Gabriel Roeder Smith & Company
Consultants & Actuaries

OHIO STATE HIGHWAY PATROL RETIREMENT SYSTEM

ANNUAL ACTUARIAL VALUATION REPORT

DECEMBER 31, 2015

TABLE OF CONTENTS

GRS
Gabriel Roeder Smith & Company
Consultants & Actuaries
One Towne Square
Suite 800
Southfield, MI 48076-3723
248.799.9000 phone
248.799.9020 fax
www.gabrielroeder.com

August 25, 2016

Retirement Board
Ohio State Highway Patrol Retirement System
Columbus, Ohio

Ladies and Gentlemen:

The results of the regular annual **actuarial valuation as of December 31, 2015** of the Ohio State Highway Patrol Retirement System (HPRS), as established by Chapter 5505 of the Revised Code, are presented in this report.

The purposes of the valuation are as follows:

- Measure the financial position of HPRS;
- Assist the Board in establishing employer and employee contribution rates necessary to fund the benefits provided by HPRS;
- Determine the number of years required to amortize the pension unfunded actuarial accrued liabilities based upon established contribution rates; and
- Provide actuarial reporting and disclosure information for the System's financial report, and analyze the experience of the System over the past year.

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 System only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

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

Your Executive Director furnished the member statistical data required for the valuation, together with pertinent data on financial operations. 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.

Your attention is directed particularly to the summary of results, comments and recommendations on pages 3 through 6.

The actuarial calculations were performed in accordance with accepted actuarial procedures. The calculations were based upon provisions of the Retirement System described in Section A.

The financial assumptions used in making the valuations are shown in Section F of this report. Assumptions concerning future experience are needed for computing employer contribution rates. As time passes and actual experience develops, assumed and actual experiences are compared. From time to time one or more of the assumptions about the future are changed by the Board after consulting with the actuary. The assumptions used in performing the 2015 valuation were adopted by the Board in conjunction with a five-year experience investigation for the period ending December 31, 2014.

The cooperation of the Executive Director and staff in furnishing materials requested for this valuation, and the complete and excellent condition of the records, is acknowledged with appreciation.

The signing actuaries are independent of the plan sponsor.

Mita D. Drazilov and Brian B. Murphy are Members of the American Academy of Actuaries (MAAA), and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,

Mita D. Drazilov

Mita D. Drazilov, ASA, FCA, MAAA

Brian B. Murphy

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

MDD/BBM:rmn

DECEMBER 31, 2015
SUMMARY OF RESULTS, COMMENTS AND RECOMMENDATIONS

Ohio Revised Code Section 5505.15 provides in part as follows:

> (B) The state shall annually pay into the employer accumulation fund, in monthly or less frequent installments as the state highway patrol retirement board requires, the employer contribution. The employer contribution shall be an amount equal to twenty-six and one-half percent of the total salaries paid to contributing members.

With the enactment of Senate Bill 345, the Board has the discretion to set the member contribution rate and the Cost of Living Allowance (COLA) percentage to comply with the amortization requirement of Section 5505.121 of the Revised Code. Based upon preliminary December 31, 2015 actuarial valuation results, the Board voted to maintain the member contribution rate and COLA schedule that was adopted in August 2014. The member contribution rate is 12.5% and the COLA is 1.25%. In addition, the Board voted to allocate 4.0% of the 26.50% of payroll employer contribution rate to the retiree health program for calendar year 2016, and 0.0% thereafter (compared to 4.0% for all years for the December 31, 2014 Valuation), and 22.50% to pension for calendar year 2016 and 26.50% thereafter. The purpose of this report is to provide information on the results of the December 31, 2015 actuarial valuation based upon these decisions.

The **total employer contribution rate** is 26.50% of payroll, as established by Statute. The breakdown between employer, employee, pension and health used for this valuation is shown below:

	Contribution Rates Expressed as a % of Active Payroll (Calendar Year 2016)		
	Retirement, Survivor & Disability Allowances	**Post-Retirement Health Care**	**Totals**
Employer	22.50%	4.00%	26.50%
Employee	12.50%	0.00 %	12.50%
Totals	**35.00%**	**4.00%**	**39.00%**

For purposes of this report, based upon discussions with staff, the retiree health rate is presumed to be 4.0% for calendar year 2016 and 0.0% for calendar year 2017 and beyond.

DECEMBER 31, 2015
SUMMARY OF RESULTS, COMMENTS AND RECOMMENDATIONS
(CONTINUED)

Items of significant importance for the December 31, 2015 actuarial valuation include:

1. The actuarial valuation was based upon the actuarial assumptions adopted by the Board in conjunction with the 5-year Experience Study covering the period January 1, 2010 through December 31, 2014. In particular, the investment return assumption used was 7.75% and the wage inflation assumption was 3.50% for the period beginning January 1, 2016.

2. The rate of investment return on a market value basis for the calendar year was below the actuarial assumed investment return rate of 8.0% that was in effect in calendar year 2015. The market value rate of return for calendar year 2015 was approximately (0.9)%. This figure will generally differ from other reported return figures due to restated audited asset figures, approximate formulas and treatment of System expenses. The funding value rate of return for calendar year 2015 was approximately 8.2%. The funding value of assets currently exceeds the market value of assets by approximately $40.8 million.

3. Experience during calendar year 2015 in the retiree health plan was favorable (i.e., actual employer paid claims were less than expected). However, after changes in actuarial assumptions and a change in the employer contribution rate from 4.0% for all years, to 4.0% in 2016 and 0.0% thereafter, the retiree health plan is expected to remain solvent until 2026, compared with 2029 last year. Note that changes to the Medicare Part B monthly reimbursements (i.e., $30 in calendar year 2016 and $0 thereafter) and monthly member premiums for Medicare eligible beneficiaries adopted at the August 2014 Board meeting are reflected in this report.

This valuation indicates that a total employer contribution rate allocation to the pension program of 22.50% in 2016 and 26.50% thereafter, with changes in actuarial assumptions based on the 5-year Experience Study covering the period January 1, 2010 through December 31, 2014, produces a 30-year amortization period for the pension program. The calculations reflect a 4.0% employer rate allocation to the retiree health program for calendar year 2016 and 0.0% thereafter, and are based upon the Funding Value of Assets.

Comment on Post-Retirement Health Care:

If all assumptions are met exactly and contribution rates and benefit provisions continue at their present levels, the retiree health program will run out of money and benefits will cease. The retiree health plan is expected to remain solvent until about 2026. Beyond that date, higher contributions are required to extend the solvency of the fund. The employer paid benefit payout rate is approximately 11.4% of payroll, approximately three times the calendar year 2016 retiree health contribution income. This situation cannot continue indefinitely. **Further changes to the retiree health plan (i.e., in addition to those made recently) and/or further increases in employer contribution rates and/or member premiums will need to be a part of the future if the program is to continue.**

Recommendation: The following reserve transfers are recommended as of December 31, 2015:

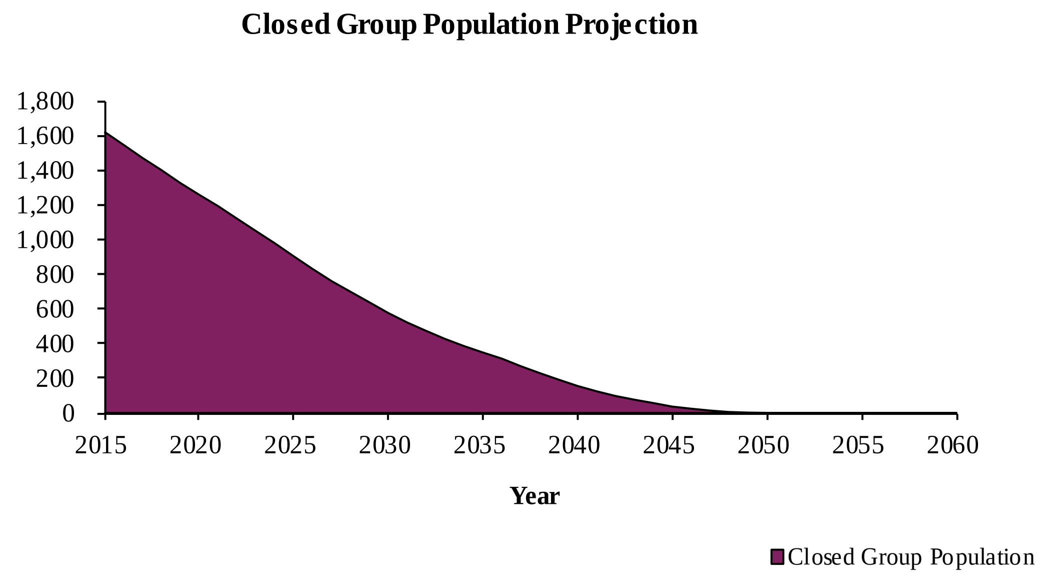
Transfer To (From)	Total Amount
Pension Reserve Fund:	$26,508,129
Survivor Benefit Fund:	38,529,533
Total	**$65,037,662**

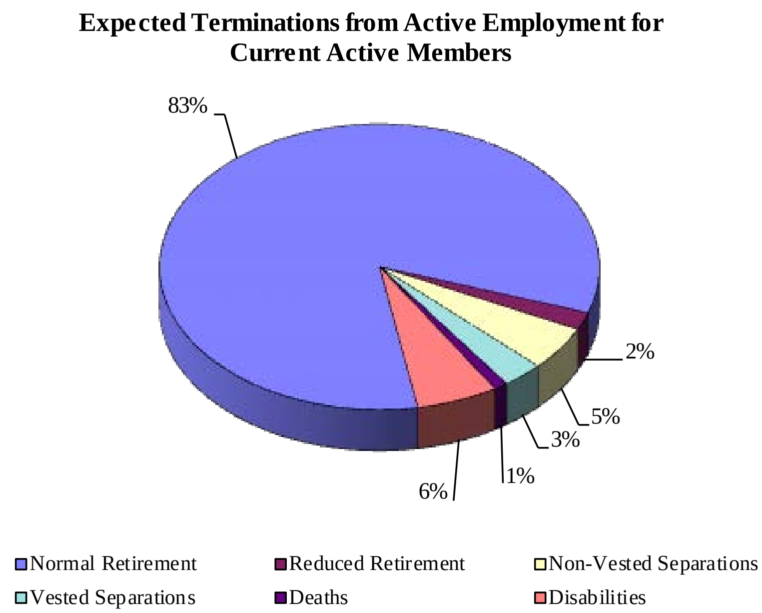
The reserve funds from which the transfers are made are determined as follows: First, the accumulated contributions of members who retired or died with survivor benefits payable prior to January 1, 2016 should be transferred from the Employees' Savings Fund if this has not already been done. The remainder of the transfer should then be taken from the Income Fund or the Employer's Accumulation Fund, as the Board deems appropriate. The purpose of these transfers is to ensure that all pension benefits are fully funded by the appropriate reserve funds.

