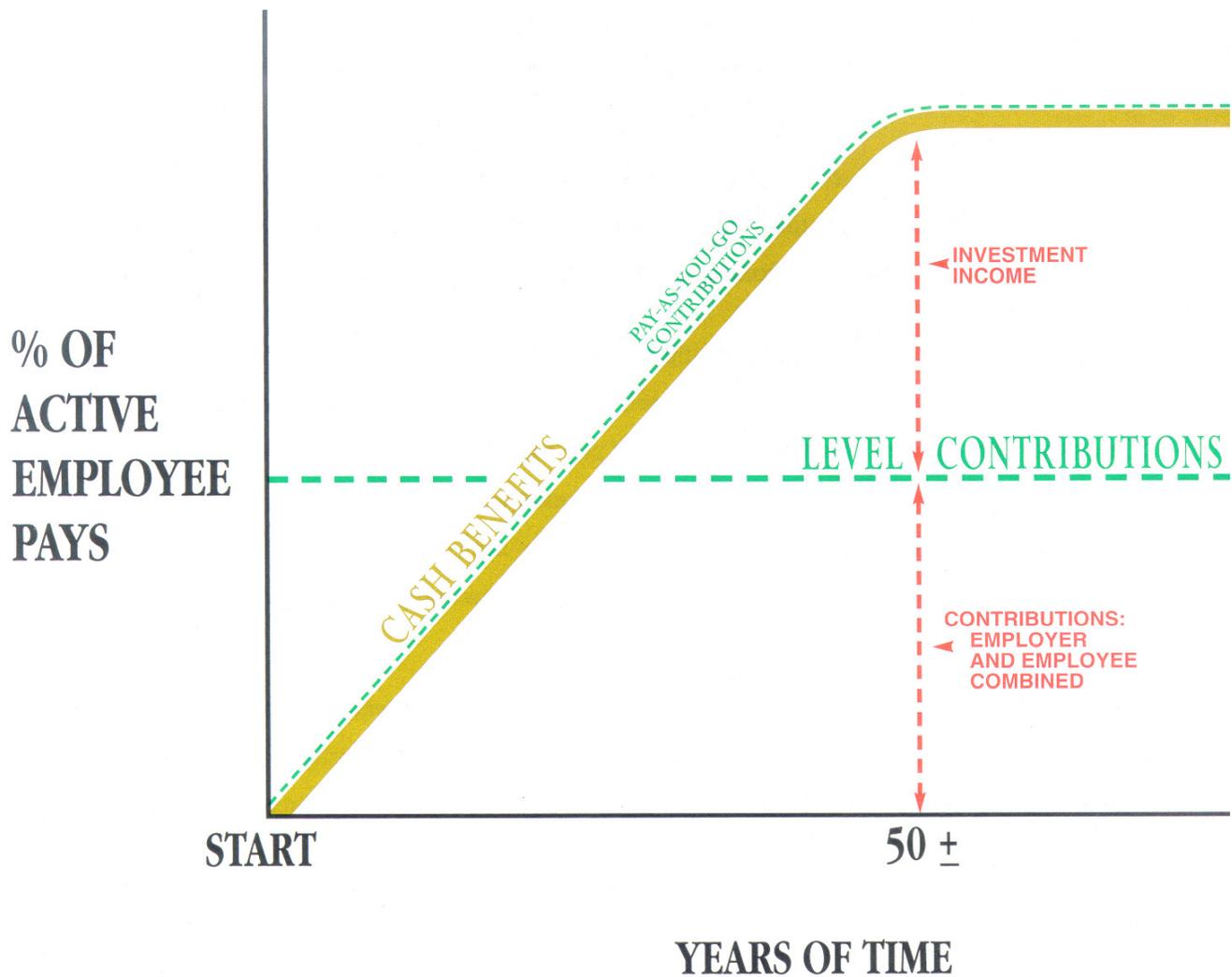
. . . plus . . .

Investment earnings on contributions received and not required for immediate cash payments of benefits

. . . minus . . .

The **E**xpenses of operating the program.

**Computed Contribution Rate Needed To Finance Benefits.** From a given schedule of benefits and from the data furnished, the actuary calculates the contribution rate **by means of an actuarial valuation** - the technique of assigning monetary values to the risks assumed in operating a retirement program.



