

**ARKANSAS TEACHER RETIREMENT SYSTEM**  
**ANNUAL ACTUARIAL VALUATION OF**  
**ACTIVE AND INACTIVE MEMBERS**  
**JUNE 30, 2016**

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December 12, 2016

Board of Trustees  
Arkansas Teacher Retirement System  
Little Rock, Arkansas

Dear Board Members:

Presented in this report are the results of the *Annual Actuarial Valuation of non-retired members as of June 30, 2016*. The June 30<sup>th</sup> annual valuation of retired lives receiving monthly benefits indicates the liabilities for future benefit payments to existing retirees. These liabilities are covered in a separate report. These are also covered briefly in this report on page B-4.

The purposes of the valuation are to measure the System's funding progress and to determine the sufficiency of the employer contribution rate for the fiscal year ending June 30, 2018. This report should not be relied on for any purpose other than the purposes described herein. Determinations of financial results associated with the benefits described in this report for purposes other than those identified above may be significantly different.

This 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. GRS is not responsible for unauthorized use of this report.

The valuation was based upon census data and financial information provided by the System's administrative staff. Preparation of this data requires considerable staff time. The helpful cooperation of the Arkansas Teacher Retirement System staff in furnishing the data is acknowledged with appreciation. We checked for internal and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the data provided by ATRS.

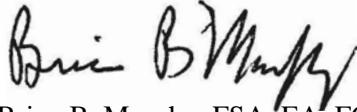
This report was prepared using certain assumptions approved by the Board under Section 24-7-305 of the Arkansas Code. The actuarial assumptions used for valuation purposes are summarized in Section G. These assumptions reflect experience during the period July 1, 2005 to June 30, 2010.

The findings in this report are based on data and other information through June 30, 2016. 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; and changes in plan provisions or applicable law. The scope of an actuarial valuation does not contain an analysis of the potential range of such future measurements.

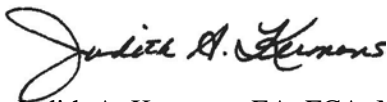
To the best of our knowledge, this report is complete and accurate and was made in accordance with standards of practice promulgated by the Actuarial Standards Board of the American Academy of Actuaries. The actuarial assumptions used for the valuation produce results which, individually and in the aggregate, are reasonable.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. Brian B. Murphy, Judith A. Kermans and Heidi G. Barry 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. The actuaries submitting this report are independent of the plan sponsor.

Respectfully submitted,



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



Judith A. Kermans, EA, FCA, MAAA



Heidi G. Barry, ASA, MAAA

BBM/JAK/HGB:sac

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## **SECTION A**

### **EXECUTIVE SUMMARY**

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## EXECUTIVE SUMMARY

**General Financial Objective.** Section 24-7-401 (a) of the Arkansas Code provides as follows (emphasis added):

- (1) The financial objective of the Arkansas Teacher Retirement System is to establish and receive contributions that expressed as percentages of active member payroll will **remain approximately level from generation to generation of Arkansas citizens.**
- (2) Contributions received each year shall be sufficient:
  - (A) To **fully cover the costs of benefit commitments** being made to members for their service being rendered **in that year**; and
  - (B) To **make a level payment** that if paid annually over a reasonable period of future years will **fully cover the unfunded costs** of benefit commitments for service previously rendered.

**Arkansas Teacher Retirement System Status:** Based upon the results of June 30, 2016 actuarial valuations, *ATRS is satisfying the financial objective of level-contribution-percent financing.*

This report contains the results of the June 30, 2016 valuation. The table below shows a summary of the data used in the valuation. This data was the basis for determining valuation results and recommended employer contribution rates.

	Number	Average	Type of Average
Active not in T-DROP	68,368	\$37,235	Pay
Active in T-DROP	3,864	61,943	Pay
Deferred Vested	12,937	5,577	Annual Projected Benefit
Retired	43,095	22,830	Annual Current Benefit
<b>Total Members</b>	<b>128,264</b>		

Included in the 2016 valuation were 3,829 reemployed retirees (included in the Retired data file) with total earnings of \$103.4 million. ATRS receives 14% employer contributions on these individuals per Arkansas Code Section 24-7-708. The actuarial valuation assumes the number of working members will remain constant at the current level. In recent years the total number of working members has decreased. A decreasing population means less contribution income for the retirement system than expected and can lead to funding difficulty in extreme cases.

The June 30, 2016 valuation results are used to test the adequacy of the statutory contribution rate for Fiscal Year 2018.

### Employer Contribution Rates for Fiscal Years Ending June 30, 2018 and 2017 (Prior Year)

Computed Contributions for	Percents of Active T-DROP and Return to Work Payroll			
	Teachers	Support	Combined	Prior Year
Normal Cost	12.29%	10.71%	<b>11.83%</b>	11.80%
Average Member Contributions	5.43%	4.15%	<b>5.05%</b>	4.99%
Net Employer Normal Cost	6.86%	6.56%	<b>6.78%</b>	6.81%
Unfunded Actuarial Accrued Liabilities			<b>7.22%</b>	7.19%
<b>Employer Contribution Rate</b>			<b>14.00%</b>	14.00%
<b>Amortization Years</b>			<b>29.4</b>	32.5
<b>Funded Ratio</b>			<b>81.0%</b>	79.6%

## EXECUTIVE SUMMARY - (CONTINUED)

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The amortization period this year is 29 years, a decrease from last year's period of 33 years. The decrease occurred primarily due to recognition of prior asset gains in the Actuarial Value of Assets resulting in a Funding Value rate of return of 9.23%, compared to an assumed 8.0% return. The Market Value rate of return was 0.19%<sup>#</sup>. Investment gains and losses that occur each year are smoothed in over a 4-year period. As of June 30, 2016, the actuarial value of assets exceeded the market value of assets by approximately \$680 million.

The Arkansas Teacher Retirement System remains stable with an 81.0% funded position as of June 30, 2016. Unless there is an investment gain in Fiscal Year 2017, the amortization period is likely to increase in the next valuation due to scheduled phase-in of investment losses.

Please note that 30 years should be viewed as a maximum period for amortizing the unfunded liability, rather than the goal. If a 30-year period is used, the UAAL grows in \$ amount for many years, although it declines as a % of payroll if all assumptions, including payroll growth, are met. This situation is referred to as "negative amortization" and is falling out of favor. Based upon ATRS' assumptions, it takes about an 18-year period to avoid the "negative amortization." Therefore, it would really be desirable to have a lower amortization period than 30 years.

GRS is in the process of completing an Experience Study. The study will focus on experience related to:

- Investments
- Retirements
- Deaths/Mortality (actives, vested and retired people)
- Quits
- Other activity (option factors, service purchases) to ensure continued cost neutrality

Depending on the results of the study, we may make a recommendation to lower the assumed rate of return. This will put upward pressure on the amortization period.

*# The actuary calculated this return figure which may not exactly match the investment consultant's figure.*

## **EXECUTIVE SUMMARY (CONTINUED)**

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### **Other Observations**

#### **General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status**

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 8.0% on the actuarial value of assets), it is expected that:

- 1) The unfunded actuarial accrued liabilities will be fully amortized after 29 years.
- 2) The funded status of the plan will increase gradually towards a 100% funded ratio.
- 3) The unfunded accrued liability will increase for an extended period before beginning to decline.

#### **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 value of assets. Unless otherwise indicated, with regard to any funded status measurements presented 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 the 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. 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.

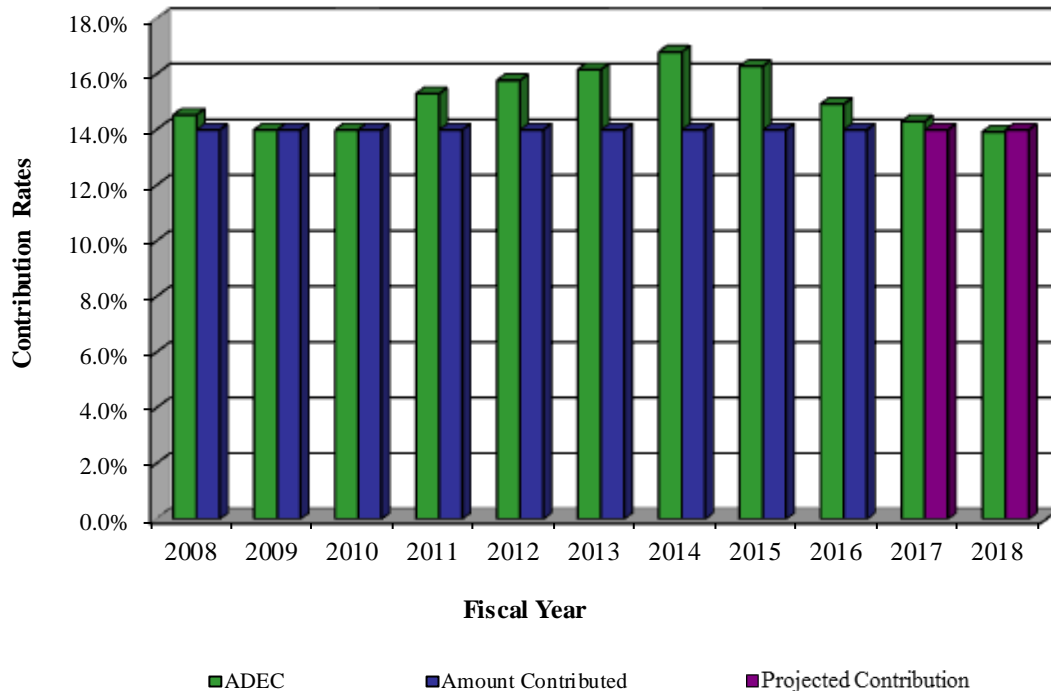
#### **Limitations of Project Scope**

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.



## EXECUTIVE SUMMARY - (CONCLUDED)

The following graph shows a history of the amounts contributed vs. the actuarially determined employer contribution (ADEC), based on a maximum amortization period of 30 years, and a projection of the amounts that are expected to be contributed in FY 2017 and FY 2018.



Since the amortization period exceeded 30 years in the 2006 and 2009-2015 valuations, the amount contributed is less than the ADEC in FY 2008, FY 2011-2016, and will also be less than the ADEC in FY 2017 (unless an increase in the contribution rate occurs). In FY 2009 (June 30, 2007 valuation) and FY 2010 (June 30, 2008 valuation), the amount contributed equaled the ADEC. The actual contribution rate will be slightly more than the ADEC in FY 2018 (June 30, 2016 valuation), since the amortization period is only 29 years.

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**SECTION B**  
VALUATION RESULTS

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**EMPLOYER CONTRIBUTION RATE COMPUTED AS OF JUNE 30, 2016  
FOR THE FISCAL YEAR ENDING JUNE 30, 2018**

Computed Contributions for	Percents of Active Member Payroll			
	Teachers	Support	Combined	Prior Year
Normal Cost				
Age & Service Annuities	9.63%	7.19%	<b>8.90%</b>	8.88%
Deferred Annuities	1.61%	2.13%	<b>1.77%</b>	1.77%
Survivor Benefits	0.19%	0.16%	<b>0.18%</b>	0.18%
Disability Benefits	0.47%	0.42%	<b>0.46%</b>	0.46%
Refunds of Member Contributions	0.39%	0.81%	<b>0.52%</b>	0.51%
Total	12.29%	10.71%	<b>11.83%</b>	11.80%
Average Member Contributions	5.43%	4.15%	<b>5.05%</b>	4.99%
Net Employer Normal Cost	6.86%	6.56%	<b>6.78%</b>	6.81%
Unfunded Actuarial Accrued Liabilities			<b>7.22%</b>	7.19%
<b>Employer Contribution Rate</b>			<b>14.00%</b>	14.00%
<b>Amortization Years</b>			<b>29.4</b>	32.5

The amortization period is the number of years it will take to pay off the unfunded liability of \$3.6 billion assuming that the employer contribution rate remains at the 14% of payroll level. Since 2000, the period has varied from a low of 19 years to a high of over 100 years. Unless there is an investment gain in FY 2017, the amortization period is likely to increase in the next valuation. Also, any new assumptions adopted by the Board will likely change the amortization period. Please see additional comments regarding the amortization period on page A-2.

**COMPUTED EMPLOYER CONTRIBUTION RATES  
10-YEAR COMPARATIVE STATEMENT**

Valuation Date June 30	Active Members in Valuation **		Average Annual Pay		Consumer Price (Inflation) Index		Employer Contributions	
	Number	Annual Payroll (\$Millions)			Value	% Change	Computed Financing Period	Total Employer Rate
			Amount	% Change				
2007#	69,226	\$ 2,191	\$ 31,645	3.0 %	\$ 208.4	2.7 %	19	14.0 %
2008#	70,172	2,268	32,319	2.1 %	218.8	5.0 %	21	14.0 %
2009	70,655	2,318	32,804	1.5 %	215.7	(1.4)%	45	14.0 %
2010#	72,208	2,381	32,980	0.5 %	218.0	1.1 %	52	14.0 %
2011#*	76,780	2,728	35,534	7.7 %	225.7	3.6 %	66	14.0 %
2012	75,627	2,714	35,891	1.0 %	229.5	1.7 %	over 100	14.0 %
2013#	74,925	2,727	36,400	1.4 %	233.5	1.8 %	70	14.0 %
2014	74,352	2,758	37,092	1.9 %	238.3	2.1 %	39	14.0 %
2015	72,919	2,777	38,088	2.7 %	238.6	0.1 %	33	14.0 %
2016	72,232	2,785	38,557	1.2 %	241.0	1.0 %	29	14.0 %

\* Revised assumptions.

# Legislated benefit or contribution rate changes.

\*\* Beginning with the June 30, 2011 valuation, active members include T-DROP members and payroll. ATRS also receives contributions on return to work retirees, but they are not included on this schedule.

The payroll has been essentially flat since 2011. In other words, the actuarial assumption of 3.25% annual growth in payroll is not being met. This is at least partly due to a drop in covered population (even considering return to work retirees). This will be a matter for attention in the experience study.