DECEMBER 31, 2015
SUMMARY OF RESULTS, COMMENTS AND RECOMMENDATIONS
(CONCLUDED)

Conclusion: Based upon the results of the December 31, 2015 regular annual actuarial valuation, the unfunded actuarial accrued liabilities of the pension program are expected to be amortized over a 30-year period. With regard to the Retiree Health Plan, solvency to 2026 is an unfavorable result, since most people presently near retirement will live beyond that date. In addition, given the volatility of health care costs, the Plan may become insolvent sooner than 2026. A combination of contribution increases and continued cost containment measures including plan redesign will be important for the Retiree Health Plan.

EXPECTED DEVELOPMENT OF PRESENT POPULATION
DECEMBER 31, 2015





The charts above show the expected future development of the present population in simplified terms. The Retirement System presently covers 1,621 active members. Eventually, 5% of the population is expected to terminate covered employment prior to retirement and forfeit eligibility for an employer provided benefit. 88% of the present population is expected to receive monthly retirement benefits either by retiring directly from active service, or by separating from service without withdrawing contributions. 7% of the present population is expected to become eligible for death-in-service or disability benefits. Within 13 years, over half of the covered membership is expected to consist of new hires.

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 7.75% on the actuarial value of assets), it is expected that:

(1) The employer normal cost as a percentage of pay will remain level,
(2) The unfunded actuarial accrued liabilities will be fully amortized after 30 years, and
(3) The funded status of the plan will increase gradually towards a 100% funded ratio.

When selecting a contribution allocation procedure, the following three items should be considered, including the balance amongst the three items:

(1) Benefit security,
(2) Intergenerational equity, and
(3) Contribution stability and predictability

Generally, given the nature of public employee retirement systems (e.g., level contribution financing objective and perceived ongoing nature of the plan or plan sponsor), intergenerational equity and contribution stability and predictability have received more consideration than benefit security when contribution allocation procedures are selected. However, given the importance of benefit security to any retirement system, we suggest that contributions to the System in excess of those presented in this report be considered.

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 obligation to an unrelated third party in a market value type transaction.
(2) The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit) and potential future losses could result in future unfunded liability contributions.
(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.

SECTION A

RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES

RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES
BENEFITS AND CONDITIONS VALUED
DECEMBER 31, 2015

Age & Service Pension: A member may retire at age 52 to age 60, provided he has 20 or more years of service, or at age 48 with 25 or more years of contributing service. The member's pension equals the sum of 2-1/2% of final average salary [average of salaries during highest 5 years (3 years prior to January 1, 2015)] times years of service not in excess of 20, 2-1/4% of final average salary times years of service in excess of 20 but not in excess of 25 and 2% of final average salary times years of service in excess of 25. The maximum pension payable is 79.25% of the member's final average salary. A member must retire upon attainment of age 60 or completion of 20 years of service, whichever occurs later.

Reduced Retirement: A member who has acquired at least 20 but less than 25 years of service and is between the ages of 48 and 52 is eligible to receive a Pension computed in the same manner as an Age & Service pension but reduced as follows:

Age	Percent of Age & Service Pension
48	75%
49	80
50	86
51	93
52	100

Deferred Pension: A member who has acquired 20 years of service and retires is eligible to receive a pension computed in the same manner as an Age & Service Pension at the attainment of age 52. A reduced benefit is payable if the retirant elects to receive a benefit after age 48 and prior to age 52. The reduction is waived for members with 25 or more years of service. A member, who has acquired 15 years of service and who voluntarily resigns or is discharged, is eligible to receive a pension equal to 1-1/2% of final average salary multiplied by total service. The pension shall begin the first month after attainment of age 55, provided the member does not withdraw his accumulated contributions from the employees' savings fund.

Disability Pension:

A. **In-the-Line-of-Duty:** A member who is permanently disabled with a duty-related injury is eligible to receive a pension that is the largest of (i) 61.25% of average final salary, or (ii) the Age & Service Pension.

B. **Off-Duty:** A member who is permanently disabled with a non-duty related injury or illness is eligible to receive a pension that is the larger of (i) 50% of average annual salary, or (ii) the Age & Service Pension.

Survivor's Benefits: The spouse of a deceased retirant (other than a deferred retirant) is eligible to receive a pension of $900 a month, or 50% of the computed monthly pension the retirant was receiving, whichever is greater. The surviving spouse of an active member or of a deferred retirant who *was not* yet eligible for an immediate pension benefit is eligible to receive a pension of $900 per month. The surviving spouse of an active member or of a deferred retirant who *was* eligible for an immediate pension benefit is eligible to receive $900 per month or 50% of the immediate benefit for which the retiree was eligible, whichever is greater. The benefit terminates upon death. Each surviving child of a deceased member or retirant is eligible for a pension of $150 a month until attainment of age 18, marriage, or death. The benefit may be continued to age 23 if the child is a full-time student. Each surviving child regardless of age, who was totally dependent upon the deceased member or retirant at his death because of physical or mental disability is eligible to receive a pension of $150 per month until his death or recovery from the disability. If there is no spouse or surviving children, each dependent parent is eligible to receive a pension of $150 a month. Additionally, a $5,000 lump sum benefit is payable upon the death of the retirant.

Minimum Benefit: All members who retired with an Age & Service Pension or Disability Benefit are eligible to receive a minimum benefit of $1,050 per month.

Members' Contributions to the Fund: Members contribute a certain percentage of the member's annual salary. The percentage shall not be less than 10.0% of salary but not more than 14.0%. The State Highway Patrol Retirement System shall establish and may adjust the rate as it considers necessary to meet the amortization period requirement. For the December 31, 2015 valuation, the assumed member contribution rate is 12.5%.

State Contributions: The state contributes the remaining amount necessary to finance the Retirement System on an actuarial basis. By statute, the state's contribution rate can be neither less than the member contribution rate, nor more than three times the member rate. The employer contribution shall be an amount equal to 26.50 percent of the total salaries paid to contributing members.

Post-Retirement Increases: The basic benefit for all retirants is increased by 1.25 percent each year starting at age 60 (age 53 for members retired or entered the DROP prior to 1/7/2013). The retirant must have also been receiving monthly benefits for at least twelve months. Benefit recipients receiving survivor benefits prior to 1/7/2013 are eligible for the increase after receiving benefits for twelve months. Disability members retired prior to 1/7/2013 are eligible for the increase after receiving benefits for sixty months or age 53 whichever occurs first. The Board may adjust the cost of living adjustment annually. The Board's determination shall be based on the annual actuarial valuation. If the Board determines that an increase may be made, the increase shall not exceed 3 percent of the eligible member's basic benefit.

PLUS: A qualified member may elect a partial lump sum benefit of not less than 6 times the monthly amount payable to the member as a single lifetime pension and not more than 60 times that amount.

Deferred Retirement Option Program (DROP): Members are eligible for a one-time election to "DROP in" upon attainment of unreduced retirement eligibility. The primary features of the DROP include:

a) During participation in the DROP, members continue to make contributions based upon the member contribution rate. While participating in the DROP, 100% of members' contributions, up to 10% of payroll, are deposited to their DROP account.

b) 100% of the member's computed benefit (based upon service and salary at time of DROP), including any scheduled post-retirement increases is credited to the member's DROP account.

c) The DROP account is credited with interest annually based upon a rate of return earned on a selected group of fixed income type investments.

***Deferred Retirement Option Program (DROP) (Continued)**:*

d) A member who "DROPs in" must stay in the DROP for a minimum period of time based on age at time of "DROPing in". A minimum participation period of 3 years for members who "DROP in" prior to age 52 and 2 years for members who "DROP in" on or after age 52. After a maximum of 8 years in the DROP program or attaining age 60, the member who entered the DROP program must retire.

e) If the member "DROPs in", the member's annual benefit when the member "DROPs out" (i.e. retires) is based upon the benefit calculations at time of the "DROP in", including any post-retirement increases that may have accrued during the DROP participation period.

f) If, during participation in the DROP, a member becomes disabled due to a duty related injury/illness, the member can choose to 1) have a disability pension benefit calculated based on the assumption that participation in the DROP did not occur, or 2) the member can elect to accept the age/service pension benefit achieved through DROP participation plus the accumulation in the DROP account. Duty disability benefit recipients will not suffer the loss of accumulated interest for early departure from the DROP.

g) Once a member elects to participate in the DROP, their contributions are committed for the minimum period (2 or 3 years). If the member voluntarily discontinues DROP participation prior to the minimum participation period, the member will not receive any interest accumulated in the DROP account but will receive all accumulated pension benefits and pension contributions deposited into the DROP account at the end of the minimum participation period.