**CASH BENEFITS LINE.** This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

**LEVEL CONTRIBUTION LINE.** Determining the level contribution line requires detailed assumptions concerning a variety of experiences in future decades, including:

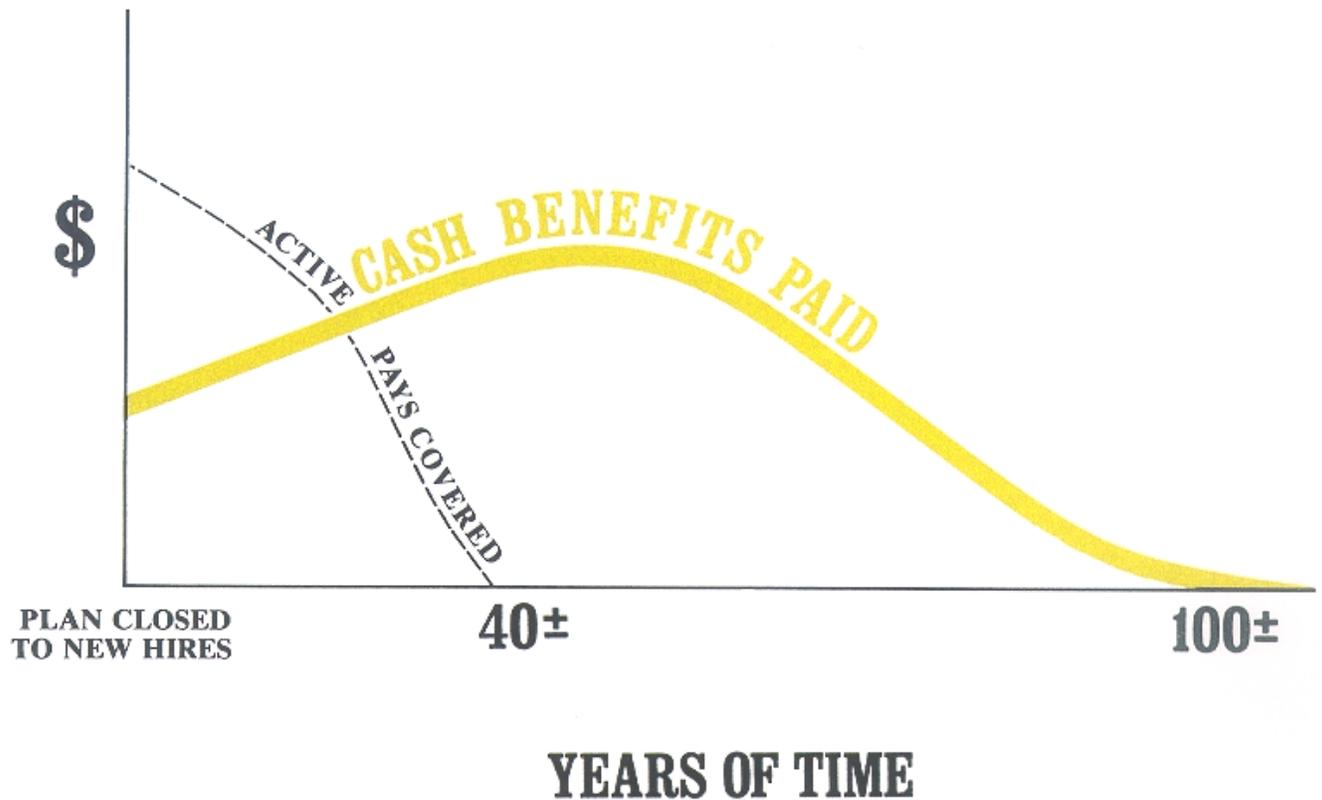
Economic Risk Areas

- Rates of investment return
- Rates of pay increase
- Changes in active member group size

Non-Economic Risk Areas

- Ages at actual retirement
- Rates of mortality
- Rates of withdrawal of active members (turnover)
- Rates of disability

## A CLOSED PENSION PLAN



A plan becomes closed when no new hires are admitted to active membership. The persons covered by the plan at the time of closing continue their normal activities and continue to be covered by the plan, until the last survivor dies.

**CASH BENEFITS LINE.** After a pension plan becomes closed, the usual pattern is for cash benefits to continue to increase for decades of time. Eventually the cash benefits will peak, and then gradually decrease over more decades of time, ultimately to zero. The last cash benefit is likely to occur a century after the time the plan is closed.

The precise amounts of cash benefits cannot be known now, and must be estimated by assumptions of future experiences in a variety of financial risk areas.

# Actuarial Valuation Process

*The financing diagram* on page C-3 shows the relationship between the two fundamentally different philosophies of paying for retirement benefits: the method where contributions match cash benefit payments (or barely exceed cash benefit payments, as in the Federal Social Security program) which is an **increasing contribution method**; and the **level contribution method** which equalizes contributions between the generations.