**COMPUTED ACTUARIAL LIABILITIES  
AS OF JUNE 30, 2016**

Actuarial Present Value of	(1) Total Present Value	Entry Age Actuarial Cost Method	
		(2) Portion Covered by Future Normal Cost Contributions	(3) Actuarial Accrued Liabilities (1)-(2)
Age and service retirement allowances based on total service likely to be rendered by present active members.	\$ 7,555,485,119	\$2,048,720,503	\$ 5,506,764,616
Age and service retirement allowances based on total service likely to be rendered by present T-DROP members.	1,989,769,834	27,833,892	1,961,935,942
Vested Deferred Benefits likely to be paid present active and inactive members.	1,241,613,762	404,883,108	836,730,654
Survivor benefits expected to be paid on behalf of present active members.	118,183,108	42,012,297	76,170,811
Disability Benefits expected to be paid on behalf of present active members.	200,701,401	102,861,963	97,839,438
Refunds of Member contributions expected to be paid on behalf of present active members.	16,483,971	113,881,739	(97,397,768)
Benefits payable to present retirees and beneficiaries.	10,429,943,985	0	10,429,943,985
<b>Total</b>	<b>\$21,552,181,180</b>	<b>\$2,740,193,502</b>	<b>\$18,811,987,678</b>
Applicable Assets	15,238,522,015	0	15,238,522,015
<b>Liabilities to be Covered by Future Contributions</b>	<b>\$ 6,313,659,165</b>	<b>\$2,740,193,502</b>	<b>\$ 3,573,465,663</b>

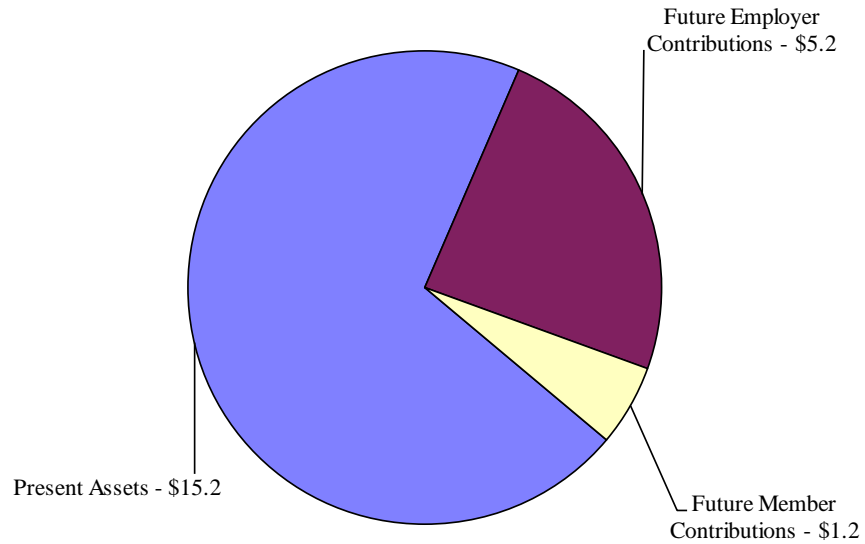
**LIABILITIES FOR RETIREES JULY 1, 2016**  
**TABULATED BY TYPE OF BENEFIT BEING PAID**

Type of Annuity	Liabilities July 1, 2016		
	Men	Women	Totals
<b>RETIREMENT RESERVE ACCOUNT</b>			
Age & Service Annuities			
Option 1 (Straight Life)	\$ 1,271,647,203	\$ 5,689,200,749	\$ 6,960,847,952
Option A (100% Joint & Survivor)	737,641,874	725,097,281	1,462,739,155
Option B (50% Joint & Survivor)	364,493,857	537,389,967	901,883,824
Option C (10 Years Certain & Life)	33,281,123	138,803,920	172,085,043
Beneficiaries	43,649,671	138,382,064	182,031,735
Total Age & Service	2,450,713,728	7,228,873,981	9,679,587,709
Disability Annuities			
Option 1	106,204	265,418,434	265,524,638
Option A	1,460,944	41,411,745	42,872,689
Option B	16,594,374	11,781,925	28,376,299
Option C	1,664,576	4,635,512	6,300,088
Beneficiaries	77,908,360	23,611,351	101,519,711
Total Disability	97,734,458	346,858,967	444,593,425
Total Retirement Reserve Account	2,548,448,186	7,575,732,948	10,124,181,134
<b>SURVIVORS' BENEFIT ACCOUNT</b>			
Beneficiaries of Deceased Members	\$ 42,961,507	\$ 55,998,751	\$ 98,960,258
<b>OTHER LIABILITIES</b>			
Act 793	\$ 11,020,710	\$ 6,242,940	\$ 17,263,650
Act 808	11,228,120	4,562,156	15,790,276
<b>RETIREMENT SYSTEM TOTALS</b>			
Total Annuity Liabilities	\$ 2,613,658,523	\$ 7,642,536,795	\$10,256,195,318
Cash Benefit Account Liabilities			69,976,233
Liabilities for Lump Sum Death Benefits			103,772,434
Total			\$10,429,943,985

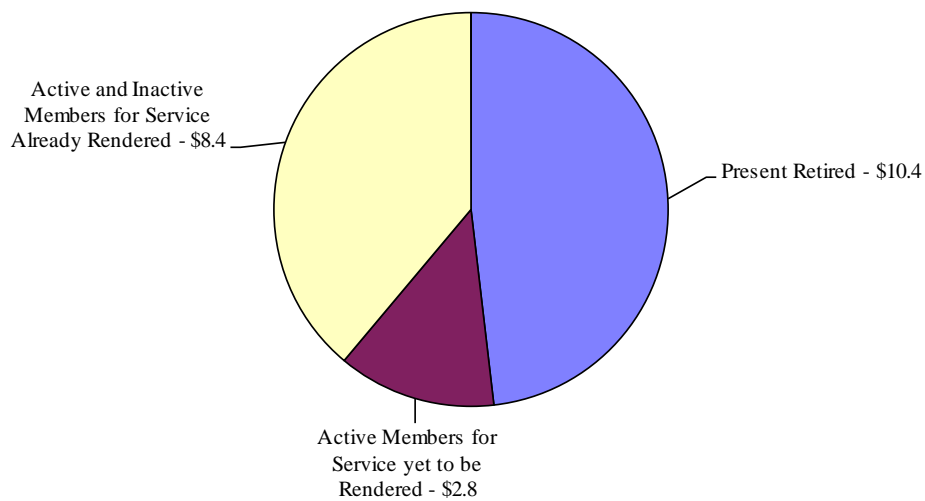
# FINANCING \$21.6 BILLION OF BENEFIT PROMISES FOR PRESENT ACTIVE AND RETIRED MEMBERS JUNE 30, 2016

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### Sources of Funds (\$ Billions)



### Uses of Funds



## SHORT CONDITION TEST

ATRS' funding objective is to meet long term benefit promises through contributions that remain approximately level from year to year as a percent of member payroll. If the contributions to the System 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) Member contributions on deposit; 2) The liabilities for future benefits to present retired lives; 3) The liabilities for service already rendered by members. In a system that has been following the discipline of level percent-of-payroll financing, the liabilities for member contributions on deposit (liability 1) and the liabilities for future benefits to present retired lives (liability 2) will be fully covered by present assets (except in rare circumstances). In addition, the liabilities for service already rendered by members (liability 3) will be partially covered by the remainder of present assets. The larger the funded portion of liability 3, the stronger the condition of the system. Liability 3 being fully funded is unusual.

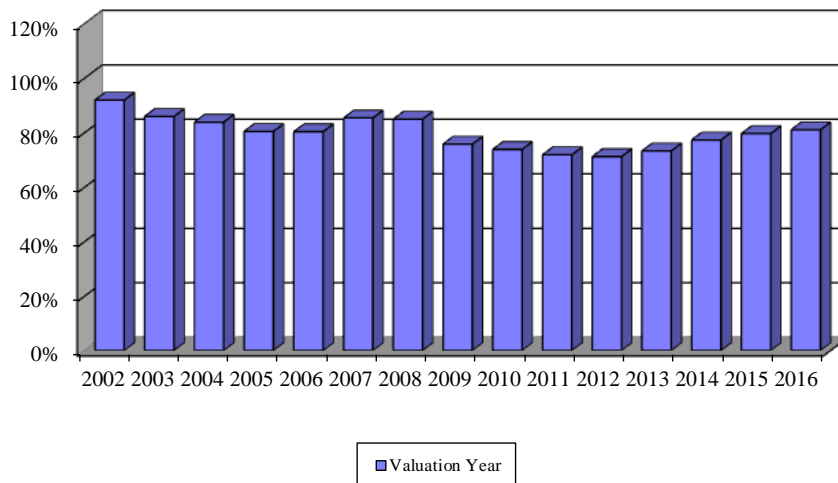
The schedule below illustrates the history of Liability 3 of the System and is indicative of the ATRS objective of following the discipline of level percent-of-payroll financing.

Val. Date June 30	(1) Member Contrib.	(2) Retirees and Benef.	(3) Active and Inactive Members (Employer Financed Portion)	Present Valuation Assets	Portion of Present Values Covered by Present Assets			
					(1)	(2)	(3)	Total
-----\$ Millions-----								
2006	\$ 630	\$ 4,617	\$ 6,376	\$ 9,332	100%	100%	64%	80%
2007#	\$ 679	\$ 4,960	\$ 6,690	\$ 10,519	100%	100%	73%	85%
2008#	732	5,544	7,058	11,319	100%	100%	71%	85%
2009	790	6,041	7,188	10,617	100%	100%	53%	76%
2010#	848	6,516	7,333	10,845	100%	100%	47%	74%
2011#*	929	7,132	7,460	11,146	100%	100%	41%	72%
2012	981	7,649	7,509	11,484	100%	100%	38%	71%
2013#	1,027	8,181	7,510	12,247	100%	100%	40%	73%
2014	1,077	8,777	7,456	13,375	100%	100%	47%	77%
2015	1,128	9,778	7,230	14,434	100%	100%	49%	80%
2016	1,184	10,430	7,198	15,239	100%	100%	50%	81%

\* Revised actuarial assumptions or methods.

# Legislated benefit or contribution rate change.

### Actuarial Value of Assets as a Percent of Accrued Liabilities (Funded Ratio)

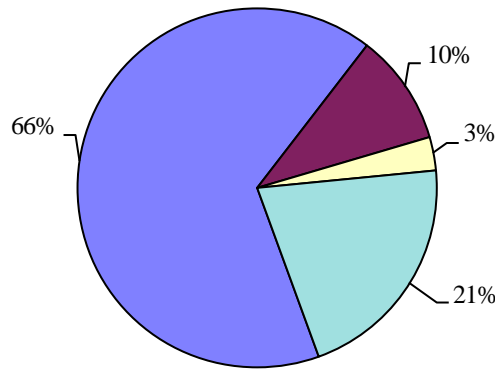
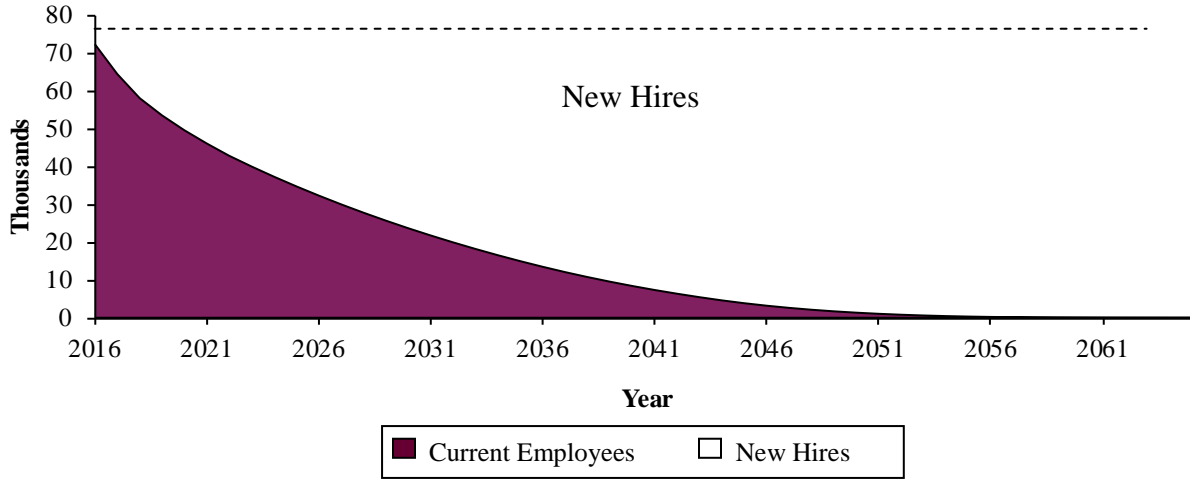




**EXPECTED DEVELOPMENT OF PRESENT POPULATION  
JUNE 30, 2016 (EXCLUDES REHIRED RETIREES)**

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**Population Projection**



■ Retirements   
 ■ Non-Vested Separations   
 ■ Deaths and Disabilities   
 ■ Vested Separations

The charts show the expected future development of the present population in simplified terms. The retirement system presently covers 72,232 active members (includes T-DROP). Eventually, 10% of the population is expected to terminate covered employment prior to retirement and forfeit eligibility for an employer provided benefit. Approximately 87% of the present population is expected to receive monthly retirement benefits. Approximately 3% of the present population is expected to become eligible for death-in-service or disability benefits. Within 9 years, over half of the covered membership is expected to consist of new hires.

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**SECTION C**  
SUMMARY OF BENEFITS

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## SUMMARY OF PROVISIONS

### JUNE 30, 2016

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1. **Voluntary Retirement – A.C.A. § 24-7-701.** A member may retire at age 60 with 5 or more years of credited service, or after 28 years of credited service regardless of age.
2. **Early Retirement – A.C.A. § 24-7-702.** A member who has more than 25 but less than 28 years of credited service and has not attained age 60 years may retire and receive an immediate early retirement annuity. The early annuity is an age & service annuity reduced by the lesser of (i) and (ii) below:
  - (i) 5/12 of 1% multiplied by the number of months by which early retirement precedes completion of 28 years of service, or
  - (ii) 5/12 of 1% multiplied by the number of months by which early retirement precedes the attainment of age 60 years.
3. **Deferred Retirement – A.C.A. § 24-7-707.** An inactive member who has 5 or more years of credited ATRS service will be entitled to an age & service annuity beginning at age 60, provided accumulated contributions are left on deposit with the retirement system.
4. **Disability Retirement – A.C.A. § 24-7-704.** An active member, with 5 or more years of actual ATRS service, who becomes totally and permanently disabled may be retired and receive a disability annuity computed in the same manner as an age & service annuity. In order to qualify for disability retirement, the member must exhibit symptoms of physical or mental incapacitation while the member is employed by a system employer as an active member (Act 973 of 2011). A member who is eligible for age and service retirement (age 60 and 5 years of service or 28 years of service at any age) is no longer eligible to apply for disability retirement and a disability member may not be employed directly or indirectly by an ATRS covered employer, which includes indirect employment through an independent contractor, limited liability company, partnership, corporation or legal entity (Act 493 of 2013). Act 219 of 2015 requires an ATRS disability retiree to obtain a Social Security Administration determination letter finding that the retiree is disabled within 36 months from July 1, 2015, when the member's disability retirement effective date is before July 1, 2015, or the effective date of disability retirement when the member's disability retirement effective date is on or after July 1, 2015. If a member cannot provide the SSA determination letter within the 36 month period, benefits will be terminated, the member will be returned to active service, and all member history will be restored. The

## SUMMARY OF PROVISIONS

### JUNE 30, 2016

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requirement to qualify for SSA disability shall not apply to a disability retiree who is age 57 or older before July 1, 2015, because that member would qualify for age & service benefits prior to requiring the SSA determination of disability. Additionally, the retiree may apply for an extension of the 36 month deadline if the retiree can demonstrate the SSA determination is in progress.