SAMPLE BENEFIT COMPUTATION FOR MEMBERS

Assumed data in connection with this sample retirement is shown below:

	Data	Description
A.	$60,000	Final Average Compensation
B.	27	Years of Credited Service
C.	50	Age of Retirant
D.	50%	Percentage to continue to spouse after retirant’s death (this is automatic)

Sample Computation Steps

E. Benefit Formula:	0.0250 x 20 x $60,000 =	$30,000
	0.0225 x 5 x $60,000 =	$ 6,750
	0.0200 x 2 x $60,000 =	$ 2,400
		$39,150

Benefit Payable to:

F. Retirant while spouse is alive (E)	$39,150
G. Spouse after retirant’s death (D x E)	$19,575
H. Retirant after spouse’s death (E)	$39,150

Projected Benefits to Member

Year of Retirement	Amount Payable*	
	COLA Beginning at Age 53	COLA Beginning at Age 60
First	$39,150	$39,150
Second	39,150	39,150
Third	39,150	39,150
Fourth	39,639	39,150
Fifth	40,129	39,150
Sixth	40,618	39,150
Seventh	41,108	39,150
Eighth	41,597	39,150
Ninth	42,086	39,150
Tenth	42,576	39,150
Eleventh	43,065	39,639

** Cost of Living Adjustment (COLA) is subject to change annually. The basic benefit for all retirants is increased by 1.25% each year starting at age 60 (age 53 for members retired or entered the DROP prior to 1/7/2013).*

RETIREMENT SURVIVOR & DISABILITY ALLOWANCES
COMPUTED EMPLOYER CONTRIBUTIONS TO SUPPORT BENEFITS

Contributions for	Contributions Expressed as Percents of Payroll	
Valuation Date - December 31	**2015**	**2014**
Normal Cost:		
Age & Service Benefits	14.27%	13.95%
Disability Benefits	2.36%	2.36%
Survivor Benefits	0.11%	0.13%
Separation Benefits	1.01%	0.94%
Administrative Expenses	1.20%	0.00%
Purchase of Military Service	0.75%	0.75%
Total Normal Cost	19.70%	18.13%
Less Member Contributions	12.50%	12.50%
Employer Normal Cost	7.20%	5.63%
Unfunded Actuarial Accrued Liabilities	19.30%	16.87%
Amortization Period	30	29
PENSION EMPLOYER CONTRIBUTION RATE	26.50% *	22.50%

* *22.50% employer pension contribution rate in 2016 (4.0% to retiree health) and 0.0% thereafter (0.0% to retiree health).*

The amortization period is computed and is the period of years over which the Board established pension employer contribution rate and the employee contribution rate will finance the unfunded liabilities. With the amortization periods shown above, the unfunded liability is expected to rise in dollar amount for several years before beginning to decline, although it is expected to decline steadily as a percentage of payroll (See page A-8).

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

(i) The annual normal costs for each individual active member, payable from the date of employment to the date of retirement, are sufficient to accumulate the value of the member's benefit at the time of retirement; and

(ii) each annual normal cost is a constant percentage of the member's year-by-year projected covered pay.

Actuarial Accrued Liabilities, $1,078,984,597, less pension assets of $739,848,920 resulted in unfunded actuarial accrued liabilities of $339,135,677, which were amortized as a level percent of payroll over 30 years. The characteristics of this method are illustrated on the following page. Actuarial accrued liabilities represent the portion of present values not covered by future normal cost contributions.

RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES FINANCING UNFUNDED ACTUARIAL ACCRUED LIABILITIES WHICH WERE CALCULATED USING A PAYROLL GROWTH ASSUMPTION OF 3.50% AND AN INVESTMENT RETURN ASSUMPTION OF 7.75% COMPOUNDED ANNUALLY

Level % of Payroll Amortization: Closed Amortization ($ Thousands)

Year	Active Employee Payroll	Unfunded Actuarial Accrued Liability	Annual UAL Contributions Dollars	Annual UAL Contributions % of Payroll	UAAL as % of Payroll
1	$ 103,483	$ 339,136	$ 19,972	19.30%	327.7%
2	107,105	344,687	20,671	19.30%	321.8%
3	110,854	349,943	21,395	19.30%	315.7%
4	114,734	354,855	22,144	19.30%	309.3%
5	118,750	359,371	22,919	19.30%	302.6%
6	122,906	363,432	23,721	19.30%	295.7%
7	127,208	366,975	24,551	19.30%	288.5%
8	131,660	369,931	25,410	19.30%	281.0%
9	136,268	372,224	26,300	19.30%	273.2%
10	141,037	373,772	27,220	19.30%	265.0%
11	145,973	374,484	28,173	19.30%	256.5%
12	151,082	374,262	29,159	19.30%	247.7%
13	156,370	373,000	30,179	19.30%	238.5%
14	161,843	370,580	31,236	19.30%	229.0%
15	167,508	366,876	32,329	19.30%	219.0%
16	173,371	361,750	33,461	19.30%	208.7%
17	179,439	355,053	34,632	19.30%	197.9%
18	185,719	346,621	35,844	19.30%	186.6%
19	192,219	336,277	37,098	19.30%	174.9%
20	198,947	323,829	38,397	19.30%	162.8%
21	205,910	309,069	39,741	19.30%	150.1%
22	213,117	291,770	41,132	19.30%	136.9%
23	220,576	271,686	42,571	19.30%	123.2%
24	228,296	248,552	44,061	19.30%	108.9%
25	236,286	222,078	45,603	19.30%	94.0%
26	244,556	191,952	47,199	19.30%	78.5%
27	253,115	157,834	48,851	19.30%	62.4%
28	261,974	119,357	50,561	19.30%	45.6%
29	271,143	76,124	52,331	19.30%	28.1%
30	280,633	27,703	54,162	19.30%	9.9%
31	290,455	0	0	0.00%	0.0%

An increasing “UAAL as a % of Payroll” indicates that the amortization payment is insufficient to amortize the Unfunded Actuarial Accrued Liability (UAAL) and the fund is expected to run out of money at some point. A decreasing “UAAL as a % of Payroll” indicates that the amortization payment is sufficient to amortize the UAAL. A level “UAAL as a % of Payroll” indicates that the amortization payment is sufficient only to pay the “real” interest on the UAAL.

RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES
ACTUARIAL PRESENT VALUE OF FUTURE BENEFITS
PRESENT RETIRED LIVES AND VESTED DEFERRED CASES
DECEMBER 31, 2015

Benefits Payable	Number	Monthly Amount	Actuarial Value
From Pension Reserve Fund:			
Regular Retirements	1,148	$4,244,699	$570,501,423
Disability Retirements	126	361,171	49,900,102
Total Benefits Payable from Pension Reserve Fund	1,274	4,605,870	620,401,525
From Survivor Benefit Fund:			
Surviving Spouses, Dependent Children & Dependent Parents	274	371,072	38,529,533
Total Benefits Payable from Survivor Benefit Fund	274	371,072	38,529,533
Total Retirement Benefits Payable	1,548	4,976,942	658,931,058
Total Vested Deferred Benefits Payable	10	29,949	3,631,422
Grand Total	**1,558**	**$5,006,891**	**$662,562,480**

RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES
DEVELOPMENT OF ACTUARIAL ACCRUED LIABILITIES
DECEMBER 31, 2015

Actuarial Present Value, December 31, of	(1) Total Actuarial Present Value	(2) Portion Covered By Future Normal Cost Contributions	(3) Actuarial Accrued Liabilities (1) - (2)
Age & service allowances based on service rendered before and likely to be rendered after valuation date	$ 550,831,372	$ 138,209,924	$ 412,621,448
Disability allowances likely to be paid to present active members who become totally and permanently disabled	26,107,036	21,815,597	4,291,439
Survivor benefits likely to be paid to spouses and children of present active members who die before retiring	1,307,660	871,322	436,338
Separation benefits (refunds of contributions and deferred allowances likely to be paid on behalf of present active members)	8,311,339	9,238,447	(927,108)
Retirement benefits likely to be paid to current retirants and beneficiaries and to present inactive members	662,562,480	0	662,562,480
Total	$ 1,249,119,887	$ 170,135,290	$ 1,078,984,597
Member portion	224,908,376	114,576,739	110,331,637
Employer portion	$ 1,024,211,511	$ 55,558,551	$ 968,652,960

RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES
SUMMARY STATEMENT OF SYSTEM RESOURCES AND OBLIGATIONS
DECEMBER 31, 2015

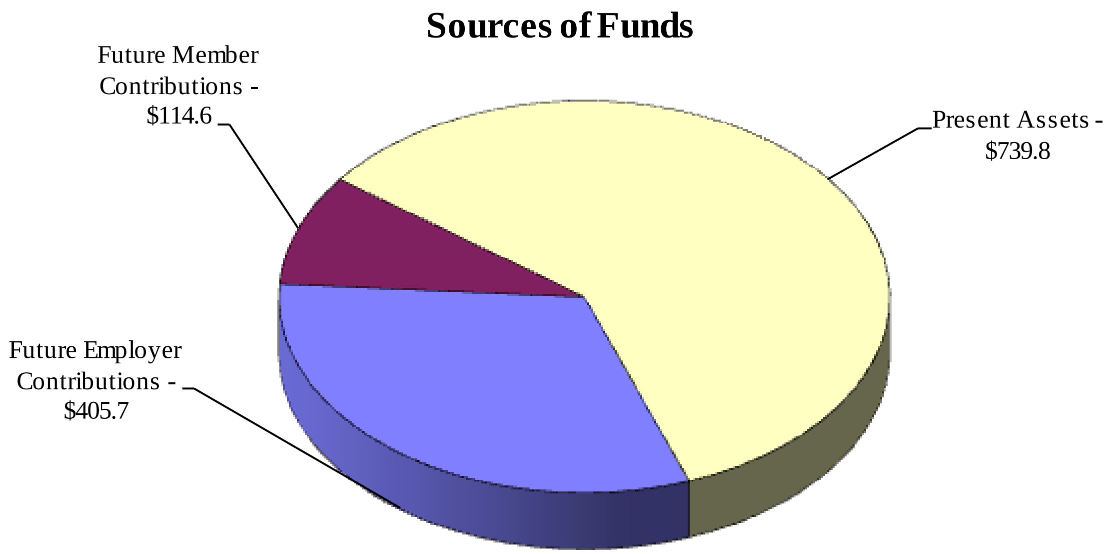
PRESENT RESOURCES AND EXPECTED FUTURE RESOURCES

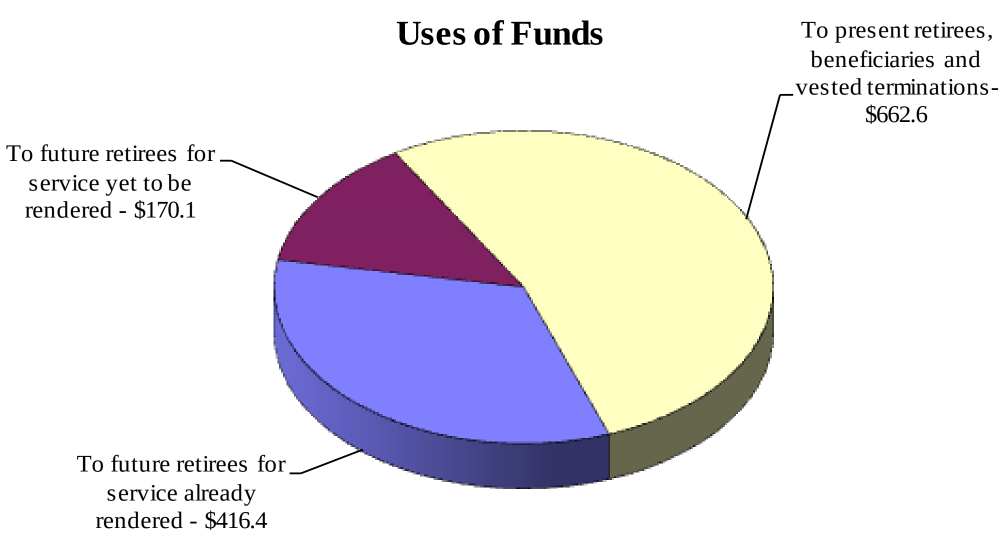
A. Present valuation assets		
1. Net assets from system financial statements	$ 805,644,760	
2. Market value adjustment	40,754,299	
3. Health assets	106,550,139	
4. Valuation assets: 1 + 2 - 3		$ 739,848,920
B. Actuarial present value of expected future employer contributions		
1. For normal costs	55,558,551	
2. For unfunded actuarial accrued liability	339,135,677	
3. Total		394,694,228
C. Actuarial present value of expected future member contributions		114,576,739
D. Total Present and Expected Future Resources		$ 1,249,119,887