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*The actuarial valuation* is the mathematical process by which the level contribution rate is determined, and the flow of activity constituting the valuation may be summarized as follows:

- A. **Census Data**, furnished by plan administrator.
  - Retired lives now receiving benefits
  - Former employees with vested benefits not yet payable
  - Active employees
  
- B. + **Asset data** (cash & investments), furnished by plan administrator
  
- C. + **Assumptions concerning future experience in various risk areas**, which assumptions are established by the Retirement System after consulting with the actuary
  
- D. + **The funding method** (the long-term, planned pattern for employer contributions)
  
- E. + **Mathematically combining the assumptions, the funding method, and the data**
  
- F. = Determination of:
  - Plan financial position; and/or
  - New Employer Contribution Rate

## Actuarial Cost Methods

**Normal cost and the allocation of benefit values** between service rendered before and after the valuation date was determined using the *individual entry-age actuarial cost method* having the following characteristics:

- the annual normal costs for each individual active member, payable from the date of employment to the date of retirement, are sufficient to accumulate the value of the member's benefit at the time of retirement; and
- each annual normal cost is a constant percentage of the member's year-by-year projected covered pay.

**Asset Valuation Method.** Last year's valuation assets are increased by contributions and reduced by refunds, benefit payments and expenses. An amount equal to the assumed investment return for the year is then added. Differences between actual return on a market value basis and an assumed return are phased-in over a four-year period. An 80%-120% market value corridor was incorporated in the September 30, 2014 valuation in accordance with WCERS Actuarial Funding Policy.

The portion of the actuarial present value allocated to the valuation year is called the normal cost. The portion of the actuarial present value not provided for by the actuarial present value of future normal costs is called the actuarial accrued liability. Deducting accrued assets from the actuarial accrued liability determines the unfunded actuarial accrued liability.

The base rate of increase in salaries used to calculate the actuarial liability was assumed to be 3.0%.

## Actuarial Assumptions Used for the Valuation

Contribution requirements and actuarial present values are calculated by applying estimates of future experience (actuarial assumptions) to the benefit provisions and participant data of the System, using the actuarial cost methods described on page C-6.

The principal areas of activity which require experience estimates are:

- long-term rates of investment return to be generated by the assets of the System
- patterns of pay increases to members
- rates of mortality among members, retired members and beneficiaries
- rates of withdrawal of active members
- rates of disability among active members
- the age patterns of actual retirements

In an actuarial valuation, the monetary effect of each activity is calculated for as long as a present covered person survives - - - a period of time which can be as long as a century.

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Actual experience of the System will not coincide exactly with the experience estimates. Each valuation provides a complete recalculation of estimated future experience and takes into account all past differences between estimated and actual experience. The result is a continual series of adjustments (usually small) to the computed contribution rate.

From time to time one or more of the estimates are modified to reflect experience trends but not random or temporary year-to-year fluctuations.

## Actuarial Assumptions Used for the Valuation

The rationale for the assumptions is an experience study covering the period October 1, 2010 through September 30, 2015 and dated November 22, 2016.

**Investment Return** (net of investment expenses).

**7.25%** per year, compounded annually. This rate consists of a real rate of return over wage inflation of **4.25%** per year plus a long-term rate of wage inflation of **3.00%** per year.

No specific price inflation assumption is necessary for this valuation. However, the above assumptions would be consistent with a price inflation assumption in the 2.50% area.

This assumption is used to equate the value of payments due at different points in time and was first used following the September 30, 2016 valuation. Approximate rates of investment return, for the purpose of comparisons with assumed rates, are shown below.

	Year Ended September 30					5-Year Average
	2017	2016	2015	2014	2013	
Recognized Rate of Return (Funding Value)	7.7%	8.4%	9.2%	8.4%	6.8%	8.1%

The nominal rate of return was computed using the approximate formula  $i = I$  divided by  $1/2 (A + B - I)$ , where  $I$  is recognized investment income net of expenses,  $A$  is the beginning of year asset value, and  $B$  is the end of year asset value.

**Rates of salary increase** (merit and longevity plus wage inflation) ranges from 3.00% to 12.15%. Select merit and longevity rates follow:

Merit and Longevity Pay Increases			
Non-Public Safety		Public Safety	
Age	Increase	Service	Increase
20	4.18%	5	6.51%
25	3.88%	10	1.75%
30	2.90%	15	1.37%
35	2.05%	20	1.25%
40	1.48%	25	0.78%
45	1.10%	30	0.67%
50	0.93%	35	0.44%
55	0.60%	40 & Over	0.10%
60	0.38%		
65 & Over	0.00%		
<b>Ref:</b>	<b>480</b>	<b>Ref:</b>	<b>703</b>

These rates are used to project current salaries to those upon which pension amounts are likely to be based. The current rates were first used for the September 30, 2016 actuarial valuation.

**Rates of separation from active membership** were as follows:

Rates for all divisions were first used for the September 30, 2016 valuation.