5. **Final Average Salary (FAS) – A.C.A. 24-7-736.** A member's final average salary is the average of the annual salaries paid during the period of 3 years of credited service producing the highest annual average. Beginning July 1, 2009, no salary paid in any year which is utilized in the computation of the members' final average salary, shall exceed 120% of the salary earned in the preceding year. If a member has a break in covered employment for eight years or more between any of the member's highest salary years used in the calculation of final average salary, then anti-spiking checking does not apply to the next highest year in the formula (Act 225 of 2011 – effective date of law July 27, 2011). There will no longer be any stacking of part-time college/teaching work for school district employees (Act 513 of 2011). Act 555 of 2013 limits the use of a reciprocal system's calculation of FAS if the ATRS member's reciprocal service credit is less than the number of years used to calculate the FAS for ATRS. Beginning July 1, 2014, if a member has less than three years of reciprocal service (the number of years used to calculate ATRS' FAS), then ATRS will obtain the salary and service credit from the reciprocal system, and use that salary and service as if it had all been earned in ATRS to calculate a FAS for retirement. Act 720 of 2013 made a minor change to final average salary for members who stop work during their last year of employment immediately before retirement.
  
6. **Age & Service Annuity and Disability Annuity – A.C.A. §§ 24-7-705, 24-7-727 (stipend).** The annuity payable will not be less than the total of: years of contributory service times 2.15% of FAS; plus years of non-contributory service times 1.39% of FAS; plus \$900 for all members with 10 or more years of ATRS credited service. For a member who elected to contribute on only the first \$7,800 of each annual salary after June 30, 1969, each annual salary used in computing FAS is limited to a maximum of \$7,800. Act 966 of 2013 allows the ATRS Board to set the contributory multiplier for service credit earned after June 30, 2013, within a range of 1.75% to 2.15%. The noncontributory multiplier for service credit earned after June 30, 2013, may be set within a range of 0.5% and 1.39%. In addition, this act would allow the Board

## SUMMARY OF PROVISIONS

### JUNE 30, 2016

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to set special multiplier rates for the first 10 years of ATRS service earned after June 30, 2013, for both contributory and noncontributory service. After members earn more than 10 years of service after June 30, 2013, the Board may increase the multiplier rates to the standard multiplier rates for all years of service. This act is dependent upon the actuary's certification that the amortization period is in excess of 30 years to pay unfunded liabilities prior to any reduction to the multipliers.

7. **T-DROP – ACA § 24-7-1301-1316.** A member with 28 or more years of service may participate in the Teacher Deferred Retirement Option Plan (T-DROP, Act 1096 of 1995). An amount equal to the amount that would have been paid had the member retired, reduced by 1% for each year of contributory, 1% for each year of reciprocal (Act 162 of 2011) and 6/10% for each year of non-contributory service, is deposited into a T-DROP account. Members who enter T-DROP with less than 30 years of service are subject to an additional 6% reduction for each year less than 30 years. The annual addition to the T-DROP account is increased each year by 3% of the member's annuity at the initial participation date and the account is credited with 2% less than the system's rate of return (but not less than 2%, nor greater than 6% interest on the mean balance) each year. Deposits to T-DROP cease at the earlier of 10 years of T-DROP participation or separation from service. T-DROP participants may continue in covered employment after 10 years of participation, but do not accumulate additional service credit or make member contributions. Beginning July 1, 2010, members who remain in T-DROP for more than 10 years (post 10-year T-DROPers) get interest on T-DROP account balances. The 10-year plus T-DROP interest rate that will be credited to an active members' T-DROP account must be no less than 4% and no greater than 6% as determined by the Board of Trustees. Upon actual retirement, the member may receive the T-DROP account balance in the form of a lump sum or as an additional annuity. Beginning July 1, 2011, the T-DROP distribution may be a combination of both lump sum and annuity allowing members to take a partial annuity along with a corresponding partial lump sum (Act 162 of 2011). For active participants who enter the T-DROP Plan July 1, 2013 or later, the reduction for contributory, reciprocal, and noncontributory service credit is 1% for each year and fractional year of service credit (Act 605 of 2013).
8. **Post-Retirement Increases – A.C.A. §§ 24-7-713, 24-7-727 (compound COLA).** Each July 1, annuities are adjusted to be equal to the base annuity times 100% plus 3% for each full year in the period from the effective date of the base annuity to the current July 1. The base annuity is the amount of the member's annuity on the later of July 1, 2001 or the effective date of retirement, as re-determined by Acts 396 of 1999 and 992 of 1997. The July 1, 2009 cost of living adjustment for retirees was compounded. The annuity was adjusted by multiplying 3% times the June 30, 2009 retirement benefit amount. After it was calculated on July 1, 2009, the base amount

## SUMMARY OF PROVISIONS

### JUNE 30, 2016

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was reset to be the July 1, 2009 benefit amount. Future cost of living raises will be established by the new updated base amount. Future cost of living adjustments will be evaluated on an annual basis to determine if a simple or compound cost of living increase will be given, depending on the financial condition of the System. Act 967 of 2013 gives the ATRS Board authority to reverse the compounding of a benefit and reset the base amount to the pre-compounding amount. If this were to occur, it would include participants in the T-DROP plan. The future benefits of a member would not be reduced to recover any benefits paid to a member as a result of the compounding. In addition, the member's benefit on the date of the reversal would not be impacted, but future COLA's would be based upon the reset base amount. *This act is dependent upon the actuary's certification that the amortization period is in excess of 30 years to pay unfunded liabilities prior to any reversal of the compounding of the COLA.*

9. **Survivor Benefits – A.C.A. § 24-7-710.** Upon the death of an active member, who has 5 or more years of credited service (which includes the year immediately preceding the death), the following annuities are payable:

- (a) The surviving spouse receives an annuity computed in the same manner as if the member had (i) retired the date of his death with entitlement to an annuity, (ii) elected Option A - 100% Survivor Annuity, and (iii) nominated the spouse as joint beneficiary. If the member has attained age 60 and has acquired 5 years of credited service or has acquired 25 years of credited service regardless of age, the annuity begins immediately; otherwise the annuity begins the month following the date the member would have attained age 60. Under certain circumstances, a lump sum distribution may be made to the beneficiary(ies) of the deceased member.
- (b) Each dependent child receives an annuity in an amount equal to 20% of the highest salary received in covered employment (including the year of death). If there are 3 or more dependent children, the aggregate amount of the dependent children's annuity shall not exceed 60% of the member's highest salary received in covered employment and shall be divided equally among the dependent children. A child is dependent until the child's death, marriage, or attainment of age 18 (age 23 if the child is a full-time student).

Beginning July 1, 2013, survivors have three months to file an application for benefits if the benefits are to begin the month of the member's death. Otherwise, the benefits will begin the month that the survivor application is filed with the system (Act 571 of 2013).

## SUMMARY OF PROVISIONS

### JUNE 30, 2016

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- 10. Lump Sum Death Benefit – A.C.A. § 24-7-720.** Beneficiaries of deceased active members or retirees with 10 or more years of ATRS credited service are eligible to receive a lump sum death benefit of up to \$10,000 (\$6,667 for non-contributory service-benefit). The amount will be prorated for members who have both contributory service and non-contributory service. Members with 15 or more years of contributory service will receive the full \$10,000 (Act 977 of 2011).
- 11. Members' Contributions – A.C.A. § 24-7-406.** Members contribute 6% of their salaries (by individual election, members who became members before July 1, 1971 could contribute on only the first \$7,800 of their annual salaries). If a member leaves service prior to becoming eligible to retire, the accumulated contributions are returned upon request. No interest is credited to a member's contributions for the first year of membership; after 1 year, interest credits are 2% annually (effective June 30, 2010). Effective June 30, 2012, the interest credit is 1%. Effective July 1, 1986, a non-contributory plan was created. Effective July 1, 1993, all new members including any former active members were automatically non-contributory members. By individual election, members could choose to contribute. The benefit accrual rate for non-contributory members is reduced. Effective July 1, 1999 the default choice for new members is contributory. All current members had until July 1, 2000 to make a final election. Effective July 1, 1997, all future member contributions are tax-deferred in accordance with §414(h) of the Internal Revenue Code of the United States. Effective July 1, 2005, all non-contributory members whose status changes from support to teacher (contracted for more than 181 days), will become contributory. Effective July 1, 2006 and each July 1 thereafter, members who previously elected to be non-contributory may elect to change to contributory status under Act 385 of 2005. Effective July 1, 2007, all noncontributory members may elect to change to contributory status. The election is irrevocable. Effective July 1, 2009, employer contributions are collected at a rate of 14% on active members, T-DROP participants (even those who work beyond the 10-year participation period), and working retirees (Act 743 of 2009). Act 602 of 2013 allows the ATRS Board to set the member contribution rate between 6% and 7% of salary. *This act is dependent upon the actuary's certification that the amortization period is in excess of 30 years to pay unfunded liabilities prior to any increase in the current contribution rate. The rate for fiscal year 2016 remains at 6%.*
- 12. Act 808 Retirement – A.C.A. § 24-4-732.** Any employee of a state agency who was an active member of the Arkansas Teacher Retirement System on April 8, 1987, and who qualified for retirement before January 1, 1988, could become a member of the Arkansas Public Employees Retirement System and retire from that system. All credited service was transferred to that system

## SUMMARY OF PROVISIONS

### JUNE 30, 2016

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but the member's contributions were retained by the Arkansas Teacher Retirement System and the benefit amount is transferred monthly to the Arkansas Public Employees Retirement System. Each July 1, annuities are adjusted by 3% (compound escalator).

13. **Act 793 Retirement – A.C.A. § 24-4-522.** Any employee who was a member of the rehabilitation services in 1977 was permitted to become a member of the Arkansas Public Employees Retirement System. Liabilities associated with prior service earned through June 30, 1978 remain in the Arkansas Teacher Retirement System. Future service is allocated to the Arkansas Public Employees Retirement System. Each July 1, annuities are adjusted by 3% (compound escalator).

14. **Retiree Health Stipend – A.C.A. § 24-7-713.** Each retired member as of June 30, 2008, with 5 or more years of ATRS credited service receives \$75 per month toward retiree health care premiums. Members in T-DROP do not receive the \$75 per month until actual retirement. For all members retiring on or after July 1, 2008, a minimum of 10 years of ATRS credited service is required to receive the \$75 per month stipend. Act 603 of 2013 allows the ATRS Board to increase or decrease the stipend to a minimum of \$1 per month and a maximum of \$75 per month. *This act is dependent upon the actuary's certification that the amortization period is in excess of 30 years to pay unfunded liabilities prior to any reduction in the current stipend. The stipend for fiscal year 2015 remains at \$75 per month.*

15. **Optional Forms of Benefits – A.C.A. § 24-7-706:**

#### **Option 1 (Straight Life Annuity)**

A member will receive the maximum monthly benefit for which he/she qualifies, throughout his/her lifetime. No monthly benefits will be paid to his/her beneficiary after the member's death. Should a member die before he/she has drawn in benefits an amount equal to his/her contributions plus earned interest, the balance will be paid to a designated beneficiary. The designated beneficiary may be anyone chosen by the member.

#### **Option A (100% Survivor Annuity)**

Under this option a member will receive a reduced annuity throughout his/her lifetime. Upon the member's death, the designated beneficiary will receive the same annuity for the balance of his/her lifetime.



## SUMMARY OF PROVISIONS JUNE 30, 2016

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### **Option B (50% Survivor Annuity)**

Under this option a member will receive a reduced annuity throughout his/her lifetime. Upon the member's death, the designated beneficiary will receive one-half (1/2) of this annuity for the balance of his/her lifetime.

### **Option C (Annuity for Ten Years Certain and Life Thereafter)**

A reduced monthly benefit payable for 120 months. After that time, a member's monthly allowance will revert to the amount he/she would have received under the regular plan and continue for life. If the member dies before receiving 120 payments, the designated beneficiary will receive a monthly benefit in the same amount until monthly benefits to both the member and the beneficiary equal 120 monthly payments. No further benefits are then payable to the beneficiary.

Option Factors are based upon an 8.0% interest rate and the 1971 Group Annuity Mortality Table projected to 1984, with a 75% unisex mix.

16. **Refund of Member Contributions – A.C.A. § 24-7-711.** Any termination refund made to a member or a lump sum payout made to a surviving spouse after July 1, 2011, cancels all service credit, including noncontributory service credit (Act 976 of 2011); any repurchase of refunded service will be as contributory years at actuarial cost (Act 69 of 2011). Act 140 of 2013 specifies that all membership rights (including noncontributory service credit) and beneficiary designations to the ATRS are cancelled when a member gets a refund of his or her contributions.
17. **Contract Buyout – A.C.A. § 24-7-735.** During periods of contract buyout/litigation/termination, members will not receive service credit if no on-call service or on site work is performed. ATRS will not allow the purchase of the time between actual work and the settlement (Act 163 of 2011).
18. **Actuarial Cost of Service – A.C.A. §§ 24-1-107, 24-2-502, 24-7-202, 24-7-406, 24-7-501, 24-7-502, 24-7-612, 24-7-602, 24-7-603, 24-7-604, 24-7-606, 24-7-607, 24-7-610, 24-7-611.** Effective July 1, 2011, all service purchases will be at actuarial cost (Act 69 of 2011).
19. **Deceased Member Refund of Contributions – § 24-7-711.** Effective July 1, 2011, if a beneficiary is not eligible for survivor benefits, or if a surviving spouse is eligible and chooses a

## SUMMARY OF PROVISIONS

### JUNE 30, 2016

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contribution refund, the interest on the refund stops the July 1 following the member's death (Act 136 of 2011).