ACTUARIAL PRESENT VALUE OF EXPECTED FUTURE BENEFIT PAYMENTS

A. To retirants and beneficiaries	$ 658,931,058
B. To terminated members	3,631,422
C. To present active members	
1. Allocated to service rendered prior to valuation date (actuarial accrued liability)	416,422,117
2. Allocated to service likely to be rendered after valuation date	170,135,290
3. Total	586,557,407
D. Total Actuarial Present Value of Expected Future Benefit Payments	$ 1,249,119,887

RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES FINANCING $1,249.1 MILLION OF BENEFIT PROMISES DECEMBER 31, 2015





RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES
COMPARATIVE STATEMENT

Valuation Date December 31	No.	Annual Payroll	Actuarial Accrued Liabilities Total	Actuarial Accrued Liabilities Funded	Actuarial Accrued Liabilities Unfunded	Unfunded/ Payroll	% Funded	Funding Years
1996	1,375	$ 59,239,349	$ 454,514,187	$ 411,316,254	$ 43,197,933	0.7	90.5%	16
1997 *	1,445	62,233,299	496,917,335	460,667,112	36,250,223	0.6	92.7%	17
1998	1,446	65,153,864	532,956,745	509,859,924	23,096,821	0.4	95.7%	10
1999 *	1,445	66,017,381	577,010,085	546,510,779	30,499,306	0.5	94.7%	20
2000 #	1,489	69,028,285	594,222,603	570,039,631	24,182,972	0.4	95.9%	8
2001	1,520	76,344,002	636,715,458	551,279,438	85,436,020	1.1	86.6%	31
2002 #	1,548	78,997,065	663,069,805	527,604,456	135,465,349	1.7	79.6%	32
2003	1,542	81,737,962	702,799,017	545,981,513	156,817,504	1.9	77.7%	32
2004 *	1,562	81,757,707	734,464,371	569,858,387	164,605,984	2.0	77.6%	34
2005 #	1,573	83,408,155	773,856,164	591,922,200	181,933,964	2.2	76.5%	35
2006 *	1,592	85,878,329	807,760,712	653,493,046	154,267,666	1.8	80.9%	28
2007	1,597	93,752,908	866,255,394	700,860,707	165,394,687	1.8	80.9%	27
2008	1,544	94,301,538	904,522,377	603,265,803	301,256,574	3.2	66.7%	N/A
2009	1,547	94,824,789	940,084,346	620,356,505	319,727,841	3.4	66.0%	N/A
2010 #	1,537	94,767,852	1,017,770,449	630,971,500	386,798,949	4.1	62.0%	N/A
2011	1,520	93,126,449	1,047,699,686	623,360,121	424,339,565	4.6	59.5%	N/A
2012 *	1,645	98,117,403	966,310,485	658,428,914	307,881,571	3.1	68.1%	30
2013 #	1,613	98,519,844	989,101,470	690,605,582	298,495,888	3.0	69.8%	30
2014	1,622	99,211,756	1,012,752,337	712,285,604	300,466,733	3.0	70.3%	29
2015	**1,621**	**99,983,224**	**1,030,172,702**	**739,848,920**	**290,323,782**	**2.9**	**71.8%**	**22**
2015 #	**1,621**	**99,983,224**	**1,078,984,597**	**739,848,920**	**339,135,677**	**3.4**	**68.6%**	**30**

* *Plan amended.*
\# *Revised actuarial assumptions or methods.*

While no one or two numeric indices can fully describe the financial condition of a retirement plan, ***the ratio of unfunded actuarial accrued liabilities to active member payroll ("Unfunded/Payroll" above) is significant***. Unfunded actuarial accrued liabilities represent a kind of debt, while active member payroll represents the Plan's capacity to collect contributions to pay toward debt --- thus ***the ratio is a relative index of condition***. ***The lower the ratio, the greater the financial strength, and vice-versa***.

CHANGES IN AVERAGE PAY

Year	Number of Members	Total Payroll	Average Pay	% Change from Prior Year in Average Pay	N.A.E.+	CPI
2001	1,520	$76,344,002	$50,226	8.3%	2.4%	1.6%
2002	1,548	78,997,065	51,032	1.6%	1.0%	2.4%
2003	1,542	81,737,962	53,008	3.9%	2.4%	1.9%
2004	1,562	81,757,707	52,342	(1.3)%	4.6%	3.3%
2005	1,573	83,408,155	53,025	1.3%	3.7%	3.4%
2006	1,592	85,878,329	53,944	1.7%	4.6%	2.6%
2007	1,597	93,752,908	58,706	8.8%	4.5%	4.1%
2008	1,544	94,301,538	61,076	4.0%	2.3%	0.1%
2009	1,547	94,824,789	61,296	0.4%	(1.5)%	2.7%
2010	1,537	94,767,852	61,658	0.6%	2.4%	1.5%
2011	1,520	93,126,449	61,267	(0.6)%	3.1%	3.0%
2012	1,645	98,117,403	59,646	(2.6)%	3.1%	1.7%
2013	1,613	98,519,844	61,079	2.4%	1.3%	1.5%
2014	1,622	99,211,756	61,166	0.1%	3.5%	0.8%
2015	1,621	99,983,224	61,680	0.8%	N/A	0.7%
		10 Year Average		1.5%	2.6% *	1.9%

+ *National Average Earnings published by the Social Security Administration.*
* *9 year average.*

Over long periods of time, the change in average pay is an approximate measure of the impact of inflation and "Across the Board" pay increases on member pays. In years when the number of members decreases, the change in average pay may tend to be greater than actual pay increases experienced by members. In years when the number of members increases the change in average pay may tend to be less than actual pay increases experienced by members.

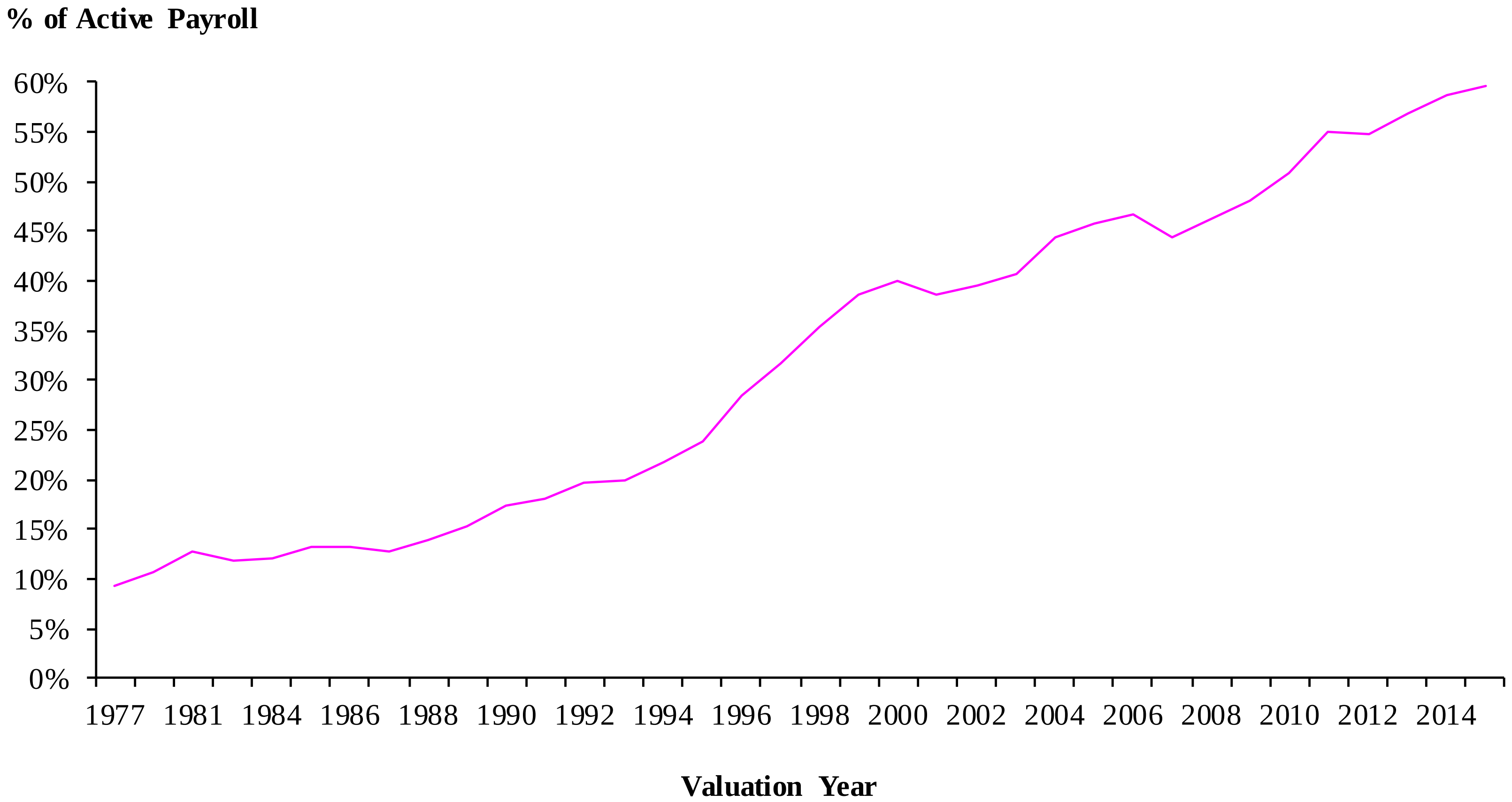
RETIREMENT, SURVIVOR, AND DISABILITY BENEFITS IN PAY STATUS COMPARATIVE STATEMENT