% of Active Members Separating within the Next Year							
Non-Public Safety				Public Safety			
Age		Service		Age		Service	
20	9.50%	0 - 1	19%	20	4.14%	0 - 1	18%
21	9.50%	1 - 2	16%	21	4.14%	1 - 2	18%
22	9.50%	2 - 3	12%	22	4.14%	2 - 3	9%
23	9.45%	3 - 4	11%	23	4.10%	3 - 4	7%
24	9.40%	4 - 5	10%	24	4.07%	4 - 5	6%
25	9.35%			25	4.03%		
30	6.00%			30	2.96%		
35	6.00%			35	2.24%		
40	6.00%			40	2.15%		
45	3.79%			45	1.95%		
50	3.07%			50	1.56%		
55	2.59%			55	1.10%		
60 & Over	0.00%			60 & Over	0.00%		
<b>Ref:</b>	<b>1398</b>		<b>759</b>	<b>Ref:</b>	<b>1230 x 92%</b>		<b>760</b>

**The probabilities of retirement** for members satisfying the age and service conditions for retirement are as follows:

Percent of Active Participants Retiring within Next Year				
Normal Retirement			Early Retirement	
Age	Public Safety	Non-Public Safety	Service	Non-Public Safety
55	25%	25%	55	5%
56	25%	20%	56	6%
57	25%	20%	57	7%
58	25%	20%	58	8%
59	25%	30%	59	9%
60	25%	30%	60	10%
61	25%	40%	61	10%
62	50%	40%	62	
63	27%	40%	63	
64	27%	50%	64	
65	50%	30%	65	
66	27%	25%	66	
67	27%	10%	67	
68	30%	15%	68	
69	30%	80%	69	
70	100%	100%	70	
Ref:	2659	2661		2658
anchor	55	55		55

Service	Regular Retirement	
	Non-Public Safety	Public Safety
30	30%	40%
31	20%	30%
32	15%	20%
33	30%	30%
34	30%	40%
35	40%	50%
36	30%	25%
37	30%	25%
38	30%	25%
39	20%	25%
40	100%	100%
Ref:	2120	2660
anchor	30	30

The rates were first used for the September 30, 2016 valuation.

Probabilities of retirement were increased to 45% for non-public safety and 40% for public safety once the member accrues the maximum benefit of 75% of Average Final Compensation.

For members that are at least age 42 as of September 30, 2015, have at least 10 years of service as of September 30, 2015 and entered the plan before age 42, the retirement pattern is applied when the member is eligible for the frozen benefit. For all other members, the retirement pattern is applied when the member is eligible for the new, non-frozen, benefit.

**Rates of disability** are represented by the following table:

Sample Ages	Percent Becoming Disabled within Next Year		
	Non-Public Safety		Public Safety
20	0.08%		0.10%
25	0.08%		0.10%
30	0.05%		0.07%
35	0.09%		0.12%
40	0.21%		0.28%
45	0.38%		0.51%
50	0.61%		0.81%
55	0.85%		1.13%
60	1.08%		1.44%
Ref	8	x 75%	8 x 100%

For members not in public safety, two-thirds of disabilities are assumed to be non-duty related and the remaining one-third are assumed to be duty related. For public safety members, 60% are assumed to be non-duty related and the remaining 40% are assumed to be duty related.

**Number of active members:** The number of County active members was assumed to remain constant.

**The mortality table** used to measure post-retirement mortality was the RP-2014 Healthy Annuitant Mortality table for males and females, adjusted for mortality improvement back to the base year of 2006. Mortality rates for a particular calendar year are determined by applying the MP-2016 Mortality Improvement scale to the above described tables. The corresponding Disabled and Employee tables were used for disability and pre-retirement mortality, respectively. This assumption was first used for the September 30, 2016 actuarial valuation.

Mortality rates are used to measure the probabilities of members dying before retirement and the probabilities of each pension payment being made after retirement. Sample post-retirement values are shown below:

Sample Attained Ages in 2017	Single Life Retirement Values					
	Present Value of \$1 Monthly for Life		Percent Dying Next Year		Future Life Expectancy (years)	
	Men	Women	Men	Women	Men	Women
45	\$153.34	\$156.59	0.2722%	0.2123%	39.41	42.10
50	147.78	151.87	0.4030%	0.2710%	34.48	37.09
55	140.87	145.59	0.5772%	0.3775%	29.73	32.15
60	132.29	137.61	0.8022%	0.5607%	25.18	27.39
65	121.77	127.67	1.1501%	0.8398%	20.86	22.85
70	108.99	115.30	1.7229%	1.3106%	16.78	18.51
75	93.85	100.46	2.7549%	2.1443%	13.00	14.48
80	76.98	83.63	4.6430%	3.6558%	9.64	10.86
Ref:	2135	x 1.00	2136	x 1.00		
Base Year	2006		2006			
Projection	929		930			