20. **Limit Lookback to Five Years – A.C.A. §§ 24-7-202, 24-7-205.** Effective July 1, 2011, absent intentional nondisclosure, fraud, misrepresentation, or criminal act, members can no longer establish old service previously unreported (Act 138 of 2011). (More than 20 cases per year.)
21. **Service Credit Requirements – A.C.A. §§ 24-7-501, 24-7-502, 24-7-601, 24-7-603, 24-7-604, 24-7-606, 24-7-607, 24-7-611.** Effective July 1, 2011, members must receive 160 days of service to be credited with a year of service credit (Act 974 of 2011).
22. **T-DROP Cash Balance Account.** Effective July 1, 2012, a T-DROP cash balance account was established that allows members exiting (retiring) from T-DROP to place all or a portion of their T-DROP proceeds into a Cash Balance Account (CBA) at ATRS. The interest rate credited will be between 2.0% and 4.0%, increasing 25 basis points for each year on deposit.
23. **Delinquent Member Contributions – A.C.A. § 24-7-205.** Act 336 of 2013 allows members to forfeit service credit for any contributory fiscal year for which there is a balance due to the system.
24. **Purchase of Air Time as a Result of Wrongful Termination – A.C.A. §§ 24-7-702, 24-7-735, 6-17-413.** Act 521 of 2013 allows a member to purchase service credit under a settlement agreement or court order to resolve a claim of wrong termination if the service credit is purchased from the date of termination by an ATRS employer to the date of the resolution of the dispute. This service credit would be purchased at actuarial cost.
25. **Buyout of Inactive Members—A.C.A. § 24-7-505.** Act 606 of 2013 allows the ATRS Board to create a voluntary "buyout plan" for inactive vested members. The System will make a one-time lump sum payment to a member, a surviving spouse, or an alternate payee in exchange for a member, surviving spouse, or alternate payee's cancellation of membership and retirement benefit rights. The buyout plan will be established by Board rules. The rule is 16-1 Cash and Savings Help Program for Members (CASH). This particular plan offering ended June 30, 2015. Depending upon the success of the plan, it may be extended by the Board.

## SAMPLE BENEFIT COMPUTATIONS FOR A MEMBER RETIRING JUNE 30, 2016

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The data for the Example member is shown below.

A.	\$35,000	Final Average Compensation
B.	32	Total Service Credit
C.	27	Contributory Service Credit
D.	60	Age of Retiree
E.	55	Age of Spouse
F.	100%	Percentage of Retirement Allowance to Continue to Spouse after Retiree's Death (Retiree Chooses this Percentage)

The computations that would be made for this case are:

	<u>Annual</u>
G. Non-Contributory Base: $1.39\% \times A \times B$	\$15,568
H. Extra for Contributory: $0.76\% \times A \times C$	<u>7,182</u>
I. Subtotal Benefit: G + H	22,750
J. Health Stipend	<u>900</u>
K. Total Benefit: I + J	23,650
L. Adjustment for Line F election: ( $1 - 0.83037$ ) x I	<u>3,859</u>
M. Annual Amount Payable	\$19,791

Projected Benefits, taking into account increases after retirement would be:

<u>Year Ended June 30</u>	<u>Annual Amount</u>
2017	\$19,791
2018	20,385
2019	20,979
2020	21,573
2021	22,167

Thereafter, the amount would increase by \$594 annually for life.

## SAMPLE T-DROP BENEFIT COMPUTATIONS FOR A MEMBER ENTERING T-DROP JUNE 30, 2016

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The data for the Example member is shown below.

A.	\$35,000	Final Average Compensation
B.	28	Total Service Credit
C.	28	Contributory Service Credit
D.	55	Age of Retiree

The computations that would be made for this case are:

	<u>Annual Amount</u>
E. Non-Contributory Base: $1.39\% \times A \times B$	\$13,622
F. Extra for Contributory: $0.76\% \times A \times C$	7,448
G. Reduction for T-DROP Plan: (1% for each year of contributory service) $0.28 \times (E+F)$	5,900
H. Reduction for Entering T-DROP with less than 30 years of service (6% for each year less than 30): $0.12 \times (E + F - G)$	<u>1,820</u>
I. Annual Deposit $E + F - G - H$	\$13,350

Projected Deposits, taking into account increases after DROP, and 5 years duration would be:

<u>Year Ended June 30</u>	<u>Amount Deposited</u>
2017	\$13,350
2018	13,751
2019	14,151
2020	14,552
2021	<u>14,952</u>
Total	\$70,756

The amount deposited, **plus** credited interest, can be paid as a lump sum or as an annuity. A portion of the deposits can also be placed into a Cash Balance account.

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## **SECTION D**

### FINANCIAL INFORMATION

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This information is presented in draft form for review by the System's auditor. Please let us know if there are any items the auditor changes so that we may maintain consistency with the System's financial statements.

## **ASSET VALUATION METHOD**

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An essential step in the valuation process is comparing valuation assets with computed liabilities. Valuation assets are those assets that are recognized for funding purposes.

Asset valuation methods are distinguished by the timing of the recognition of investment income. Total investment income is the sum of ordinary income and capital value changes. Under a pure market value approach, ordinary investment income and all capital value changes would be recognized immediately. Because of market volatility, use of pure market values in retirement funding can result in volatile contribution rates and unstable financial ratios, contrary to ATRS objectives.

Under the ATRS asset valuation method (see page D-3), assumed investment return is recognized fully each year. Differences between actual and assumed investment return are phased-in over a closed 4-year period. During periods when investment performance exceeds the assumed rate, the funding value will tend to be less than the market value. Conversely, during periods when investment performance is less than the assumed rate, funding value will tend to be greater than market value. If assumed rates are exactly realized for 3 consecutive years, funding value will become equal to market value.

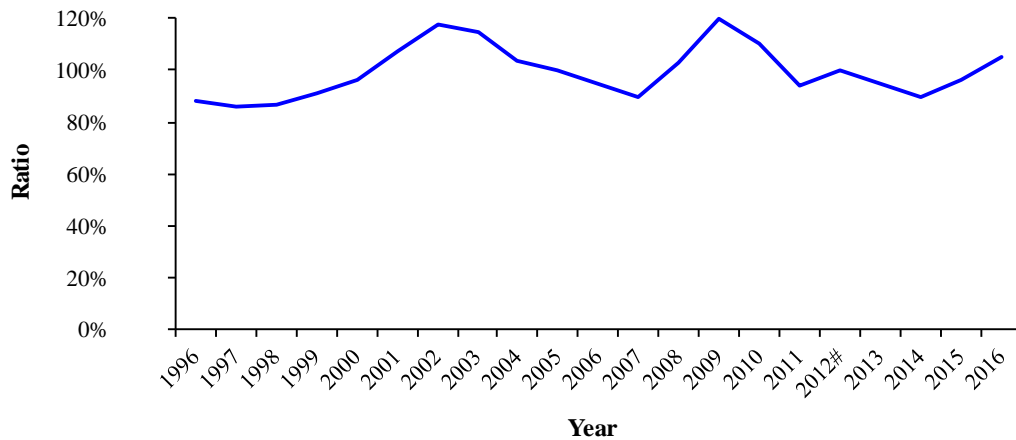
A multi-year comparison of market value to funding (actuarial) value is on the following page.

## ASSET VALUATION METHOD

Valuation Date June 30	Market Value of Assets (1)	Actuarial Value of Assets (2)	Ratio of AV to MV (2) / (1)
1996	\$ 4,750	\$ 4,186	88%
1997	5,747	4,956	86%
1998	6,656	5,815	87%
1999	7,403	6,740	91%
2000	7,978	7,620	96%
2001	7,643	8,166	107%
2002	7,084	8,328	118%
2003	7,050	8,113	115%
2004	8,122	8,424	104%
2005	8,811	8,817	100%
2006	9,868	9,332	95%
2007	11,637	10,519	90%
2008	11,018	11,319	103%
2009	8,847	10,617	120%
2010	9,884	10,845	110%
2011	11,895	11,146	94%
2012#	11,484	11,484	100%
2013	12,830	12,247	95%
2014	14,856	13,375	90%
2015	15,036	14,434	96%
2016	14,559	15,239	105%

# Actuarial Value set equal to Market Value.

### Ratio of Actuarial Value to Market Value



This year the market value of assets is less than the actuarial value (see page A-2). To prevent unreasonably large differences between market value and funding value, there is a requirement that the recognized assets must always be between 80% and 120% of the market value (see page D-3).

## DEVELOPMENT OF FUNDING VALUE OF ASSETS

Year Ended June 30:	2013	2014	2015	2016	2017	2018	2019
A. Funding Value Beginning of Year	\$ 11,483,885,509	\$ 12,246,805,197	\$ 13,374,765,500	\$ 14,433,823,989			
B. Market Value End of Year	12,829,565,578	14,856,276,668	15,035,701,313	14,558,576,729			
C. Market Value Beginning of Year	11,483,885,509	12,829,565,578	14,856,276,668	15,035,701,313			
D. Non-Investment Net Cash Flow	(336,581,359)	(394,588,772)	(444,707,451)	(504,645,210)			
E. Investment Return							
E1. Market Total: B - C - D	1,682,261,428	2,421,299,862	624,132,096	27,520,626			
E2. Amount for Immediate Recognition (8%)	905,247,586	963,960,865	1,052,192,942	1,134,520,111			
E3. Amount for Phased-In Recognition: E1-E2	777,013,842	1,457,338,997	(428,060,846)	(1,106,999,485)			
F. Phased-In Recognition of Investment Return							
F1. Current Year: 0.25 x E3	194,253,461	364,334,749	(107,015,212)	(276,749,871)	Unknown	Unknown	Unknown
F2. First Prior Year	-	194,253,461	364,334,749	(107,015,212)	\$ (276,749,871)	Unknown	Unknown
F3. Second Prior Year	-	-	194,253,461	364,334,749	(107,015,212)	\$ (276,749,871)	Unknown
F4. Third Prior Year	-	-	-	194,253,459	364,334,750	(107,015,210)	\$ (276,749,872)
<b>F5. Total Recognized Investment Gain</b>	<b>194,253,461</b>	<b>558,588,210</b>	<b>451,572,998</b>	<b>174,823,125</b>	(19,430,333)	(383,765,081)	(276,749,872)
G. Funding Value End of Year:							
G1. Preliminary Funding Value End of Year: A+D+E2+F6	<b>12,246,805,197</b>	<b>13,374,765,500</b>	<b>14,433,823,989</b>	<b>15,238,522,015</b>			
G2. Upper Corridor Limit: 120% x B	<b>15,395,478,694</b>	<b>17,827,532,002</b>	<b>18,042,841,576</b>	<b>17,470,292,075</b>			
G3. Lower Corridor Limit: 80% x B	<b>10,263,652,462</b>	<b>11,885,021,335</b>	<b>12,028,561,050</b>	<b>11,646,861,383</b>			
<b>G4. Funding Value End of Year</b>	<b>12,246,805,197</b>	<b>13,374,765,500</b>	<b>14,433,823,989</b>	<b>15,238,522,015</b>			
H. Actual/Projected Difference between Market and Funding Value	582,760,381	1,481,511,168	601,877,324	(679,945,286)	(660,514,953)	(276,749,872)	-
I. Market Rate of Return	14.87 %	19.17 %	4.26 %	0.19 %			
J. Funding Rate of Return	9.72 %	12.64 %	11.43 %	9.23 %			
K. Ratio of Funding Value to Market Value	95.46 %	90.03 %	96.00 %	104.67 %			

The Funding Value of Assets recognizes assumed investment return (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.



*The assets* of the Retirement System, as of June 30, 2016, were reported to your actuary to be \$14,558,576,729. This amount, together with a market value adjustment of \$679,945,286 this year, is used to finance the Retirement System liability.

Accounts	Assets at June 30	
	2016	2015
Regular Accounts		
Members' Deposit Accounts		
Contributions	\$ 1,159,759,877	\$ 1,104,106,342
Interest	7,150,581,061	7,869,410,906
Total	8,310,340,938	8,973,517,248
T-Drop Member Deposit Accounts		
Contributions	24,074,666	24,219,104
Interest	37,090,183	43,020,907
Total	61,164,849	67,240,011
Cash Balance Account	69,976,233	52,200,512
Employer's Accumulation Account	(3,985,107,737)	(3,694,081,484)
Retirement Reserve Account	9,533,653,119	9,043,552,180
Act 808 Retirement Reserve Account	14,894,565	16,730,157
T-Lump Payable	454,943,811	476,250,673
Survivors Benefit Account	88,768,471	90,353,488
Total Regular Accounts	14,548,634,249	15,025,762,786
Other Accounts		
Income Expense Account	9,942,480	9,938,528
Other Special Reserves	-	-
Miscellaneous	-	-
Total Other Accounts	9,942,480	9,938,528
Total Accounting Value of Assets	14,558,576,729	15,035,701,313
Market Value Adjustment	679,945,286	(601,877,324)
Funding Value of Assets	\$ 15,238,522,015	\$ 14,433,823,989

## MARKET VALUE OF ASSETS

The net market value of assets at year end was \$14,558,576,729 and was invested as shown below.