Valuation Date December 31	Number of People	Monthly Pensions	Active Payroll	Average Amount	% of Active Member Pays
1996	911	$ 1,402,909	$ 59,239,349	$ 1,540	28.4%
1997 *	984	1,645,613	62,233,299	1,672	31.7%
1998	1,060	1,914,091	65,153,864	1,806	35.3%
1999 *	1,123	2,123,471	66,017,381	1,891	38.6%
2000 #	1,174	2,300,464	69,028,285	1,960	40.0%
2001	1,207	2,460,308	76,344,002	2,038	38.7%
2002	1,231	2,603,108	78,997,065	2,115	39.5%
2003	1,253	2,770,149	81,737,962	2,211	40.7%
2004	1,282	3,023,341	81,757,707	2,358	44.4%
2005 #	1,301	3,177,731	83,408,155	2,443	45.7%
2006 *	1,337	3,341,805	85,878,329	2,499	46.7%
2007	1,359	3,470,329	93,752,908	2,554	44.4%
2008	1,371	3,628,092	94,301,538	2,646	46.2%
2009	1,385	3,793,054	94,824,789	2,739	48.0%
2010 #	1,424	4,011,554	94,767,852	2,817	50.8%
2011	1,465	4,270,807	93,126,449	2,915	55.0%
2012 *	1,497	4,470,542	98,117,403	2,986	54.7%
2013 #	1,523	4,667,280	98,519,844	3,065	56.8%
2014	1,558	4,857,703	99,211,756	3,118	58.8%
2015 #	**1,548**	**4,976,942**	**99,983,224**	**3,215**	**59.7%**

* *Plan amended.*
\# *Revised actuarial assumptions or methods.*

Pensions expressed as a % of payroll exceed contribution income by a considerable margin. This is a normal and expected condition in a funded plan such as HPRS, but it does have implications for cash flow and investment planning.

RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES BEING PAID EXPRESSED AS A % OF ACTIVE MEMBER PAYROLL DECEMBER 31, 2015



SHORT-TERM SOLVENCY TEST

The HPRS financing objective is to pay for the benefits 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.*

Short-term solvency test is one means of checking a system's progress under its funding program. In a short-term solvency test, the plan's present assets (cash and investments) are compared with: 1) Active member contributions on deposit; 2) The liabilities for future benefits to present retired lives; 3) The liabilities for service already rendered by active members. In a system that has been following the discipline of level percent financing, the liabilities for active member contributions on deposit (1) and the liabilities for future benefits to present retired lives (2) will be fully covered by present assets (except in rare circumstances). In addition, the liabilities for service already rendered by active members (3) will be partially covered by the remainder of the present assets. Generally, if the system has been using level cost financing, the funded portion of column 3 will increase over time.

Accrued Liabilities and Assets Allocated to Retirement, Survivor and Disability Allowances

Valuation Year	(1) Active Member Contributions	(2) Retirants, Beneficiaries & Vested Deferreds	(3) Active Members (Employer Financed Portion)	Valuation Assets	Portion of Accrued Liabilities Covered by Reported Assets (1)	(2)	(3)
1996	$ 52,297,873	$ 218,164,080	$ 184,052,234	$ 411,316,254	100%	100%	77%
1997 *	53,264,614	260,095,357	183,557,364	460,667,112	100%	100%	80%
1998	53,797,385	291,066,407	188,092,953	509,859,924	100%	100%	88%
1999 *	55,558,145	333,340,728	188,111,212	546,510,779	100%	100%	84%
2000 #	59,455,707	358,422,165	176,344,731	570,039,631	100%	100%	86%
2001	63,969,216	374,228,361	198,517,881	551,279,438	100%	100%	57%
2002 #	68,794,904	391,098,788	203,176,113	527,604,456	100%	100%	33%
2003	73,358,075	412,818,959	216,621,983	545,981,513	100%	100%	28%
2004 *	77,100,466	445,084,791	212,279,114	569,858,387	100%	100%	22%
2005 #	77,779,569	463,476,318	232,600,277	591,922,200	100%	100%	22%
2006 *	82,720,940	482,998,754	242,041,018	653,493,046	100%	100%	36%
2007	89,279,853	509,179,659	267,795,882	700,860,707	100%	100%	38%
2008	94,749,356	511,626,943	298,146,078	603,265,803	100%	99%	0%
2009	101,131,517	528,087,050	310,865,779	620,356,505	100%	98%	0%
2010 #	104,503,065	583,714,389	329,552,995	630,971,500	100%	90%	0%
2011	104,701,161	618,984,073	324,014,452	623,360,121	100%	84%	0%
2012 *	108,311,937	586,311,106	271,687,442	658,428,914	100%	94%	0%
2013 #	113,334,067	601,342,081	274,425,322	690,605,582	100%	96%	0%
2014	117,441,639	622,719,141	272,591,557	712,285,604	100%	96%	0%
2015	**122,286,821**	**632,731,445**	**275,154,435**	**739,848,920**	**100%**	**98%**	**0%**
2015 #	**122,286,821**	**662,562,480**	**294,135,296**	**739,848,920**	**100%**	**93%**	**0%**

* *Plan amendment.*
\# *Assumption or method change.*

SUMMARY OF UNFUNDED ACTUARIAL ACCRUED LIABILITIES

Each time a new benefit is added which applies to service already rendered, an "unfunded actuarial accrued liability" is created. In addition, if actual financial experiences are less favorable than assumed financial experiences, the difference is added to unfunded actuarial accrued liabilities.

In an inflationary economy, the value of the dollar is decreasing. This environment results in employee pays increasing in dollar amounts resulting in unfunded actuarial accrued liabilities increasing in dollar amounts, all at a time when the actual substance of these items may be decreasing. Looking at just dollar amounts of unfunded actuarial accrued liabilities can be misleading. Unfunded actuarial accrued liabilities divided by active employee payroll provides an index, which aids understanding. The smaller ratio of unfunded liabilities to active member payroll, the stronger the system. Observation of this relative index over a period of years will give an indication of whether the system is becoming financially stronger or weaker.

Summary of Assets and Actuarial Accrued Liabilities for Retirement, Survivor, and Disability Allowances

Valuation Year	Actuarial Accrued Liability (AAL)	Valuation Assets	Unfunded Actuarial Accrued Liability (UAAL)	Ratio of Assets to AAL	Active Member Payroll	UAAL as a % of Active Member Payroll
1996	$ 454,514,187	$411,316,254	$ 43,197,933	90.5%	$59,239,349	72.9%
1997 *	496,917,335	460,667,112	36,250,223	92.7%	62,233,299	58.2%
1998	532,956,745	509,859,924	23,096,821	95.7%	65,153,864	35.4%
1999 *	577,010,085	546,510,779	30,499,306	94.7%	66,017,381	46.2%
2000 #	594,222,603	570,039,631	24,182,972	95.9%	69,028,285	35.0%
2001	636,715,458	551,279,438	85,436,020	86.6%	76,344,002	111.9%
2002 #	663,069,805	527,604,456	135,465,349	79.6%	78,997,065	171.5%
2003	702,799,017	545,981,513	156,817,504	77.7%	81,737,962	191.9%
2004 *	734,464,371	569,858,387	164,605,984	77.6%	81,757,707	201.3%
2005 #	773,856,164	591,922,200	181,933,964	76.5%	83,408,155	218.1%
2006 *	807,760,712	653,493,046	154,267,666	80.9%	85,878,329	179.6%
2007	866,255,394	700,860,707	165,394,687	80.9%	93,752,908	176.4%
2008	904,522,377	603,265,803	301,256,574	66.7%	94,301,538	319.5%
2009	940,084,346	620,356,505	319,727,841	66.0%	94,824,789	337.2%
2010 #	1,017,770,449	630,971,500	386,798,949	62.0%	94,767,852	408.2%
2011	1,047,699,686	623,360,121	424,339,565	59.5%	93,126,449	455.7%
2012 *	966,310,485	658,428,914	307,881,571	68.1%	98,117,403	313.8%
2013 #	989,101,470	690,605,582	298,495,888	69.8%	98,519,844	303.0%
2014	1,012,752,337	712,285,604	300,466,733	70.3%	99,211,756	302.9%
2015	**1,030,172,702**	**739,848,920**	**290,323,782**	**71.8%**	**99,983,224**	**290.4%**
2015 #	**1,078,984,597**	**739,848,920**	**339,135,677**	**68.6%**	**99,983,224**	**339.2%**

* *Plan amendment.*
\# *Assumption or method change.*

The figures on this page do not include liabilities and assets related to post-retirement Health Care and Medicare reimbursement.

SCHEDULE OF EMPLOYER CONTRIBUTIONS FOR COMPLIANCE WITH APPLICABLE GASB STATEMENTS

Year Ended December 31	Actual Contributions	Percent of Required Contributed
1999	$13,569,730	100%
2000	13,210,189	100%
2001	13,901,313	100%
2002	14,923,893	100%
2003	16,361,339	100%
2004	17,205,610	100%
2005	18,467,789	100%
2006	19,263,941	98%
2007	19,956,700	92%
2008	20,302,216	96%
2009	20,453,914	102%
2010	21,211,944	93%
2011	22,966,338	85%
2012	23,766,361	78%
2013	22,908,182	65%
2014	22,325,421	75%
2015	**22,895,242**	**102%**

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

The amounts reported in this schedule do not include contributions for post-employment Health Care benefits.

NOTES TO TREND DATA FOR COMPLIANCE WITH APPLICABLE GASB STATEMENTS

The information presented in the required supplementary schedules was determined as part of the actuarial valuation at the dates indicated. Additional information as of the latest actuarial valuation follows:

Valuation Date	December 31, 2015
Actuarial Cost Method	Entry Age
Amortization Method	Level Percent Closed
Remaining Amortization Period	30 years for retirement allowances in determining the Annual Required Contribution
Asset Valuation Method	4-year smoothed market 20 % Corridor
Actuarial Assumptions:	
Investment Rate of Return	7.75%
Projected Salary Increases	3.8% - 13.5%
Includes Wage Inflation at	3.5%

OTHER REQUESTED CAFR INFORMATION

As of December 31, 2015, the actuarial present value of credited projected benefits for current employees is shown below:

	Actuarial Present Value of Credited Projected Benefits
Current Employees	
Accumulated employee contributions including allocated investment income	$ 122,286,821
Employer - financed vested	202,754,958
Employer - financed non-vested	29,543,819

As of December 31, 2015, there were 763 vested active members and 858 non-vested active members.