# Miscellaneous and Technical Assumptions

## September 30, 2017

<b>Marriage Assumption:</b>	100% of males and 100% of females are assumed to be married. Male spouses are assumed to be three years older than female spouses.
<b>Pay Increase Timing:</b>	Beginning of (Fiscal) year.
<b>Decrement Timing:</b>	Decrements are assumed to occur mid-year.
<b>Eligibility Testing:</b>	Eligibility for benefits is determined using the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
<b>Decrement Relativity:</b>	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
<b>Decrement Operation:</b>	Disability and turnover do not operate during retirement eligibility.
<b>Normal Form of Benefit:</b>	The assumed normal form of benefit is straight life.
<b>Adjustments:</b>	Straight Life amounts are provided for some retired members who elect the pop-up provision. Retiree liabilities were increased by 1% to account for the remaining missing data for the plan's pop-up provision.
<b>Incidence of Contributions:</b>	Contributions are assumed to be received continuously throughout the year based upon the computed percent-of-payroll shown in this report, and the actual payroll payable at the time contributions are made, subject to recommended dollar amounts shown on page A-2.
<b>Benefit Service:</b>	Exact fractional service is used to determine the amount of benefit payable.
<b>Option Factors:</b>	Option factors are based upon 7.25% interest and the RP-2014 Healthy Annuitant Mortality table projected to 2022 using MP-2016 with an 80% Unisex Blend.
<b>Administrative Expenses:</b>	A contribution of 2.56% of payroll was included for administrative expenses. This assumption was first used for the September 30, 2016 valuation.
<b>AFC Floor:</b>	Active member final average compensation was assumed to be at least equal to 95% of base wages.
<b>Interest on Member Contributions:</b>	Contribution balances are credited with interest annually in an amount determined by the retirement commission. For the September 30, 2017 valuation, the assumed crediting rate is 1.5% (the amount credited to member balances as of September 30, 2017).

## **SECTION D**

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### **RISK MEASURES AND FUNDING POLICY**

## Summary of Risk Measures Based on Market Value of Assets (Excludes WCAA)

Actuarial Valuation Date September 30	Funded Ratio (Market Value)	Retiree Liabilities / Total Liabilities	UAAL / DB Plan Payroll#	Market Value of Assets / DB Plan Payroll#	Total AAL / DB Plan Payroll#	Portfolio Std Dev	Portfolio Std Dev % of DB Plan Payroll#
2014	48 %	0.75	6.97	6.16	12.78	n/a	n/a
2015	52 %	0.83	6.71	7.61	14.51	n/a	n/a
2016	54 %	0.84	6.67	7.87	14.66	n/a	n/a
2017	56 %	0.84	6.20	7.79	13.81	10.79%	84%

*# Ratio is based on base wages starting in 2015 and pensionable wages in prior years.*

Short-term fluctuations in the Risk Measures will occur due to experience, plan changes, and assumption and method changes. Long-term expectations are described below.

**Funded Ratio (Market Value):** The funded ratio is the most widely known measure of a plan's financial strength, but the trend in the funded ratio is much more important than the absolute ratio. The funded ratio should trend to 100%; for WCERS, it is expected to trend toward 100% by September 30, 2028 under the current Funding Policy. As it approaches 100%, it is important to reevaluate the level of investment risk in the portfolio and potentially to reevaluate the assumed rate of return.

**Retiree Liabilities / Total Liabilities:** The ratio of retiree liabilities to total accrued liabilities gives an indication of the maturity of the system. As the ratio increases, cash flow needs increase, and liquidity needs of the portfolio change. A ratio on the order of 0.50 indicates a maturing system; a ratio approaching 1.00 indicates a closed system or another special situation.

**UAAL / Payroll:** The ratio of the unfunded actuarial accrued liability to payroll is expected to trend toward 0% by September 30, 2028 under the current Funding Policy.

**Market Value of Assets / Payroll and Total AAL / Payroll:** The ratios of liabilities and assets to payroll give an indication of both maturity and volatility. Many systems have ratios between 5 and 7. Ratios significantly above that range may indicate difficulty in supporting level percent-of-payroll financing, unless the assets are very conservatively invested. As the funded ratio increases, the Market Value of Assets / Payroll ratio is expected to converge to the ratio of Total AAL / Payroll.

**Portfolio Standard Deviation % of Payroll:** This measure illustrates the impact of a one standard deviation change in the investment return as a percent of payroll. Investment return experience other than expected ultimately affects the employer contribution rates. The higher the ratio of this risk metric, the greater the expected volatility in employer contribution rates. Absent changes in the investment policy, this metric is expected to increase as the assets grow to 100% of the AAL. As of September 30, 2017, this risk measure is calculated to be 84% (based on the ten-year annualized standard deviation times the Market Value of Assets divided by the active member payroll).