	<b>Market Value at June 30</b>	
	<b>2016</b>	<b>2015</b>
Cash	\$ 228,375,223	\$ 280,996,454
Receivables		
Unsettled Trades and Accrued Return	89,180,723	65,873,636
Member Contributions	8,909,917	9,454,259
Employer Contributions	30,479,999	32,343,337
Other	373,109	212,241
Total Receivables	128,943,748	107,883,473
Investments		
Government Securities	25,157,800	17,453,181
Domestic Equities	2,736,847,861	2,837,466,664
International Equities	733,961,206	846,243,295
Commingled Funds	5,808,435,670	6,303,108,061
Corporate Bonds	608,322,817	658,670,879
Asset and Mortgage-backed Securities	33,238,073	21,647,805
Mortgages (CMO's)	-	2,004,037
Conventional Mortgages	-	-
Alternative Investments	4,261,910,693	3,948,277,549
Limited Partnerships	37,471,079	36,101,155
Real Estate	58,730,872	52,597,687
Investment Derivative Instruments	(195,507)	(340,057)
Total Investments	14,303,880,564	14,723,230,256
Invested Securities Lending	574,498,212	633,738,366
Net Equipment	309,256	296,586
Total Assets	15,236,007,003	15,746,145,135
Liabilities		
Survivor Benefits for Minors	302,374	324,828
Other Payables	6,226,684	5,470,267
Securities Related Payables	95,998,275	70,405,889
Securities Lending Collateral	574,902,941	634,242,838
Total Liabilities	677,430,274	710,443,822
Net Market Value	\$ 14,558,576,729	\$ 15,035,701,313
Change from Prior Year	(477,124,584)	179,424,645

## MARKET VALUE RECONCILIATION

Assets developed during the year as follows:

	Year Ended June 30	
	2016	2015
Net Market Value July 1	\$ 15,035,701,313	\$ 14,856,276,668
<b>Additions</b>		
Employer Contributions	410,461,299	408,281,905
Employee Contributions	130,997,913	128,504,251
Appreciation	(63,612,934)	538,492,499
Interest	21,904,797	20,491,467
Dividends	78,774,203	79,631,857
Real Estate	7,205,691	7,506,050
Other	29,930,559	27,156,930
Securities Lending Activity	4,698,995	3,497,553
<b>Total Additions</b>	620,360,523	1,213,562,512
<b>Deductions</b>		
Age & Service Benefits	852,695,640	795,518,171
Disability Benefits	37,812,689	36,188,748
Option Benefits	24,637,113	23,056,130
Survivor Benefits	9,946,290	9,626,726
Reciprocal Service	45,746,432	41,958,663
Act 808	3,000,785	3,139,880
Refunds	10,145,471	10,774,122
Active Member Death	357,921	404,248
T-DROP Benefits	52,760,622	50,656,897
CBA Benefits	8,600,786	8,923,390
CASH Benefit Program	400,673	1,246,632
Investment Expense	43,321,655	44,609,403
Administrative Expense	8,059,030	8,034,857
<b>Total Deductions</b>	1,097,485,107	1,034,137,867
Miscellaneous	-	-
<b>Net Market Value June 30</b>	<b>\$ 14,558,576,729</b>	<b>\$ 15,035,701,313</b>

**SCHEDULE OF FUNDING PROGRESS**  
**(DOLLAR AMOUNTS IN MILLIONS)**

Valuation Date June 30	(1) Actuarial Value of Assets	(2) Entry Age AAL	(3) UAAL (2)-(1)	(4) Funding Ratio (1)/(2)	(5) Annual Payroll	Liabilities as a % of Payroll		
						Unfunded (3)/(5)	Funded (1)/(5)	Total (2)/(5)
1997+	\$ 4,956	\$ 5,403	\$ 447	91.7%	\$ 1,302	34.3%	380.7%	415.0%
1998+*	5,815	6,188	373	94.0%	1,368	27.3%	425.0%	452.3%
1999+	6,740	6,834	94	98.6%	1,429	6.6%	471.6%	478.2%
2000+	7,620	7,879	259	96.7%	1,485	17.4%	513.2%	530.6%
2001+	8,166	8,561	395	95.4%	1,557	25.4%	524.4%	549.8%
2002*	8,328	9,062	734	91.9%	1,628	45.1%	511.5%	556.6%
2003+	8,113	9,445	1,332	85.9%	1,683	79.1%	482.1%	561.2%
2004	8,424	10,050	1,626	83.8%	1,748	93.0%	481.9%	574.9%
2005	8,817	10,973	2,156	80.4%	1,962	109.9%	449.4%	559.3%
2006	9,332	11,623	2,291	80.3%	2,080	110.1%	448.7%	558.8%
2007+	10,519	12,329	1,810	85.3%	2,191	82.6%	480.1%	562.7%
2008+	11,319	13,334	2,015	84.9%	2,268	88.8%	499.1%	587.9%
2009	10,617	14,019	3,402	75.7%	2,318	146.8%	458.0%	604.8%
2010+	10,845	14,697	3,852	73.8%	2,381	161.8%	455.5%	617.3%
2011+*	11,146	15,521	4,375	71.8%	2,728	160.4%	408.6%	569.0%
2012	11,484	16,139	4,655	71.2%	2,714	171.5%	423.2%	594.7%
2013+*	12,247	16,718	4,471	73.3%	2,727	164.0%	449.1%	613.1%
2014	13,375	17,310	3,935	77.3%	2,758	142.7%	484.9%	627.6%
2015	14,434	18,136	3,702	79.6%	2,777	133.3%	519.8%	653.1%
2016	15,239	18,812	3,573	81.0%	2,785	128.3%	547.2%	675.5%

+ Legislated benefit or contribution rate change.

\* Revised actuarial assumptions.

A system with a high ratio of assets or liabilities to payroll will tend to experience more volatility than a system with a lesser ratio, assuming a similar asset allocation.

## SCHEDULE OF EMPLOYER CONTRIBUTIONS

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<b>Fiscal Year Ended June 30</b>	<b>Valuation Date June 30</b>	<b>Covered Payroll *</b>	<b>Annual Required Contribution</b>	<b>(A) Annual Required Contribution</b>	<b>(B) Actual Contribution Dollars</b>	<b>(B)/(A) Percent Contributed</b>
2014	2012	\$2,850,860,174	16.8%	\$478,944,509	\$404,920,441	84.5%
2015	2013	2,873,988,053	16.3%	468,460,053	408,281,905	87.2%
2016	2014	2,888,392,668	14.9%	430,370,508	410,461,299	95.4%

\* Annual payroll of active, T-DROP and return to work employees as of June 30. Actual contributions were based on pay actually paid throughout the year which was different from the payroll reported above.

## RISK MEASURES (BASED ON MARKET VALUE OF ASSETS)

Valuation Date June 30	(1) Accrued Liabilities (AAL)	(2) Market Value of Assets	(3) Unfunded AAL (1)-(2)	(4) Valuation Payroll	(5) Funded Ratio (2)/(1)	(6) Liability/ Payroll (1)/(4)	(7) Assets/ Payroll (2)/(4)	(8) Unfunded/ Payroll (3)/(4)	(9) Net External Cash Flow (NECF)	(10) NECF/ Assets (9)/(2)	(11) Portfolio Rate of Return	(12) 10 year Trailing Average
2002*	\$ 9,062	\$ 7,084	\$ 1,978	\$ 1,628	78.2%	556.6%	435.1%	121.5%	\$ (94)	-1.3%	-6.1%	
2003#	9,445	7,050	2,395	1,683	74.6%	561.2%	418.9%	142.3%	(109)	-1.6%	1.1%	
2004	10,050	8,122	1,928	1,748	80.8%	574.9%	464.6%	110.3%	(115)	-1.4%	17.0%	
2005	10,973	8,811	2,162	1,962	80.3%	559.3%	449.1%	110.2%	(84)	-1.0%	9.6%	
2006	11,623	9,868	1,755	2,080	84.9%	558.8%	474.4%	84.4%	(110)	-1.1%	13.3%	
2007#	12,329	11,637	692	2,191	94.4%	562.7%	531.1%	31.6%	(118)	-1.0%	19.2%	
2008#	13,334	11,018	2,316	2,268	82.6%	587.9%	485.8%	102.1%	(135)	-1.2%	-4.2%	
2009	14,019	8,847	5,172	2,318	63.1%	604.8%	381.7%	223.1%	(172)	-1.9%	-18.3%	
2010#	14,697	9,884	4,813	2,381	67.2%	617.3%	415.1%	202.2%	(203)	-2.1%	14.2%	3.6%
2011#*	15,521	11,895	3,626	2,728	76.6%	569.0%	436.1%	132.9%	(201)	-1.7%	22.6%	6.1%
2012	16,139	11,484	4,655	2,714	71.2%	594.7%	423.2%	171.5%	(285)	-2.5%	-1.1%	6.6%
2013#	16,718	12,830	3,888	2,727	76.7%	613.1%	470.5%	142.6%	(337)	-2.6%	14.9%	8.0%
2014	17,310	14,856	2,454	2,758	85.8%	627.6%	538.6%	89.0%	(395)	-2.7%	19.2%	8.2%
2015	18,136	15,036	3,100	2,777	82.9%	653.1%	541.5%	111.6%	(445)	-3.0%	4.3%	7.7%
2016	18,812	14,559	4,253	2,785	77.4%	675.5%	522.8%	152.7%	(505)	-3.5%	0.2%	6.3%

(\*) ATRS had experience studies in these years leading to a change or "true up" in actuarial assumptions. A pattern of periodic studies is a sign of a well-run system and suggests the extent to which the liability measures the actuary provides are likely to be realistic.

(#) ATRS had benefit changes in these years. Benefit increases cause liabilities to rise; benefit decreases cause liabilities to fall. In either case benefit changes affect the year by year comparability of the measures on this page.

(5). 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%. As it approaches 100%, it is important to re-evaluate the level of investment risk in the portfolio and potentially to re-evaluate the assumed rate of return.

(6) and (7) The ratios of liabilities and assets to payroll gives an indication of both maturity and volatility. Many systems have values between 500% and 700%. Values significantly above that range may indicate difficulty in supporting the benefit level as a level % of payroll.

(8) The ratio of unfunded liability to payroll gives an indication of the plan sponsor's ability to actually pay off the unfunded liability. A value above approximately 300% or 400% may indicate difficulty in discharging the unfunded liability within a reasonable time frame.

(9) and (10) The ratio of Net External Cash Flow to assets is an important measure of sustainability. Negative ratios are common and expected for a maturing system. In the longer term, this ratio should be on the order of approximately -4%. A ratio that is significantly more negative than that for an extended period could be a leading indicator of potential exhaustion of assets.

(11) and (12) Investment return is probably the largest single risk that most systems face. The year by year return and the 10-year geometric average give an indicator of the realism of the systems assumed return. The averages are of course distorted by the extraordinary events of 2008.

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## **SECTION E**

### **COVERED MEMBER DATA**

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**TOTAL ACTIVE MEMBERS IN VALUATION JUNE 30, 2016**  
**BY ATTAINED AGE AND YEARS OF SERVICE**  
**(EXCLUDES T-DROP AND REHIRED RETIREES)**

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	670							670	\$ 1,397,681
20-24	1,949	21						1,970	37,724,745
25-29	4,890	1,067	8					5,965	200,412,582
30-34	3,170	3,137	940	5				7,252	266,760,752
35-39	2,771	2,223	2,796	656	8			8,454	328,950,493
40-44	2,350	2,138	2,029	2,412	530	3		9,462	391,320,343
45-49	1,932	1,784	2,047	1,791	1,997	486	1	10,038	420,271,480
50-54	1,522	1,455	1,710	1,667	1,374	1,425	55	9,208	366,947,974
55-59	1,307	1,134	1,313	1,456	1,404	1,037	78	7,729	286,193,212
60	248	216	239	252	274	196	19	1,444	53,934,432
61	191	186	191	204	215	173	14	1,174	43,159,123
62	194	176	195	151	181	152	9	1,058	37,061,921
63	149	156	135	134	149	131	16	870	31,901,097
64	146	145	123	107	118	119	18	776	27,226,104
65	139	122	98	67	85	93	10	614	18,721,467
66	110	77	47	30	27	25		316	8,863,642
67	98	58	28	17	10	7	5	223	4,687,332
68	101	68	35	8	9	9	2	232	4,767,393
69	102	57	28	8	3	2	1	201	3,604,915
70 & Up	368	200	105	20	5	11	3	712	11,757,474
<b>Totals</b>	<b>22,407</b>	<b>14,420</b>	<b>12,067</b>	<b>8,985</b>	<b>6,389</b>	<b>3,869</b>	<b>231</b>	<b>68,368</b>	<b>\$2,545,664,162</b>

Group Averages:

Age: 44.4 years

Service: 10.2 years



**WOMEN ACTIVE MEMBERS IN VALUATION JUNE 30, 2016**  
**BY ATTAINED AGE AND YEARS OF SERVICE**  
**(EXCLUDES T-DROP AND REHIRED RETIREES)**

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	233							233	\$ 555,682
20-24	1,383	9						1,392	28,586,050
25-29	3,624	823	5					4,452	147,589,519
30-34	2,498	2,383	769	1				5,651	200,592,598
35-39	2,197	1,716	2,178	523	3			6,617	246,249,420
40-44	1,872	1,732	1,644	1,858	415	1		7,522	295,389,126
45-49	1,449	1,461	1,735	1,464	1,586	400	1	8,096	326,100,843
50-54	1,081	1,103	1,425	1,434	1,105	1,077	41	7,266	277,120,228
55-59	886	820	1,040	1,225	1,201	851	61	6,084	218,536,070
60	165	156	190	208	238	176	14	1,147	41,953,695
61	109	125	137	157	177	150	11	866	31,289,078
62	113	125	145	117	153	132	8	793	27,520,707
63	85	103	99	105	137	110	14	653	23,853,062
64	84	97	84	83	99	102	15	564	19,641,238
65	70	76	75	53	70	82	8	434	13,487,674
66	62	46	33	22	22	20		205	5,819,799
67	49	28	17	14	8	6	4	126	2,775,100
68	50	37	24	7	7	9	2	136	2,884,393
69	59	30	20	6	2	2	1	120	1,887,608
70 & Up	179	94	54	10	2	9	2	350	5,620,385
<b>Totals</b>	<b>16,248</b>	<b>10,964</b>	<b>9,674</b>	<b>7,287</b>	<b>5,225</b>	<b>3,127</b>	<b>182</b>	<b>52,707</b>	<b>\$1,917,452,275</b>

Group Averages:

Age: 44.5 years

Service: 10.6 years

**MEN ACTIVE MEMBERS IN VALUATION JUNE 30, 2016**  
**BY ATTAINED AGE AND YEARS OF SERVICE**  
**(EXCLUDES T-DROP AND REHIRED RETIREES)**