Valuation Date December 31,	Funded Ratio Based on AVA	Funded Ratio Based on MVA	UAAL Amortization Period	Total UAAL / Total Payroll	Total Actuarial Value of Assets / Total Payroll	Total AAL / Total Payroll	Standard Deviation of Investment Return / Total Payroll
2006 *	81 %	85 %	28	1.8	7.6	9.4	**
2007	81	83	27	1.8	7.5	9.2	**
2008	67	56	N/A	3.2	6.4	9.6	**
2009	66	63	N/A	3.4	6.5	9.9	**
2010 #	62	64	N/A	4.1	6.7	10.7	**
2011	60	58	N/A	4.6	6.7	11.3	**
2012 *	68	67	30	3.1	6.7	9.8	**
2013 #	70	74	30	3.0	7.0	10.0	**
2014	70	73	29	3.0	7.2	10.2	98 %
2015 #	69	65	30	3.4	7.4	10.8	92

* *Plan amendment.*
\# *Assumption or method change.*
** *Unavailable*

Funded ratio: The funded ratio is expected to trend toward 100% by December 31, 2046 under the current amortization period.

UAAL Amortization Period: The statutory amortization period is expected to decrease by one year each year.

UAAL / Total Payroll: The ratio of the unfunded actuarial accrued liability to payroll is expected to trend toward to 0% by December 31, 2046.

Funding Value of Assets / Total Payroll: As the funded ratio increases, this ratio is expected to converge to the ratio of Total AAL / Payroll.

Total AAL / Total Payroll: Total AAL / Total Payroll is expected to grow as the system matures.

Standard Deviation of Investment Return / Total Payroll: This measure illustrates the impact of a one standard deviation change in investment return as a percent of payroll. Investment return experience other than expected ultimately affects the employer contribution rates. The higher the ratio of this risk metric, the greater the expected volatility in employer contribution rates. Absent changes in investment policy, this metric is expected to increase as the assets grow to 100% of the AAL.

SECTION B

POST-RETIREMENT HEALTH CARE AND MEDICARE REIMBURSEMENT

POST-RETIREMENT HEALTH CARE AND MEDICARE REIMBURSEMENT PROVISIONS EVALUATED AND/OR CONSIDERED

Benefits Provided

Since July 1, 1974, the Retirement System has made Health Care available for every benefit recipient and eligible dependent under a hospitalization and health care policy administered by Aetna and Medical Mutual of Ohio. This Plan is secondary to Medicare or any other Health Care coverage. Depending on Medicare coverage, members are enrolled in either the fully-insured Medicare Advantage plan or the self-insured plan. Each year the Board establishes participant premium rates, any necessary co-payments for the retirant, spouse, or dependent children, and any other changes in plan design for the following calendar year. The member premiums for calendar years 2016 and 2017 are as follows:

Premium Scale for Members or Spouses Ineligible for Medicare

2016

	Monthly Premium		
Age	**Retiree**	**Spouse**	**Retiree/Spouse**
65+	$83	$149	$232
60-64	$116	$149	$265
56-59	$149	$182	$331
52-55	$182	$215	$397
Under 52	$215	$248	$463

2017

	Monthly Premium		
Age	**Retiree**	**Spouse**	**Retiree/Spouse**
65+	$99	$165	$264
60-64	$132	$165	$297
56-59	$182	$215	$397
52-55	$248	$297	$545
Under 52	$281	$330	$611

Premium Scale for Members or Spouses Eligible for Medicare

	Monthly Premium		
Calendar Year	**Retiree**	**Surviving Spouse**	**Spouse**
2016	$20	$46	$100
2017	$25	$91	$165

Benefits Provided (continued)

The dependent child premium is $50 for each child.

Effective January 1, 2015, a benefit recipient who is re-employed at least thirty hours each week may secure primary medical and/or prescription coverage through the employer or the state highway patrol retirement system. Alternatively, the benefit recipient may elect to secure primary coverage through a spouse's employment. If the benefit recipient is re-employed and secures primary coverage through the state highway patrol retirement system, he or she shall pay a premium set by the Board. For 2016, the amount is $330. If the benefit recipient is re-employed less than thirty hours per week, the benefit recipient may apply to the Board for an exemption to the $330 premium. An exemption may also be granted for seasonal employees. If the exemption is granted, the benefit recipient will pay the normal premium amount for his or her age.

After calendar year 2017, member and spouse premiums presented on B-1 are assumed to increase by the health trend assumption shown on page B-10.

Basic Plan coverage provides for a portion of payment of all reasonable and customary hospital expenses. All hospital admissions must be pre-certified prior to an elective admission. Emergency confinements require notification within 48 hours following admission. If a covered person is in a network area, he or she must use a preferred provider for the maximum benefit.

All other medical expenses are covered at the rate of 80% of reasonable and customary charges.

Designated surgical procedures require a second opinion. Designated outpatient procedures must be pre-certified. For in-network activity, the annual out-of-pocket maximum is $1,500 per individual or $3,000 per family (out of network amounts are $5,000 and $10,000, respectively) for Medical Mutual. Each covered person not eligible for Medicare must meet a $500 annual deductible ($1,000 for out of network). For in-network activity for members in the insured Medicare Advantage, the annual out-of-pocket maximum is $2,000 per individual. Members in the insured Medicare Advantage plan do not have a deductible requirement.

A mail-order prescription drug plan is also available. Each 90-day prescription submitted via mail order has a co-payment of $10.00 for generic and $30.00 for brands. Each 34-day prescription has a co-payment of $5.00 for generic and $15.00 for brands. Members will be responsible for the full cost of non-formulary drugs.

POST-RETIREMENT HEALTH CARE AND MEDICARE REIMBURSEMENT PROVISIONS EVALUATED AND/OR CONSIDERED (CONCLUDED)

Administration: The medical program is administered by the AETNA and Medical Mutual of Ohio for hospital-medical-surgical coverage and by ESI for retail/mail order prescription drug coverage.

Stop Loss Coverage: The non-Medicare population is fully self-insured and stop loss coverage is maintained.

Medicare Part B Reimbursements: A portion (annually set by the Board) of the Medicare Part B basic premium amount is reimbursed to eligible benefit recipients upon proof of coverage. The reimbursement amount is $30 monthly for 2016 and $0 monthly thereafter.

Dental/Vision: Premiums for benefit recipients are deducted from benefit payments. The Dental/Vision member premium amounts are as follows:

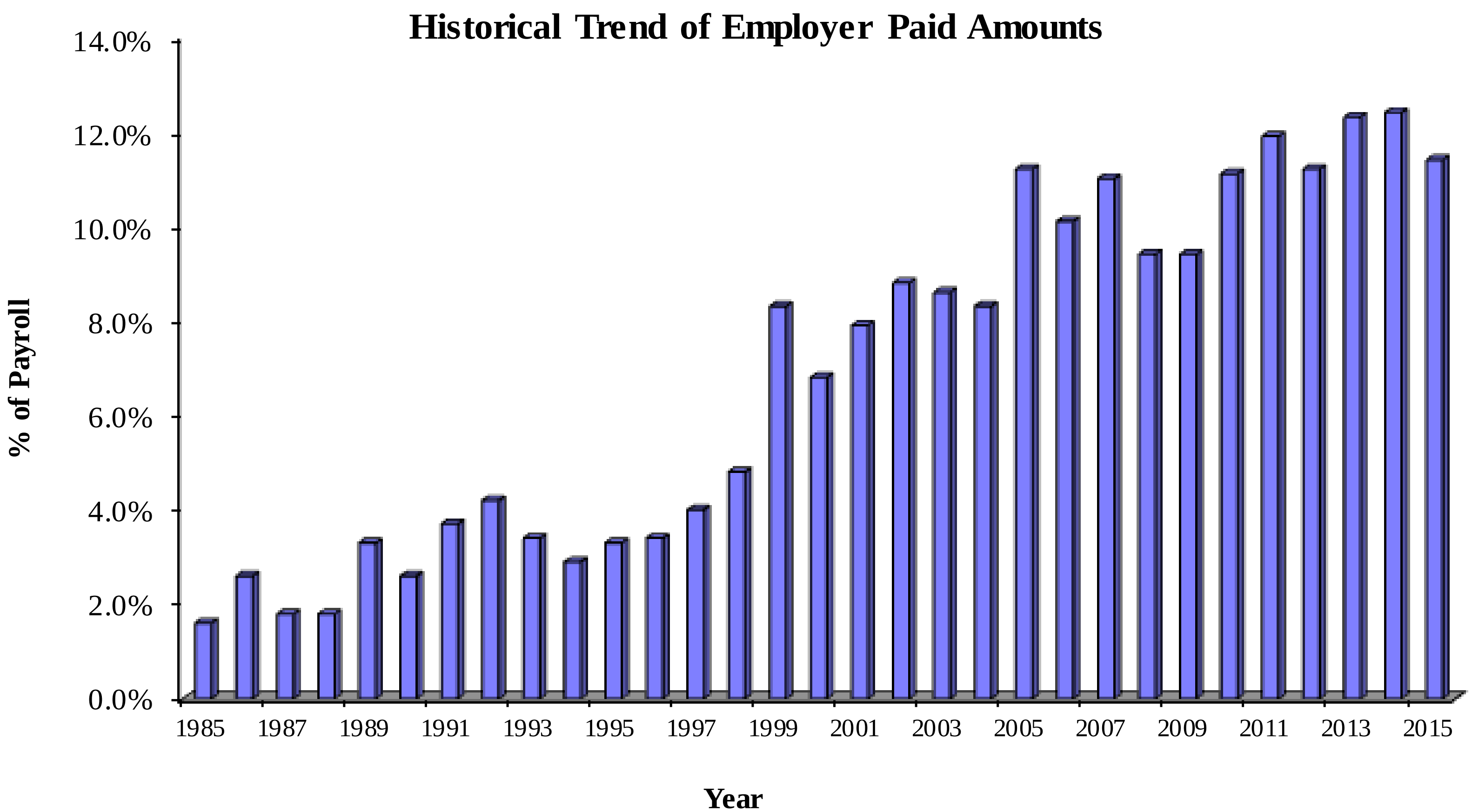
Premium Scale for Dental/Vision

	Monthly Premium	
	Retiree	Spouse
Dental	$5	$20
Vision	$5	$5

POST-RETIREMENT HEALTH CARE AND MEDICARE REIMBURSEMENT

Year	Covered Lives	Amounts Paid to Vendors (Including Medicare Part B) Medical	Drugs	Medicare Part B	Dental	Vision	Wellness	Total	Retiree/Spouse Premiums and Other Adjustments	Net Paid by OHPRS	Per Covered Life	Valuation Payroll	% of Payroll
1985	697	$ 427,361	$ 60,015	$ 28,272				$ 515,648		$ 515,648	$ 740	$ 32,500,428	1.6%
1986	715	787,245	80,911	30,457				898,613		898,613	1,257	34,757,277	2.6%
1987	731	559,832	115,544	38,037				713,413		713,413	976	39,938,912	1.8%
1988	761	522,747	145,847	57,461				726,055		726,056	954	40,674,634	1.8%
1989	810	1,043,650	186,795	77,869				1,308,314	$ 97,864	1,406,178	1,736	43,053,057	3.3%
1990	925	1,009,153	213,716	77,363				1,300,232	(94,251)	1,205,981	1,304	45,679,355	2.6%
1991	976	1,267,327	251,004	86,740				1,605,071	180,583	1,785,654	1,830	48,488,406	3.7%
1992	1,045	1,643,276	298,493	97,117				2,038,886	76,046	2,114,932	2,024	50,235,996	4.2%
1993	1,081	1,553,628	299,410	118,109				1,971,147	(90,525)	1,880,622	1,740	55,781,585	3.4%
1994	1,133	1,239,008	320,360	141,384				1,700,752	3,314	1,704,066	1,504	58,116,787	2.9%
1995	1,225	1,512,523	364,096	149,440				2,026,059	(66,834)	1,959,225	1,599	59,825,356	3.3%
1996	1,379	1,353,932	491,525	155,769				2,001,226	21,382	2,022,608	1,467	59,239,349	3.4%
1997	1,499	1,623,640	849,321	166,743				2,639,704	(140,526)	2,499,178	1,667	62,233,299	4.0%
1998	1,602	2,147,334	1,122,248	171,223				3,440,805	(311,917)	3,128,888	1,953	65,153,864	4.8%
1999	1,772	3,315,914	1,364,990	197,606				4,878,510	619,894	5,498,404	3,103	66,017,381	8.3%
2000	1,848	3,190,885	1,684,300	203,157				5,078,342	(358,082)	4,720,260	2,554	69,028,285	6.8%
2001	1,900	3,730,167	1,960,825	231,046				5,922,038	138,317	6,060,355	3,190	76,344,002	7.9%
2002	1,943	4,147,534	2,431,297	260,772	$194,893	$80,909		7,115,405	(200,021)	6,915,384	3,559	78,997,065	8.8%
2003	1,912	4,256,046	2,681,414	290,506	209,429	82,097		7,519,492	(507,642)	7,011,850	3,667	81,737,962	8.6%
2004	1,928	4,074,972	2,710,367	347,585	230,994	84,136		7,448,054	(641,707)	6,806,347	3,530	81,757,707	8.3%
2005	1,958	6,015,277	2,980,755	422,045	364,139	124,658		9,906,874	(552,570)	9,354,304	4,777	83,408,155	11.2%
2006	2,078	4,999,822	2,832,743	503,034	408,667	127,266		8,871,532	(198,141)	8,673,391	4,174	85,878,328	10.1%
2007	2,085	6,580,455	3,513,662	572,127	464,402	130,029		11,260,675	(980,539)	10,280,136	4,931	93,752,908	11.0%
2008	2,103	5,087,073	3,274,896	632,293	453,002	121,599	$ 79,679	9,648,542	(784,381)	8,864,161	4,215	94,301,538	9.4%
2009	2,095	4,983,739	3,430,089	673,450	495,272	133,296	86,007	9,801,853	(902,320)	8,899,533	4,248	94,824,789	9.4%
2010	2,166	6,380,294	3,709,855	713,317	453,276	133,141	57,747	11,447,630	(911,076)	10,536,554	4,865	94,767,852	11.1%
2011	2,269	6,755,757	4,053,343	770,183	528,824	157,600	95,210	12,360,917	(1,268,402)	11,092,515	4,889	93,126,449	11.9%
2012	2,310	6,393,584	4,301,087	839,451	594,292	149,962	24,604	12,302,980	(1,277,430)	11,025,550	4,773	98,117,403	11.2%
2013	2,359	7,872,163	4,110,260	896,970	612,575	158,197	53,440	13,703,605	(1,562,609)	12,140,996	5,147	98,519,844	12.3%
2014	2,356	7,624,000	4,722,043	874,164	619,286	167,660	48,728	14,055,881	(1,747,403)	12,308,478	5,224	99,211,756	12.4%
2015	**2,400**	**7,087,732**	**5,245,815**	**601,860**	**593,016**	**162,417**	**68,263**	**13,759,103**	**(2,397,055)**	**11,362,048**	**4,734**	**99,983,224**	**11.4%**

Separate information for dental and vision was not available for years prior to 2002.


Historical Trend of Employer Paid Amounts
% of Payroll
14.0%
12.0%
10.0%
8.0%
6.0%
4.0%
2.0%
0.0%
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
Year

ASSUMPTIONS FOR HEALTH CARE COVERAGES
DECEMBER 31, 2015

Development of Health Care Rates: Based on the 2015 retired life data, the HPRS portion of the total health care rates was developed as follows:

		HPRS Monthly Rates (Age 57 Central Age)		
		This Year Gross Rate		**Prior Year Gross Rate**
A.	One-person without Medicare	$ 679.81		$ 678.03
B.	One-person with Medicare*	214.21		198.02
C.	Two-persons without Medicare	1,359.62		1,356.06
D.	Two-persons with Medicare*	428.42		396.04
E.	Child	368.64		242.72
F.	Medicare Part B Reimbursement	30.00	**	60.00

* *Does not include Medicare Part B monthly premium. Includes a reduction to the premium due to Medicare Part D reimbursements.*

** *The Medicare Part B premium is $30 monthly for 2016 and $0 monthly thereafter.*

The above rates are estimates that are suitable for the purpose of this valuation. Use of the above rates for any other purpose would require review. Pre-Medicare rates are lower than would be expected when compared with other retired groups. This may be attributable to a higher than average amount of coordination of benefit claims for younger HPRS retirees. Many younger retirees likely have other employment. Please see page B-7 for age specific rates used for valuation purposes. Employment related primary coverages for recipients and dependents have been reflected in the age based specific premium rates.

ASSUMPTIONS FOR HEALTH CARE COVERAGES
AGE SPECIFIC HPRS MONTHLY GROSS RATES

Age	Gross Rate Male	Gross Rate Female	Age	Gross Rate Male	Gross Rate Female	Age	Gross Rate Male	Gross Rate Female
16	$ 257.31	$ 403.14	51	$ 500.74	$ 554.16	86	$ 422.52	$ 370.67
17	257.31	403.14	52	529.35	573.17	87	424.44	371.38
18	257.31	403.14	53	558.35	593.26	88	424.44	371.38
19	257.31	403.14	54	587.99	614.04	89	424.44	371.38
20	257.31	403.14	55	618.18	635.43	90	424.44	371.38
21	257.31	403.14	56	648.82	657.38	91	424.44	371.38
22	257.31	403.14	57	679.81	679.81	92	424.44	371.38
23	257.31	403.14	58	711.92	701.77	93	424.44	371.38
24	257.31	403.14	59	744.22	724.03	94	424.44	371.38
25	257.31	403.14	60	776.61	746.50	95	424.44	371.38
26	257.31	403.14	61	808.98	769.10	96	424.44	371.38
27	257.31	403.14	62	841.22	791.76	97	424.44	371.38
28	257.31	403.14	63	872.76	814.85	98	424.44	371.38
29	257.31	403.14	64	903.94	837.87	99	424.44	371.38
30	257.31	403.14	65	294.52	271.21	100	424.44	371.38
31	257.31	403.14	66	304.02	278.33	101	424.44	371.38
32	257.31	403.14	67	313.33	285.34	102	424.44	371.38
33	257.31	403.14	68	322.40	292.21	103	424.44	371.38
34	257.31	403.14	69	331.20	298.94	104	424.44	371.38
35	257.31	403.14	70	339.72	305.48	105	424.44	371.38
36	257.31	403.14	71	347.93	311.82	106	424.44	371.38
37	257.31	403.14	72	355.79	317.93	107	424.44	371.38
38	257.31	403.14	73	363.30	323.80	108	424.44	371.38
39	257.31	403.14	74	370.42	329.40	109	424.44	371.38
40	257.31	403.14	75	377.15	334.71	110	424.44	371.38
41	273.04	412.14	76	383.47	339.72	111	424.44	371.38
42	290.16	422.08	77	389.36	344.42	112	424.44	371.38
43	308.65	432.98	78	394.81	348.77	113	424.44	371.38
44	328.47	444.85	79	399.82	352.79	114	424.44	371.38
45	349.61	457.70	80	404.38	356.45	115	424.44	371.38
46	371.99	471.50	81	408.50	359.75	116	424.44	371.38
47	395.59	486.25	82	412.16	362.67	117	424.44	371.38
48	420.33	501.93	83	415.39	365.23	118	424.44	371.38
49	446.15	518.49	84	418.18	367.41	119	424.44	371.38
50	472.98	535.92	85	420.55	369.22	120	424.44	371.38

ASSUMPTIONS FOR HEALTH CARE COVERAGES
DECEMBER 31, 2015

Eligibility for Medicare Coverage: All benefit recipients were assumed to be eligible for Medicare on attainment of age 65.

Health Care Inflation: If the price for any product or service were to increase faster than wages for an indefinite period, eventually that product or service would be priced out of the market and either the product or service would not be offered or substituted with an affordable product or service. For this reason, health care inflation was assumed to equal wage inflation in the long term. The assumed point in time when health care inflation reduces to wage growth inflation is uncertain. Our assumptions are based on an approximate 5 to 10-year horizon. Short-term assumptions are described on page B-10.