## CHAPTER 3 – ACTUARIAL FUNDING POLICY

### SECTION 2:301- INTRODUCTION.

#### (A) Purpose

(1) This document and the attached glossary of terms comprise the Actuarial Funding Policy for the Wayne County Employees' Retirement System (WCERS). The purpose of this Actuarial Funding Policy (Funding Policy) for the Defined Benefit Plan is to establish the funding objectives and policy set by the Retirement Commission for WCERS. The Retirement Commission establishes this Funding Policy to help ensure the systematic funding of future benefit payments for members of WCERS.

#### (B) Act 314

(1) Section 20m of the Public Employee Retirement System Investment Act, Public Act 314 of 1965, as amended ("Act 314") [MCL § 38.1140m], provides for the Retirement Commission's duties and responsibilities with respect to determining and certifying the annual required employer contribution to the Retirement System in relevant part as follows:

(a) The governing board vested with the general administration, management, and operation of a system or other decision-making body that is responsible for implementation and supervision of any system shall confirm in the annual actuarial valuation required under section 20h and the summary annual report required under section 13 that each system under this act provides for the payment of the required employer contribution as provided in this section and shall confirm in the summary annual report that the system has received the required employer contribution for the year covered in the summary annual report. The required employer contribution is the actuarially determined contribution amount. **An annual required employer contribution in a system under this act shall consist of a current service cost payment and a payment of at least the annual accrued amortized interest on any unfunded actuarial liability and the payment of the annual accrued amortized portion of the unfunded principal liability.** For fiscal years that begin before January 1, 2006, the required employer contribution shall not be determined using an amortization period greater than 40 years. **Except as otherwise provided in this section, for fiscal years that begin after December 31, 2005, the required employer contribution shall not be determined using an amortization period greater than 30 years. . . .** In a plan year, any current service cost payment may be offset by a credit for amortization of accrued assets, if any, in excess of actuarial accrued liability. A required employer contribution for a system administered under this act shall allocate the actuarial present value of future plan benefits between the current service costs to be paid in the future and the actuarial accrued liability. The governing board vested with the general administration, management, and operation of a system or other decision-making body that is responsible for implementation and supervision of a system shall act upon the recommendation of an actuary and the

## **CHAPTER 3 – ACTUARIAL FUNDING POLICY**

board and the actuary shall take into account the standards of practice of the actuarial standards board of the American academy of actuaries in making the determination of the required employer contribution.

[Emphasis added].

### **(C) GASB**

(1) In 2012, the Governmental Accounting Standards Board (GASB) approved two new financial reporting standards. GASB Statement No. 67, “Financial Reporting for Pension Plans” replaces the requirements of Statement No. 25. GASB Statement No. 68, “Accounting and Financial Reporting for Pensions” replaces the requirements of Statements No. 27 and No. 50. Prior to the changes, the Annual Required Contribution (ARC) rate was used as a basis for funding decisions. The new GASB statements separate accounting cost (expense) from funding cost (contributions), necessitating the creation of this Funding Policy.

### **SECTION 2:302 - FUNDING OBJECTIVES.**

#### **(A) General**

- (1) Maintain a targeted funded ratio of 100%.
- (2) Maintain adequate assets so that current plan assets plus future contributions (Employer and Member) and investment earnings should be sufficient to fund all benefits expected to be paid to members and their beneficiaries.
- (3) Maintain stability of employer contribution rates, consistent with these funding objectives.
- (4) Maintain public policy goals of accountability and transparency. Each policy element is clear in intent and effect, and each should allow an assessment of whether, how and when the funding requirements of the plan will be met.
- (5) Monitor material risks to assist in any risk management strategies the Retirement Commission deems appropriate.
- (6) Promote intergenerational equity. Each generation of members and employers should incur the cost of benefits for the employees who provide services to them, rather than deferring those costs to future members and employers.
- (7) Provide a reasonable margin for adverse experience to help offset risks.
- (8) Review investment return assumption, potentially in conjunction with a periodic asset/liability study and in consideration of the Retirement Commission’s risk profile.
- (9) Continue progress of systematic reduction of the Unfunded Actuarial Accrued Liabilities (UAAL).

## **CHAPTER 3 – ACTUARIAL FUNDING POLICY**

### **SECTION 2:303 - ELEMENTS OF ACTUARIAL FUNDING POLICY.**

#### **(A) Actuarial Cost Method**

(1) The Individual Entry Age Normal actuarial cost method of valuation shall be used in determining Actuarial Accrued Liability (AAL) and Normal Cost in accordance with Section 141-36 of the Retirement Ordinance. Differences in the past between assumed experience and actual experience (“actuarial gains and losses”) shall become part of the AAL. The Normal Cost shall be determined on an individual basis for each active member.