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	437							437	\$ 841,999
20-24	566	12						578	9,138,695
25-29	1,266	244	3					1,513	52,823,063
30-34	672	754	171	4				1,601	66,168,154
35-39	574	507	618	133	5			1,837	82,701,073
40-44	478	406	385	554	115	2		1,940	95,931,217
45-49	483	323	312	327	411	86		1,942	94,170,637
50-54	441	352	285	233	269	348	14	1,942	89,827,746
55-59	421	314	273	231	203	186	17	1,645	67,657,142
60	83	60	49	44	36	20	5	297	11,980,737
61	82	61	54	47	38	23	3	308	11,870,045
62	81	51	50	34	28	20	1	265	9,541,214
63	64	53	36	29	12	21	2	217	8,048,035
64	62	48	39	24	19	17	3	212	7,584,866
65	69	46	23	14	15	11	2	180	5,233,793
66	48	31	14	8	5	5		111	3,043,843
67	49	30	11	3	2	1	1	97	1,912,232
68	51	31	11	1	2			96	1,883,000
69	43	27	8	2	1			81	1,717,307
70 & Up	189	106	51	10	3	2	1	362	6,137,089
<b>Totals</b>	<b>6,159</b>	<b>3,456</b>	<b>2,393</b>	<b>1,698</b>	<b>1,164</b>	<b>742</b>	<b>49</b>	<b>15,661</b>	<b>\$ 628,211,887</b>

Group Averages:

Age: 44.2 years

Service: 9.0 years

**SUMMARY OF ACTIVE MEMBERS  
(EXCLUDES T-DROP AND REHIRED RETIREES)**

	Teachers		Support		Total Active Members	
	No.	Valuation Payroll	No.	Valuation Payroll	No.	Valuation Payroll
Women	27,208	\$ 1,334,788,309	25,499	\$ 582,663,966	52,707	\$ 1,917,452,275
Men	7,592	422,723,820	8,069	205,488,067	15,661	628,211,887
All	34,800	\$ 1,757,512,129	33,568	\$ 788,152,033	68,368	\$ 2,545,664,162

	Teachers	Support	Total
Members Contributing Now	31,930	18,400	50,330
Members Not Contributing	2,870	15,168	18,038
All	34,800	33,568	68,368

June 30	Number	Group Averages			Active Member Payroll (\$ Millions)
		Age	Service	Annual Earnings	
2000	60,147	43.6	9.6	\$24,696	\$1,485
2001	61,389	43.7	9.5	25,365	1,557
2002	62,011	43.8	9.4	26,254	1,628
2003	62,432	44.0	9.5	26,963	1,683
2004	63,185	44.2	9.5	27,660	1,748
2005	65,793	44.2	9.4	29,826	1,962
2006	67,710	44.3	9.3	30,714	2,080
2007	69,226	44.4	9.3	31,645	2,191
2008	70,172	44.5	9.4	32,319	2,268
2009	70,655	44.7	9.5	32,804	2,318
2010	72,208	44.7	9.7	32,980	2,381
2011	72,293	44.8	9.9	33,995	2,458
2012	71,195	45.0	10.1	34,362	2,446
2013	70,660	45.0	10.2	34,920	2,467
2014	70,225	44.7	10.2	35,673	2,505
2015	68,945	44.6	10.3	36,717	2,531
2016	68,368	44.4	10.2	37,235	2,546

**DEFERRED VESTED MEMBERS AT JUNE 30, 2016  
BY ATTAINED AGE**

Age	Number	Estimated Annual Benefits*	Contribution Balance
Below 40	2,409	\$ 14,725,218	\$ 30,484,441
40	312	1,806,934	3,127,669
41	274	1,645,001	3,016,516
42	355	2,152,794	3,722,298
43	412	2,597,646	4,314,780
44	379	2,288,416	3,894,813
45	410	2,547,399	4,036,169
46	418	2,456,776	3,518,509
47	458	2,502,937	3,720,713
48	454	2,466,015	3,367,038
49	535	3,029,812	4,253,650
50	578	2,914,974	4,284,057
51	529	2,956,470	4,393,386
52	566	3,051,370	4,348,298
53	583	3,327,331	5,691,560
54	566	3,419,807	5,687,569
55	578	3,493,646	5,793,202
56	536	3,340,060	5,481,855
57	600	3,517,518	6,357,694
58	356	1,674,112	2,715,002
59	269	1,263,111	1,960,069
60 & Up	1,279	4,448,391	5,185,349
Future Beneficiaries #	81	524,656	0
<b>Totals</b>	<b>12,937</b>	<b>\$ 72,150,394</b>	<b>\$ 119,354,637</b>

\* Estimated Annual Benefits do not include stipend.

# These are beneficiaries of deceased active members who are eligible for a pension at age 62.

An inactive member is no longer actively working but has sufficient service credit to qualify for a monthly benefit at retirement age.

**ALL MEMBERS PARTICIPATING IN T-DROP AT JUNE 30, 2016  
BY ATTAINED AGE**

<b>Age</b>	<b>Number</b>	<b>Current T-DROP Contribution</b>	<b>Original T-DROP Contribution</b>	<b>T-DROP Account Balance</b>	<b>Pay</b>
48	2	\$ 19,647	\$ 18,816	\$ 29,324	\$ 64,972
49	5	70,267	67,635	97,437	216,713
50	24	465,174	448,071	577,258	1,457,880
51	78	1,589,741	1,528,339	2,040,245	4,775,050
52	157	3,128,974	2,982,158	5,420,186	9,346,154
53	217	4,512,701	4,227,800	10,360,680	13,155,274
54	291	6,399,674	5,912,616	18,376,085	17,968,347
55	330	7,294,621	6,652,662	24,686,357	20,158,421
56	355	8,331,191	7,485,536	33,679,734	22,442,128
57	346	8,237,071	7,243,539	40,512,890	21,461,557
58	349	8,441,372	7,382,998	45,965,632	22,113,230
59	356	8,042,788	7,011,976	50,557,818	21,453,086
60	313	6,884,326	6,402,877	50,567,644	19,629,839
61	282	5,637,954	5,690,375	49,767,270	17,840,156
62	235	4,181,273	4,599,961	40,617,451	15,043,661
63	190	3,105,699	3,685,071	33,218,769	11,777,930
64	155	2,533,858	2,993,071	28,333,798	9,513,660
65	97	1,763,578	1,810,977	14,869,725	5,928,096
66	33	676,133	618,776	5,258,964	2,206,356
67	13	216,403	212,524	1,176,830	664,249
68	16	352,218	301,261	2,282,241	979,618
69	12	196,652	227,295	2,044,266	756,127
70	3	42,234	36,657	232,805	125,325
73	3	52,268	61,565	902,209	179,828
74	1	1,468	1,277	7,722	61,811
78	1	-	12,570	207,216	30,036
<b>Totals</b>	<b>3,864</b>	<b>\$ 82,177,285</b>	<b>\$ 77,616,403</b>	<b>\$ 461,790,556</b>	<b>\$ 239,349,504</b>

A T-DROP member continues to work, but does not accrue retirement benefits. A reduced benefit is paid into the T-DROP account (see pages C-2 and C-3) during T-DROP participation. Deposits to T-DROP cease at 10 years of T-DROP participation. T-DROP participants may continue in covered employment after 10 years of participation, but do not accumulate additional service credit or make member contributions. ATRS receives full employer contributions on behalf of these people.

**ANNUITIES BEING PAID RETIREES AND BENEFICIARIES JULY 1, 2016  
BY TYPE OF ANNUITY BEING PAID**

Type of Annuity	No.	Annual Amounts		
		Original Annuities	Base Annuities	Current Annuities
<b>RETIREMENT RESERVE ACCOUNT</b>				
Age & Service				
Option 1 (Basic single life)	30,225	\$ 450,304,455	\$ 583,831,630	\$ 691,311,126
Option A (Joint & 100% Survivor)	4,760	79,984,547	99,227,137	117,278,164
Option B (Joint & 50% Survivor)	2,401	52,414,559	67,708,339	80,523,395
Option C (10 year certain)	735	11,135,835	12,378,486	14,438,179
Beneficiaries	990	16,619,780	17,848,723	21,453,313
Totals	39,111	610,459,176	780,994,315	925,004,178
Disability				
Option 1	2,240	22,022,594	27,373,299	32,070,809
Option A	371	3,973,821	4,453,543	5,145,214
Option B	83	1,156,436	1,363,288	1,590,126
Option C	41	341,629	344,506	409,310
Beneficiaries	291	3,072,730	3,769,161	4,533,946
Totals	3,026	30,567,210	37,303,797	43,749,405
Totals	42,137	641,026,386	818,298,112	968,753,583
<b>SURVIVOR'S BENEFIT ACCOUNT</b>				
Beneficiaries of Deceased Members	700	\$ 6,848,309	\$ 8,606,608	\$ 10,084,359
<b>OTHER ANNUITIES</b>				
Act 793	199	\$ 1,130,865	\$ 2,054,766	\$ 2,054,766
Act 808	59	1,121,557	2,978,253	2,978,253
<b>RETIREMENT SYSTEM TOTALS</b>				
Total Annuities Being Paid	43,095	\$ 650,127,117	\$ 831,937,739	\$ 983,870,961

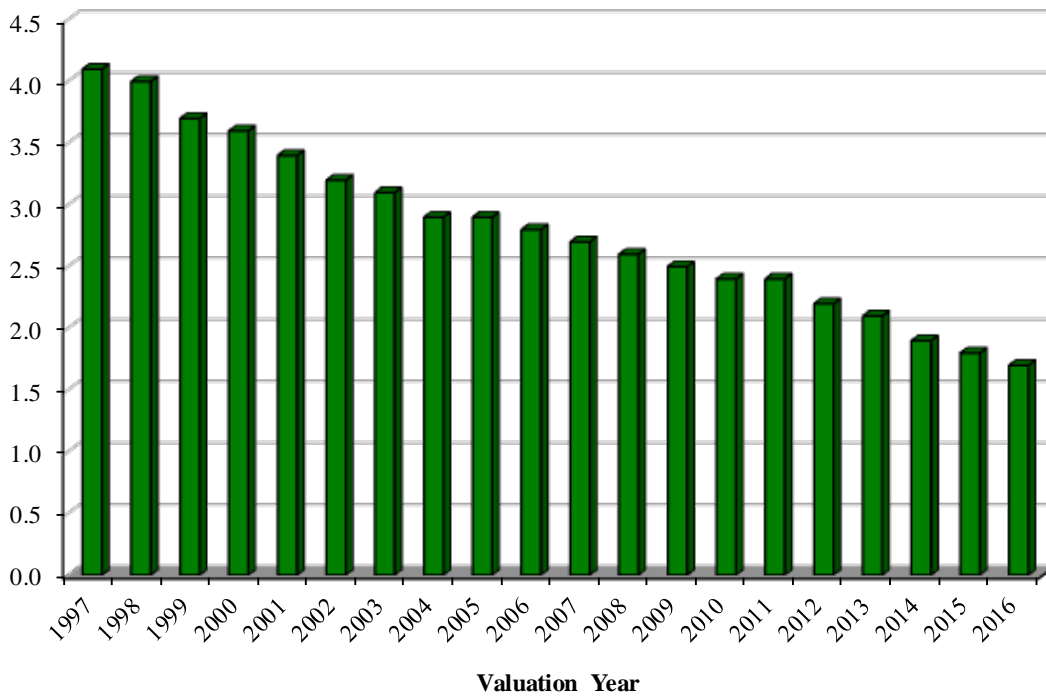
**The Original Annuity** is the annuity at the date of retirement.

**The Base Annuity** is the amount from which the 3.0% COLA is calculated.

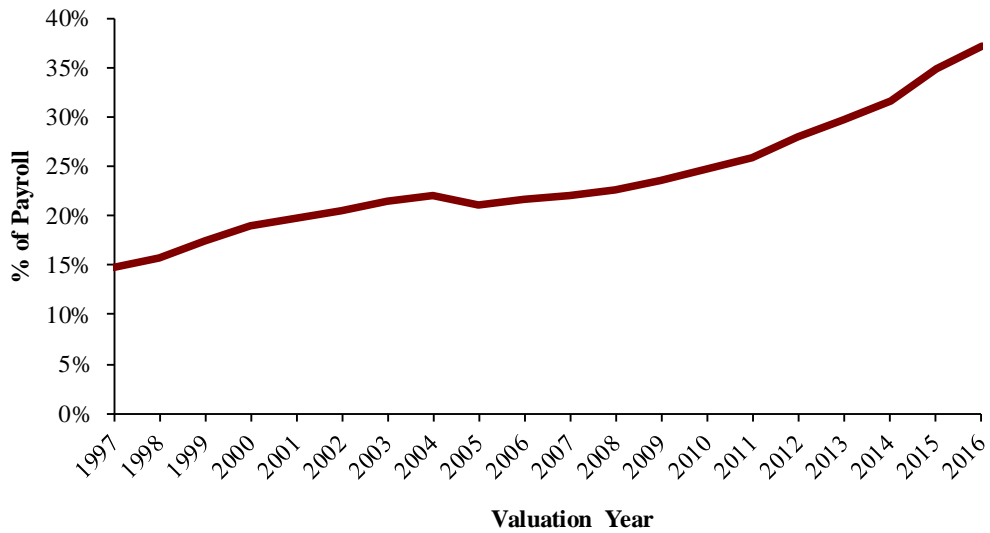
**The Current Annuity** is the annuity payable at July 1, 2016 (Includes July 1 COLA).

# HISTORICAL GRAPHS

## Active Members Per Retired Life \*



## Retirement Benefits Being Paid as a Percent of Member Payroll \*



\* Beginning with the June 30, 2011 valuation, active members include T-DROP participants and payroll.

## BENEFIT CHANGES DURING RECENT YEARS OF RETIREMENT & RELATED CHANGES IN PURCHASING POWER (1980 \$)

Year Ended June 30	Increase Beginning of Year	Benefit Dollars in Year*	Inflation (Loss) in Year#	Purchasing Power at Year End	
				1980 \$	% of 1980
1980	\$ - - - -	\$ 5,000	- - - -	\$ 5,000	100%
1981	75	5,075	(9.6)%	4,632	93%
1982	152	5,227	(7.1)%	4,456	89%
1983	152	5,379	(2.6)%	4,471	89%
1984	431	5,810	(4.2)%	4,633	93%
1985	438	6,248	(3.7)%	4,802	96%
1986	509	6,757	(1.7)%	5,103	102%
1987	197	6,954	(3.7)%	5,067	101%
1988	400	7,354	(3.9)%	5,154	103%
1989	503	7,857	(5.1)%	5,236	105%
1990	497	8,354	(4.7)%	5,319	106%
1991	230	8,584	(4.7)%	5,220	104%
1992	762	9,346	(3.1)%	5,513	110%
1993	792	10,138	(3.0)%	5,806	116%
1994	820	10,958	(2.5)%	6,123	122%
1995	303	11,261	(3.0)%	6,107	122%
1996	303	11,564	(2.8)%	6,103	122%
1997	1,657	13,221	(2.3)%	6,821	136%
1998	1,214	14,435	(1.7)%	7,324	146%
1999	323	14,758	(2.0)%	7,344	147%
2000	1,039	15,797	(3.7)%	7,583	152%
2001	1,220	17,017	(3.2)%	7,907	158%
2002	672	17,689	(1.1)%	8,132	163%
2003	468	18,157	(2.1)%	8,174	163%
2004	468	18,625	(3.3)%	8,120	162%
2005	468	19,093	(2.5)%	8,118	162%
2006	468	19,561	(4.3)%	7,973	159%
2007	468	20,029	(2.7)%	7,950	159%
2008	468	20,497	(5.0)%	7,747	155%
2009	468	20,965	1.4 %	8,038	161%
2010	629	21,594	(1.1)%	8,193	164%
2011	648	22,242	(3.6)%	8,149	163%
2012	648	22,890	(1.7)%	8,249	165%
2013	648	23,538	(1.8)%	8,336	167%
2014	648	24,186	(2.1)%	8,392	168%
2015	648	24,834	(0.1)%	8,606	172%
2016	648	25,482	(1.0)%	8,744	175%
2017	648	26,130			

\* The \$5,000 benefit used to begin this schedule is an arbitrary amount. A smaller beginning amount would show a smaller purchasing power loss in percent loss.

# Based on Consumer Price Index, All Urban Consumers, United States City Average (June values).



**BENEFIT CHANGES DURING RECENT YEARS OF RETIREMENT  
& RELATED CHANGES IN PURCHASING POWER (1990 \$)**

Year Ended June 30	Increase Beginning of Year	Benefit Dollars in Year*	Inflation (Loss) in Year#	Purchasing Power at Year End	
				1990 \$	% of 1990
1990	\$ - - - -	\$ 5,000	- - - -	\$ 5,000	100%
1991	150	5,150	(4.7)%	4,919	98%
1992	457	5,607	(3.1)%	5,195	104%
1993	475	6,082	(3.0)%	5,471	109%
1994	492	6,574	(2.5)%	5,770	115%
1995	182	6,756	(3.0)%	5,755	115%
1996	182	6,938	(2.8)%	5,751	115%
1997	330	7,268	(2.3)%	5,889	118%
1998	667	7,935	(1.7)%	6,324	126%
1999	177	8,112	(2.0)%	6,340	127%
2000	849	8,961	(3.7)%	6,756	135%
2001	826	9,787	(3.2)%	7,143	143%
2002	387	10,174	(1.1)%	7,346	147%
2003	270	10,444	(2.1)%	7,385	148%
2004	270	10,714	(3.3)%	7,337	147%
2005	270	10,984	(2.5)%	7,336	147%
2006	270	11,254	(4.3)%	7,205	144%
2007	270	11,524	(2.7)%	7,185	144%
2008	270	11,794	(5.0)%	7,002	140%
2009	270	12,064	1.4 %	7,265	145%
2010	362	12,426	(1.1)%	7,405	148%
2011	373	12,799	(3.6)%	7,366	147%
2012	373	13,171	(1.7)%	7,456	149%
2013	373	13,544	(1.8)%	7,535	151%
2014	373	13,917	(2.1)%	7,585	152%
2015	373	14,290	(0.1)%	7,779	156%
2016	373	14,663	(1.0)%	7,903	158%
2017	373	15,036			

\* The \$5,000 benefit used to begin this schedule is an arbitrary amount. A smaller beginning amount would show a smaller purchasing power loss in percent loss.

# Based on Consumer Price Index, All Urban Consumers, United States City Average (June values).

**BENEFIT CHANGES DURING RECENT YEARS OF RETIREMENT  
& RELATED CHANGES IN PURCHASING POWER (2000 \$)**

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Year Ended June 30	Increase Beginning of Year	Benefit Dollars in Year*	Inflation (Loss) in Year#	Purchasing Power at Year End	
				2000 \$	% of 2000
2000	\$ - - - -	\$ 5,900	- - - -	\$ 5,900	100%
2001	177	6,077	(3.2)%	5,886	100%
2002	252	6,329	(1.1)%	6,065	103%
2003	179	6,508	(2.1)%	6,108	104%
2004	179	6,687	(3.3)%	6,078	103%
2005	179	6,867	(2.5)%	6,086	103%
2006	179	7,046	(4.3)%	5,987	101%
2007	179	7,225	(2.7)%	5,978	101%
2008	179	7,404	(5.0)%	5,834	99%
2009	179	7,583	1.4 %	6,061	103%
2010	228	7,811	(1.1)%	6,178	105%
2011	234	8,045	(3.6)%	6,145	104%
2012	234	8,280	(1.7)%	6,221	105%
2013	234	8,515	(1.8)%	6,287	107%
2014	234	8,749	(2.1)%	6,328	107%
2015	234	8,983	(0.1)%	6,490	110%
2016	234	9,217	(1.0)%	6,593	112%
2017	234	9,451			

\* The \$5,900 benefit used to begin this schedule is an arbitrary amount. A smaller beginning amount would show a smaller purchasing power loss in percent loss.

# Based on Consumer Price Index, All Urban Consumers, United States City Average (June values).

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**SECTION F**  
FINANCIAL PRINCIPLES

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## FINANCIAL PRINCIPLES AND OPERATIONAL TECHNIQUES

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**Promises Made and To Be Paid For.** As each year is completed, the System, in effect, hands an “IOU” to each member then acquiring a year of service credit. The “IOU” says: “The Arkansas Teacher Retirement System owes you one year’s worth of retirement benefits, payments in cash commencing when you qualify for retirement.”

The related *key financial questions* are:

**Which generation of taxpayers contributes the money to cover the IOU?**

**The present taxpayers**, who receive the benefit of the member’s present year of service?

**Or the future taxpayers**, who happen to be in Arkansas at the time the IOU becomes a cash demand?

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The financial objective of the ATRS is that this year’s taxpayers contribute the money to cover the IOUs being handed out this year so that **the employer contribution rate will remain approximately level from generation to generation** -- our children and our grandchildren will not have to contribute greater percents of pay than we contribute now. This objective was set forth in Act 793 of 1977.

(There are systems which have **a design for deferring contributions to future taxpayers**, lured by a lower contribution rate now and putting aside the fact that the contribution rate must then relentlessly grow much greater over decades of time -- consume now, and let your children face higher contribution rates after you retire.)

An inevitable byproduct of the level-cost design is the accumulation of reserve assets for decades and the income produced when the assets are invested. **Investment income** becomes the **third and largest contributor** for benefits to employees, and is interlocked with the contribution amounts required from employees and employers.

Translated to actuarial terminology, this level-cost objective means that the contribution rates must total at least the following:

Normal Cost (the cost of members’ service being rendered this year)

... plus ...

Interest on Unfunded Actuarial Accrued Liabilities (unfunded accrued liabilities are the difference between (i) liabilities for service already rendered and (ii) the accrued assets of the plan).

**Computing Contributions to Support System Benefits.** From a given schedule of benefits and from the employee data and asset data furnished, the actuary determines the contribution rates to support the benefits, by means of **an actuarial valuation**. An actuarial valuation has a number of ingredients such as: the rate of investment income which plan assets will earn; the rates of withdrawal of active members who leave covered employment before qualifying for any monthly benefit; the rates of mortality; the rates of disability; the rates of pay increases; and the assumed age or ages at actual retirement. In an actuarial valuation, assumptions must be made as to what the above rates will be, for the next year and for decades in the future. Only the subsequent actual experience of the System can indicate the degree of accuracy of the assumptions.

**Reconciling Differences Between Assumed Experience and Actual Experience.** Once actual experience has occurred and been observed, it will not coincide exactly with assumed experience, regardless of the accuracy of the various financial assumptions or the skill of the actuary and the precision of the calculations made. The System copes with these continually changing differences by having annual actuarial valuations. Each actuarial valuation is a complete recalculation of assumed future experience, taking into account all past differences between assumed and actual experience. The result is continual adjustments in financial position.

## THE ACTUARIAL VALUATION PROCESS

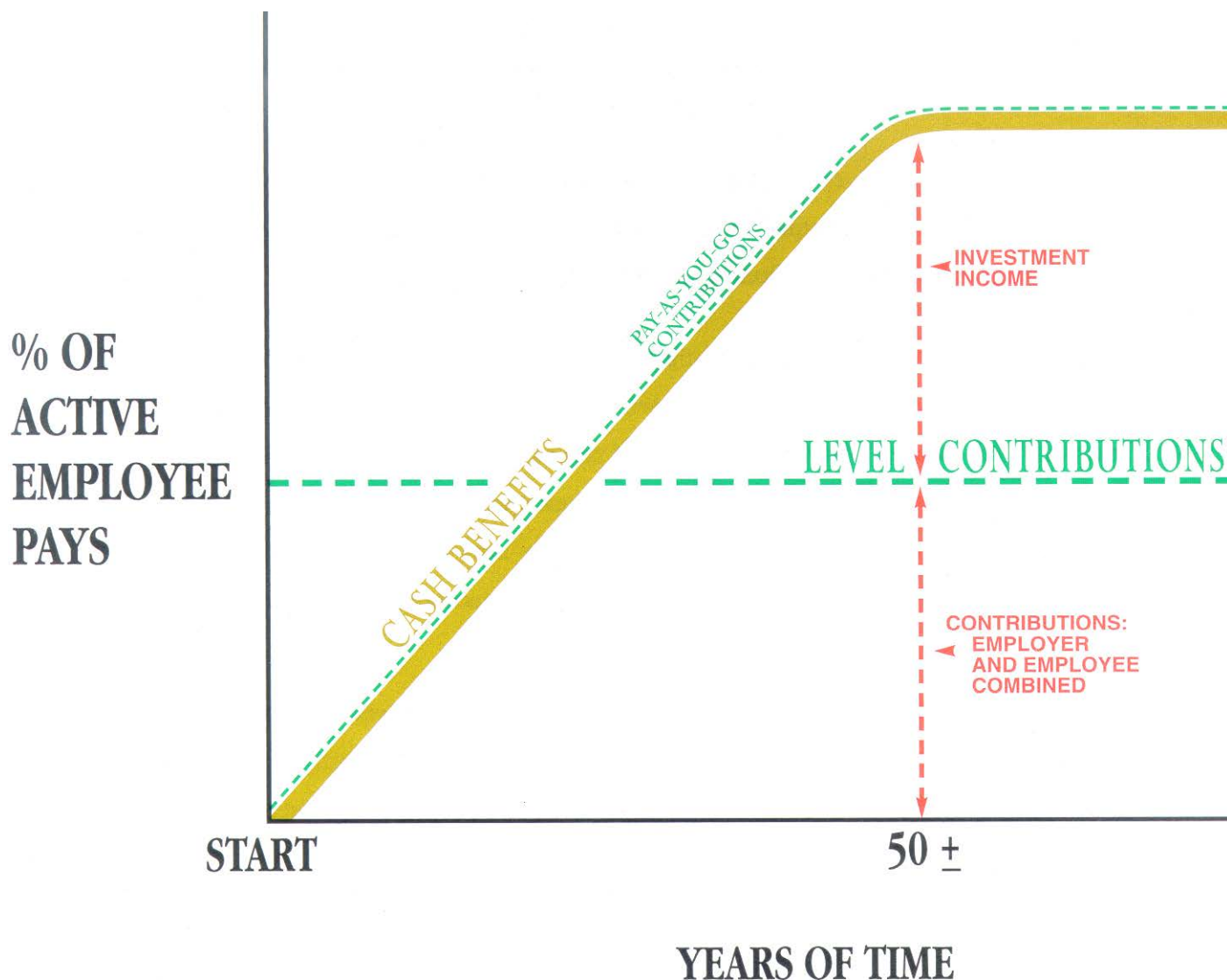
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*The financing diagram* on the next page shows the relationship between the two fundamentally different philosophies of paying for retirement benefits: the method where contributions match cash benefit payments (or barely exceed cash benefit payments, as in the Federal Social Security program), and is thus 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. + **Benefit provisions** that establish eligibility and amounts of payments to members
  
- D. + **Assumptions concerning future financial experiences in various risk areas**, which assumptions are established by the Board of Trustees after consulting with the actuary.
  
- E. + **The funding method** for employer contributions (the long-term planned pattern for employer contributions)
  
- F. + **Mathematically combining the assumptions, the funding method, and the data**
  
- G. = Determination of:
  - Plan financial position**, and/or
  - New Employer Contribution Rate**



**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

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**SECTION G**  
ACTUARIAL ASSUMPTIONS

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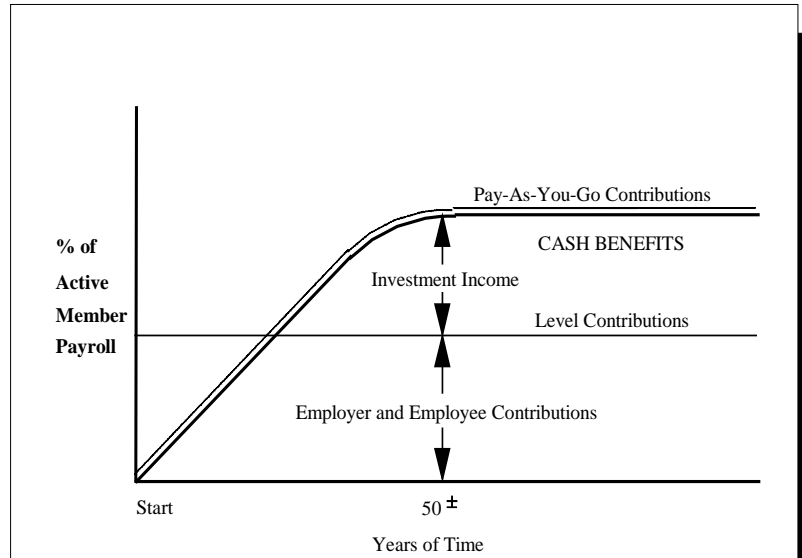
# SELECTION OF ASSUMPTIONS USED IN ACTUARIAL VALUATIONS

## Economic Assumptions

Investment return  
Pay increases to individual employees:  
the portion for economic changes  
Active member group size and  
total payroll growth

## Demographic Assumptions

Actual ages at service retirement  
Pay increases to individual members:  
the portion for merit & seniority  
Disability while actively employed  
Separations before retirement  
Mortality after retirement  
Mortality before retirement



## RELATIONSHIP BETWEEN PLAN GOVERNING BODY AND THE ACTUARY

The actuary should have the primary responsibility for choosing the *demographic* assumptions used in the actuarial valuation, making use of specialized training and experience.