#### **(B) Asset Smoothing Method**

(1) The investment gains or losses of each valuation period, resulting from the difference between actual investment return and assumed investment return, shall be recognized annually in level amounts over a period not to exceed 4 years in calculating the Funding Value of Assets. Regardless of the results obtained from the smoothing method described above, the Funding Value of Assets shall not diverge from the Market Value of Assets by more than 20% (corridor). Based upon consultation with the Actuary, the Retirement Commission may combine bases (scheduled recognition of prior gains and losses) in order to reset the Funding Value of Assets to be equal to the Market Value of Assets when the difference between Market Value of Assets and Funding Value of Assets is 5% or less of Market Value of Assets.

#### **(C) Amortization Method**

- (1) A level percent of payroll amortization method shall be used to systematically pay off the UAAL over a closed amortization period not to exceed 30 years as required under Section 20m of Act 314 (MCL § 38.1140m).
- (2) The amortization period for unfunded accrued liabilities shall be set in a manner to ensure that the plan will be 100% funded as soon as reasonably possible. Starting in conjunction with the actuarial valuation dated September 30, 2014 (determines contribution for Fiscal Year 2016), the amortization period shall be decreased by two (2) years annually. In conjunction with the first valuation report employing a fifteen (15) year amortization period, the Retirement Commission may elect to create a new fifteen (15) year amortization schedule for unfunded liabilities arising during that valuation and subsequent valuations, and to continue the amortization of preexisting unfunded liabilities to their scheduled end date.
- (3) Unfunded liabilities associated with benefit changes or assumption changes shall be funded over a period not exceeding 10 years.
- (4) Unfunded liabilities arising from benefit increases provided to retirees or in conjunction with early retirement incentive programs offered by the employer shall be separately funded over a period not exceeding 5 future years.

## **CHAPTER 3 – ACTUARIAL FUNDING POLICY**

- (5) In order to stabilize contributions, the Retirement Commission may from time to time elect to combine separate amortization schedules arising under subparagraphs (3) and (4) into a single schedule over the average remaining amortization period being used.
- (6) In the event that the Plan's assets exceed the Plan's liabilities, all amortization schedules other than those related to benefit changes for retirees or early retirement incentive programs offered by the employer shall be considered completed and employer contributions will be set based upon the Normal Cost plus the completion of any remaining amortizations due to benefit changes for retirees or early retirement incentive programs offered by the employer, without regard to such overfunding.

### **(D) Risk Management**

#### **(1) Actuarial Assumption Changes**

- (a) The actuarial assumptions used for funding shall be those last adopted by the Retirement Commission based on the most recent experience study and upon the advice and recommendation of the Actuary. The Retirement Commission shall direct the actuary to conduct an experience study at least every five years. The results of the study shall be the basis for the actuarial assumptions recommended to the Retirement Commission.
- (b) The actuarial assumptions can be updated during the five-year period between experience studies, as advised by the Actuary, if significant plan design changes or other significant events occur.

#### **(2) Risk Control**

- (a) The Retirement Commission shall carefully monitor the risk measures outlined below and shall consider steps to mitigate risk, with particular regard to funded ratio increases. Risk mitigation may involve a reduction in the assumed rate of investment return. Examples of risk mitigating techniques include, but are not limited to:
  - i. Review asset allocation with investment advisors and actuary with a goal of reducing the standard deviation of the portfolio return once WCERS becomes fully (100%) funded.
  - ii. Reduce asset-liability mismatching.
  - iii. Should such de-risking or future unfavorable experiences cause unfunded liabilities to arise again, such liabilities shall be funded over a closed period of 20 future years.

#### **(3) Risk Measures**

- (a) The following risk measures will be annually determined by the Retirement System's Actuary to provide quantifiable measurements of risk and its movement over time:

### CHAPTER 3 – ACTUARIAL FUNDING POLICY

- i. Funded ratio (assets / accrued liabilities)
- ii. Average UAAL amortization period (years required to pay down the UAAL based on current funding schedule)
- iii. Total UAAL / Total Defined Benefit Plan Active Member Payroll - Measures the risk associated with contribution decreases relative impact on the ability to fund the UAAL. A decrease in this measure indicates a decrease in contribution risk.
- iv. Total Assets / Total Defined Benefit Plan Active Payroll - Measures the risk associated with the ability to respond to asset experience through adjustments in contributions. A decrease in this measure indicates a decrease in asset risk.
- v. Total AAL / Total Defined Benefit Plan Active Payroll - Measures the risk associated with the ability to respond to liability experience through adjustments in contributions. A decrease in this measure indicates a decrease in experience risk. This also provides a long-term measure of the asset risk in situations where the WCERS has a funded ratio below 100%.