The actuary and other professionals can provide guidance concerning the choice of suitable economic assumptions, but the basis of the economic assumptions is the assumed rate of *inflation*, a quantity which defies accurate prediction. Given an assumed rate of future inflation, it is very important that this rate be applied in a consistent manner in deriving the assumed rate of investment return, the economic portion of the assumption on pay increases to individual employees, and the assumed rate of growth of active member payroll. Consistent application of assumptions is an area in which the actuary has specialized training.



# **SUMMARY OF ASSUMPTIONS USED IN ACTUARIAL VALUATIONS FOR THE ARKANSAS TEACHER RETIREMENT SYSTEM ASSUMPTIONS ADOPTED BY BOARD OF TRUSTEES AFTER CONSULTING WITH ACTUARY**

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The rationale for the assumptions is the July 1, 2005 through June 30, 2010 5-Year Experience Study dated August 18, 2011.

## ***Economic Assumptions***

***The investment return rate*** used in the valuation was 8% per year, compounded annually (net after administrative expenses). This rate of return is not the assumed real rate of return. The real rate of return over wage inflation in this valuation is defined to be the portion of investment return which is more than the wage inflation rate. Considering wage inflation recognition of 3.25%, the 8% rate translates to an assumed real rate of return over wage inflation of 4.75%. This rate was first used for the ***June 30, 2011*** valuation. The assumed real rate of return over price inflation would be higher – on the order of 5% to 5.25%.

***Pay increase assumptions*** for individual active members are shown on pages G-7 and G-8. Part of the assumption for each age is for a merit and/or seniority increase, and the other 3.25% recognizes wage inflation. These rates were first used for the ***June 30, 2011*** valuation.

No specific ***Price Inflation*** is needed for this valuation. However, the wage inflation and interest rate assumptions would be compatible with a price inflation assumption of 2.75%. It is assumed that the 3% COLA will always be paid.

The Active Member Group size is assumed to remain constant at its present level.

***Total active member payroll*** is assumed to increase 3.25% per year, which is the portion of the individual pay increase assumptions attributable to wage inflation. This rate was first used for the ***June 30, 2011*** valuation.

## ***Non-Economic Assumptions***

***The mortality table*** used was the RP-2000 Mortality table for males and females projected 25 years with scale AA (95% for men & 87% for women). Mortality rates were adjusted to include a small margin for future mortality improvement as described in the table named above. Related values are shown on page G-4. This table was first used for the ***June 30, 2011*** valuation. For disabled lives, the mortality table used was the 1983 Group Annuity Mortality Table set forward 5 years. The set forward of 5 years was first used for the ***June 30, 2002*** valuation.

*The probabilities of retirement* for members eligible to retire are shown on pages G-5 and G-6. The rates for full retirement were first used in the *June 30, 2011* valuation. The rates for reduced retirement were first used in the *June 30, 2002* valuation.

*The probabilities of withdrawal from service, death-in-service and disability* are shown for sample ages on pages G-7 and G-8. These rates were first used in the *June 30, 2011* valuation.

*The entry age actuarial cost method of valuation* was used in determining accrued liabilities and normal cost.

Differences in the past between assumed experience and actual experience (“actuarial gains and losses”) become part of actuarial accrued liabilities.

Unfunded actuarial accrued liabilities are amortized to produce contribution amounts (the total of principal & interest) which are level percents of payroll contributions.

These cost methods were first used in the June 30, 1986 valuation.

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*Asset Valuation Method.* A market value related asset method is used as described on page D-1. This method was first used in the June 30, 1995 valuation. It was modified following the 1997-2002 Experience Study to include an 80% - 120% market value corridor.

*The data about persons now covered and about present assets* was furnished by the System’s administrative staff. Although examined for general reasonableness, the data was not audited by the Actuary. Members whose dates of birth were not supplied were assumed to be 40 years old on the valuation date. Members whose salaries were not supplied and that entered T-DROP before September 2003 were assumed to have the group average pay of \$69,110. Those that entered after were assumed to have the group average pay of \$61,811.

## SINGLE LIFE RETIREMENT VALUES

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Sample Attained Ages	Present Value of \$1.00 Monthly for Life		Present Value of \$1 Monthly for Life Increasing 3.0% Annually		Future Life Expectancy (years)		Percent Dying within Next Year	
	Men	Women	Men	Women	Men	Women	Men	Women
40	\$147.45	\$148.74	\$192.83	\$195.36	43.26	45.92	0.08 %	0.04 %
45	144.24	145.78	186.54	189.56	38.45	41.03	0.10 %	0.07 %
50	139.69	141.63	178.19	181.91	33.65	36.18	0.13 %	0.10 %
55	133.32	135.93	167.28	172.06	28.89	31.39	0.21 %	0.19 %
60	124.93	128.62	153.79	160.06	24.28	26.77	0.43 %	0.39 %
65	114.53	119.62	137.94	146.03	19.92	22.41	0.85 %	0.74 %
70	102.19	109.01	120.09	130.24	15.89	18.36	1.45 %	1.28 %
75	87.25	96.62	99.84	112.72	12.15	14.64	2.53 %	2.00 %
80	70.65	82.27	78.66	93.60	8.86	11.25	4.76 %	3.35 %
85	54.64	66.59	59.29	73.90	6.25	8.29	8.83 %	5.80 %
Ref:	472 x 0.95	473 x 0.87	472 x 0.95	473 x 0.87				

Sample Attained Ages	Benefit Increasing 3.0% Yearly	Portion of Age 60 Lives Still Alive	
		Men	Women
60	\$100.00	100%	100%
65	115.00	97%	97%
70	130.00	92%	93%
75	145.00	84%	86%
80	160.00	71%	76%
Ref		472 x 0.95	473 x 0.87

## PROBABILITIES OF RETIREMENT FOR MEMBERS

Retirement Ages	% of Active Participants Retiring with Unreduced Benefits			
	Education		Support	
	Male	Female	Male	Female
48	59%	55%	25%	25%
49	67%	25%	54%	22%
50	11%	7%	3%	9%
51	7%	6%	5%	7%
52	7%	6%	8%	7%
53	7%	8%	9%	8%
54	8%	8%	9%	8%
55	9%	9%	6%	10%
56	11%	10%	10%	9%
57	11%	12%	10%	10%
58	11%	12%	16%	14%
59	14%	16%	16%	27%
60	16%	16%	11%	13%
61	15%	15%	10%	14%
62	30%	26%	29%	22%
63	24%	22%	21%	18%
64	22%	20%	25%	20%
65	37%	43%	46%	40%
66	43%	41%	38%	36%
67	35%	34%	37%	35%
68	31%	33%	39%	28%
69	25%	33%	26%	34%
70	37%	40%	33%	34%
71	41%	30%	34%	33%
72	32%	34%	41%	31%
73	44%	36%	32%	34%
74	30%	30%	29%	34%
75	100%	100%	100%	100%
Ref	2013	2014	2015	2016

These rates are based upon data presented in the 2005-2010 experience study and were first used in the 2011 valuation.

## PROBABILITIES OF REDUCED RETIREMENT FOR MEMBERS

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Retirement Ages	% of Active Participants Retiring with Reduced Benefits			
	Education		Support	
	Male	Female	Male	Female
50	2%	2%	2%	2%
51	2%	2%	2%	2%
52	3%	3%	3%	3%
53	4%	4%	4%	4%
54	4%	4%	4%	4%
55	6%	6%	6%	6%
56	9%	5%	9%	5%
57	9%	5%	9%	5%
58	9%	5%	9%	5%
59	9%	5%	9%	5%
Ref	826	825	826	825

### DURATION OF T-DROP FOR MEMBERS

Present T-DROP members are assumed to remain in T-DROP according to the following table:

Entry Age	Assumed Duration Years
50-56	6
57	5
58	4
59+	3

**TEACHERS**  
**SEPARATIONS FROM ACTIVE EMPLOYMENT BEFORE AGE AND SERVICE**  
**RETIREMENT & INDIVIDUAL PAY INCREASES**

Sample Ages	Percent of Active Members Separating within the Next Year						
	Service	Death		Disability		Other	
		Men	Women	Men	Women	Men	Women
	0					25.30%	18.00%
	1					13.80%	11.30%
	2					10.60%	9.10%
	3					8.40%	8.40%
	4					5.00%	6.60%
25	5 & Up	0.01%	0.01%	0.05%	0.05%	3.50%	4.00%
30		0.02%	0.01%	0.05%	0.04%	3.60%	4.30%
35		0.03%	0.02%	0.04%	0.05%	2.80%	2.90%
40		0.04%	0.02%	0.08%	0.09%	2.30%	2.10%
45		0.05%	0.03%	0.18%	0.16%	1.90%	1.80%
50		0.07%	0.05%	0.40%	0.39%	2.90%	2.20%
55		0.11%	0.10%	0.73%	0.69%	3.60%	2.60%
60		0.22%	0.20%	0.96%	0.86%	3.10%	2.30%
65		0.43%	0.38%	1.00%	0.90%	2.50%	1.80%
Ref:		472 x 0.48	473 x 0.44	737 x 1	738 x 1	718 1192	719 1193

Age	Pay Increase Assumptions for an Individual Member		
	Merit & Seniority	Base (Economic)	Increase Next Year
20	5.10%	3.25%	8.35%
25	4.10%	3.25%	7.35%
30	3.10%	3.25%	6.35%
35	2.10%	3.25%	5.35%
40	1.40%	3.25%	4.65%
45	0.90%	3.25%	4.15%
50	0.46%	3.25%	3.71%
55	0.12%	3.25%	3.37%
60	0.00%	3.25%	3.25%
65	0.00%	3.25%	3.25%
Ref:	388		

**SUPPORT EMPLOYEES**  
**SEPARATIONS FROM ACTIVE EMPLOYMENT BEFORE AGE AND SERVICE**  
**RETIREMENT & INDIVIDUAL PAY INCREASES**

Sample Ages	Percent of Active Members Separating within the Next Year						
	Service	Death		Disability		Other	
		Men	Women	Men	Women	Men	Women
	0					47.50%	46.80%
	1					27.30%	24.90%
	2					18.90%	17.00%
	3					15.30%	13.20%
	4					10.80%	10.40%
25	5 & Up	0.01%	0.01%	0.05%	0.04%	11.10%	9.50%
30		0.02%	0.01%	0.10%	0.05%	9.00%	7.20%
35		0.03%	0.02%	0.10%	0.05%	6.90%	5.40%
40		0.04%	0.02%	0.12%	0.07%	5.40%	4.90%
45		0.05%	0.03%	0.20%	0.16%	4.30%	4.40%
50		0.07%	0.05%	0.55%	0.34%	3.90%	3.60%
55		0.11%	0.10%	0.88%	0.59%	3.50%	3.00%
60		0.22%	0.20%	0.98%	0.76%	2.80%	2.50%
65	0.43%	0.38%	1.00%	0.80%	2.30%	2.00%	
Ref:		472 x 0.48	473 x 0.44	739 x 1	740 x 1	720 1194	721 1195

Age	Pay Increase Assumptions for an Individual Member		
	Merit & Seniority	Base (Economic)	Increase Next Year
20	5.85%	3.25%	9.10%
25	4.97%	3.25%	8.22%
30	3.93%	3.25%	7.18%
35	3.33%	3.25%	6.58%
40	2.65%	3.25%	5.90%
45	1.29%	3.25%	4.54%
50	0.35%	3.25%	3.60%
55	0.00%	3.25%	3.25%
60	0.00%	3.25%	3.25%
65	0.00%	3.25%	3.25%
Ref:	389		

## MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

### JUNE 30, 2016

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<b>Marriage Assumption:</b>	100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses.
<b>Pay Increase Timing:</b>	Beginning of (Fiscal) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
<b>Decrement Timing:</b>	Decrements are assumed to occur mid-year, with the exception of normal and early retirement, which are assumed to occur at the beginning of the year. This implies that people who worked the entire school year are reported as active members even if they retired at the end of the year.
<b>Eligibility Testing:</b>	Eligibility for benefits is determined based upon the age nearest birthday and the service nearest whole year on the date of the valuation.
<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 does not operate during the first 5 years of service. Disability and turnover do not operate during retirement eligibility.
<b>Normal Form of Benefit:</b>	The assumed normal form of benefit is the straight life form.
<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. The payroll used for this purpose is payroll for all active members plus payroll for members who entered T-DROP on or after September 2003 and retirees who returned to work.
<b>Adjustments:</b>	Active member liabilities were increased by 0.25% to account for subsidized Options, Service Purchases, and data uncertainties.



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**SECTION H**  
GLOSSARY

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## GLOSSARY

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***Accrued Service.*** The service credited under the plan which was rendered before the date of the actuarial valuation.

***Accumulated Benefit Obligation.*** The actuarial present value of vested and non-vested benefits based on service to date and past and current salary levels.

***Actuarial Accrued Liability.*** The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as “accrued liability” or “past service liability.”

***Actuarial Assumptions.*** Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

***Actuarial Cost Method.*** A mathematical budgeting procedure for allocating the dollar amount of the “actuarial present value of future plan benefits” between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”

***Actuarial Equivalent.*** A single amount or series of amounts of equal value to another single amount or series of amounts, computed on the basis of the rate(s) of interest and mortality tables used by the plan.

***Actuarial Present Value.*** The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

***Actuarial Present Value of Credited Projected Benefits or Pension Benefit Obligation.*** The present value of future benefits based on service to date and the effect projected salary increases.

## GLOSSARY

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**Actuary.** A person who is trained in the applications 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. The Society of Actuaries is an international research, education and membership organization for actuaries in the life and health insurance, employee benefits, and pension fields. It administers a series of examinations leading initially to Associateship and the designation A.S.A. and ultimately to Fellowship with the designation F.S.A. The federal government certifies actuaries to practice under ERISA with the designation of E.A.

**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.

**Experience 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.

**Normal Cost.** The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as “current service cost.” Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

**Plan Termination Liability.** The actuarial present value of future plan benefits based on the assumption that there will be no further accruals for future service and salary. The termination liability will generally be less than the liabilities computed on a “going concern” basis and is not normally determined in a routine actuarial valuation.

**Reserve Account.** An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

**Unfunded Actuarial Accrued Liability.** The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as “unfunded accrued liability.”

**Valuation Assets.** The value of current plan assets recognized for valuation purposes. Generally based on book value plus a portion of unrealized appreciation or depreciation.