#### (4) Closed Group Funding

- (a) Closed groups arise when new hires of a group participating in one of the Defined Benefit Plans of the WCERS are no longer allowed to participate in said defined benefit plan, or when active members of a group are transferred out of the WCERS, leaving only retirees and vested former members in the WCERS.
- (b) The liabilities of employers sponsoring closed groups will only be considered discharged if the pension obligations (actuarial accrued liabilities) for the sub- group(s) (retirees, beneficiaries, active vested and non-vested and deferred vested members) leaving the WCERS are transferred to the employer/successor plan or, if such obligations remain with the WCERS, assets sufficient to fund the pension obligation (actuarial accrued liabilities) of any such sub-group(s) either remain and/or are deposited into the WCERS through a lump sum payment made by the employer associated with the closed group. Such transfers and payments will be based on amounts required by the Retirement Commission, based on consultation with the WCERS Actuary. Any such transfers and payments shall include a margin for adverse experience that may occur for the WCERS in the future, as follows:
  - i. **Closed Groups leaving liability with WCERS.** All calculations related to liabilities remaining with the WCERS shall be based on the Market Value of assets on deposit with the WCERS at the time of the transfer, and the Actuarial Accrued Liability calculated based on a risk-free rate of investment return and such other actuarial assumptions and methods as the Actuary and Retirement Commission deem appropriate for such purpose. Any sub-groups remaining in the WCERS will need to be 100% funded based on current assets and a risk-free rate of investment return but not

### **CHAPTER 3 – ACTUARIAL FUNDING POLICY**

less than 150% funded based on current assets and actuarial assumptions used in the regular valuation of WCERS. Current assets shall include any required transfers and payments from the employer/successor plan.

- ii. **Closed Groups transferring liability from WCERS.** All calculations with respect to liabilities being transferred to the employer or to a successor system or to any assets transferred from the WCERS in conjunction with a release of liability (transferred to the employer/successor plan) will be in an amount equal to 80% of the Funded Ratio of the Actuarial Accrued Liability to be transferred based on the actuarial assumptions used in the regular valuation of WCERS. Such 80%, however, shall not be permitted to result in a transfer of assets that exceeds the actuarial accrued liabilities being transferred.

<b>W.C.E.R.S. Policy – Actuarial Funding Policy</b>	
<b>Category: Board Governance</b>	
<b>Date Adopted: 12/19/2014</b>	<b>Date(s) Amended:</b>
<b>Legal Review By: VanOverbeke, Michaud &amp; Timmony, P.C.</b>	<b>Date(s) Reviewed: 4/20/2017</b>

## CHAPTER 3 – ACTUARIAL FUNDING POLICY

### APPENDIX A GLOSSARY

1. **Actuarial Accrued Liability (AAL):** The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future Normal Cost. Sometimes referred to as “accrued liability” or “past service liability.”
2. **Actuarial Assumptions:** Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement actuarial assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic actuarial assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.
3. **Actuarial Cost Method:** A mathematical budgeting procedure for allocating the dollar amount of the “actuarial present value of future plan benefits” between the actuarial present value of future Normal Cost and the actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”
4. **Actuarial Gain (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, in accordance with the actuarial cost method being used. For example, if during a given year the assets earn more than the investment return assumption, the amount of earnings above the assumption will cause an unexpected reduction in UAAL, or “actuarial gain” as of the next valuation. These include contribution gains and losses that result from actual contributions made being greater or less than the level determined under the policy.
5. **Actuary:** A person who is trained in the application of probability and compound interest to solve problems in business and finance that involve payment of money in the future, contingent upon the occurrence of future events. Most actuaries in the United States are Members of the American Academy of Actuaries (MAAA). For the purpose of this Funding Policy, Actuary shall only refer to the WCERS actuary.
6. **Amortization:** Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.
7. **Entry Age Normal Actuarial Cost Method:** A funding method that calculates the Normal Cost as a level percentage of pay over the working lifetime of the plan’s members.
8. **Experience Study:** An actuarial investigation of demographic and economic experiences of the WCERS during the period studied. The investigation is made for the purpose of updating the actuarial assumptions used in valuing the actuarial liabilities.
9. **Funding Value of Assets:** The value of current plan assets recognized for valuation purposes. Generally based on a phased-in recognition of all or a portion of market related investment return. Sometimes referred to as Actuarial Value of Assets.
10. **Market Value of Assets:** The fair value of plan assets as reported in the plan’s audited financial statements.

### CHAPTER 3 – ACTUARIAL FUNDING POLICY

11. **Normal Cost (NC):** The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as “current service cost.” Any payment toward the unfunded actuarial accrued liability is not part of the Normal Cost.
12. **Unfunded Actuarial Accrued Liability (UAAL):** The positive difference, if any, between the actuarial accrued liability and valuation assets. Sometimes referred to as “unfunded accrued liability.”