Retiree health valuations require an assumption about how the health costs that the System is absorbing will change over the years. This assumption includes more than just "health inflation." It includes the impact of:

- The introduction of new procedures and medications and how they are priced.
- The utilization of services and products by covered retirees and their dependents and how that utilization changes over the years.

Retiree health valuations use a health cost trend assumption that changes over the years. The near term rates reflect the fact that currently employers are seeing sharp increases in the cost of health goods and services. If this trend is projected to continue for years to come, it implies that years from now virtually all our expenditures will be for health care. The seemingly more reasonable alternative is that in the not too distant future inflation in medical expenses will decrease to a level at or near wage inflation. It is on this basis that we project premium rates will continue to exceed wage inflation for the next 5 - 10 years, but by less each year until leveling off at an ultimate rate, assumed to be 4.0% in this valuation.

The trend assumption is established by reviewing the System's historical trends and evaluating its relationship with national trends. Comparative trends obtained from a variety of resources including trend surveys from major insurers and benefit consulting groups. This information is added to information we have collected from analysis done in conjunction with many retiree health valuations we have completed for other clients.

This analysis is done separately for the prescription drug program and the remainder of the medical benefits since the trends and forces driving the trends are quite different in these two segments. Review of the System's recent experience indicates trends typical of our comparative trends for both prescription drug and medical. The trends used in this valuation are found on page B-10.

POST-RETIREMENT HEALTH PREMIUM AND MEDICARE REIMBURSEMENT SELECTION OF ASSUMPTIONS DECEMBER 31, 2015

In order to prepare actuarial studies of the coverages, it is necessary to make assumptions regarding future events such as:

1. When people will retire and how long people will live after retirement.
2. Whether or not people will quit employment prior to eligibility for a benefit.
3. Whether or not people will die in service or become disabled.
4. Rates of Investment Return and pay increases.
5. The proportion of retirees electing coverage for a spouse after retirement.
6. Rates of increase in health care premium.
7. Effect of managed care program on future claims.

Regarding items 1 through 4, the assumptions from the regular December 31, 2015 valuations were used. For current retirees, actual health care coverage elections were used. For future retirees, it was assumed that 90% of males and 50% of females who retire and elect healthcare coverage would also elect coverage for a spouse at retirement, and that coverage would be available to surviving spouses of deceased retirees and active members.

For purposes of the solvency projections, an investment return assumption of 7.75% was chosen by default to be the same rate used in the Pension Plan valuations. It is uncertain how much longer retiree health fund assets can be invested in the same manner as pension assets given the current solvency period of the retiree health fund. For purposes of GASB Statements No. 43 and No. 45 reporting, an investment return assumption of 5.0% was used.

POST-RETIREMENT HEALTH PREMIUM AND MEDICARE REIMBURSEMENT SELECTION OF ASSUMPTIONS DECEMBER 31, 2015 (CONCLUDED)

Three alternate assumptions for near term health care cost increases were considered and are shown below. A brief description of each of the alternate assumptions follows:

Alternate A (Optimistic): The Alternate A assumption assumes that the employer share of per capita costs would increase at 6% next year, 5.75% the second year, 5.5% the third year, 5.25% the fourth year, 5% the fifth year, 4.75% the sixth year, 4.5% the seventh year, 4.25% the eighth year and no faster than 4% per year thereafter.

Alternate B (Intermediate): In the middle of the range of probable conditions is the view that short-term Health Care trends will rise somewhat over the next few years before declining to the level of overall GDP growth. This is the assumption set upon which Governmental Accounting Standards Board (GASB) Statements No. 43 and No. 45 information is based.

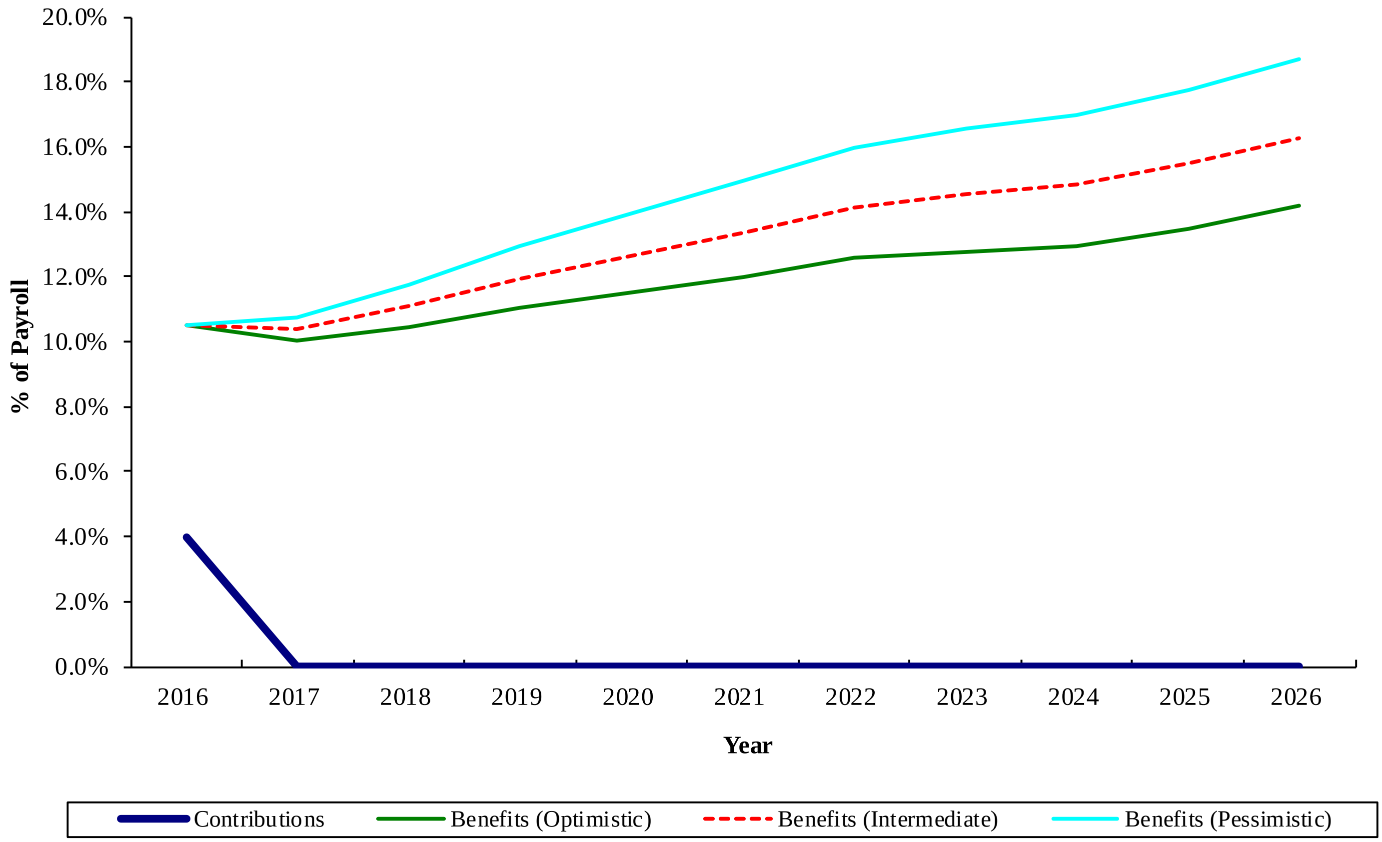
Alternate C (Pessimistic): This scenario envisions poorer experience than the other two.

	Health Trend Assumption		
	Medical and Prescription Drug		
Year	Alt. A Optimistic	Alt. B Intermediate	Alt. C Pessimistic
2016			
2017	6.00%	9.00%	12.00%
2018	5.75%	8.25%	11.00%
2019	5.50%	7.50%	10.00%
2020	5.25%	7.00%	9.00%
2021	5.00%	6.50%	8.00%
2022	4.75%	6.00%	7.00%
2023	4.50%	5.50%	6.25%
2024	4.25%	5.00%	5.50%
2025	4.00%	4.50%	4.75%
2026	4.00%	4.00%	4.00%
2027	4.00%	4.00%	4.00%
2028	4.00%	4.00%	4.00%
2029	4.00%	4.00%	4.00%
2030 & Later	4.00%	4.00%	4.00%

Post-Retirement Health Care and Medicare Reimbursement
Projected Benefits
December 31, 2015

	Projected Benefits as a % of Payroll		
Year Ended 12/31	Alt. A Optimistic	Alt. B Intermediate	Alt. C Pessimistic
2016	10.5%	10.5%	10.5%
2017	10.0%	10.4%	10.7%
2018	10.4%	11.1%	11.7%
2019	11.0%	11.9%	12.9%
2020	11.5%	12.6%	13.9%
2021	12.0%	13.3%	15.0%
2022	12.6%	14.1%	16.0%
2023	12.8%	14.5%	16.5%
2024	13.0%	14.8%	17.0%
2025	13.5%	15.5%	17.8%
2030	16.7%	19.2%	22.0%
2035	18.3%	21.0%	24.0%
2040	17.4%	20.0%	22.9%
2045	17.3%	19.9%	22.8%
2050	18.6%	21.3%	24.5%
2055	20.7%	23.8%	27.2%
2060	21.9%	25.1%	28.8%
2065	22.2%	25.5%	29.2%
2070	21.9%	25.1%	28.7%
2075	21.8%	25.0%	28.7%

CONTRIBUTIONS VS. BENEFIT PAYOUTS



The above chart assumes that there will be assets sufficient to pay the benefits. Under the intermediate assumptions, unless significant investment gains and/or contribution increases arise, the retiree health fund is expected to run out of money in 2026 based upon the Board established retiree health employer contribution rate of 4.0% of payroll for calendar year 2016 and 0.0% thereafter. At that point, the retiree health plan would become "pay as you go." Benefits would have to be reduced well below the present levels, because benefits paid out could not exceed contribution income. Given the assumed contribution level, benefits would actually have to be completely eliminated.

POST-RETIREMENT HEALTH CARE AND MEDICARE REIMBURSEMENT
GASB STATEMENT NO. 43/NO. 45 REPORTING
ALTERNATIVE B: INTERMEDIATE HEALTH TREND

Determination of the Annual Required Contribution for the Period July 1, 2016 to June 30, 2017	Contributions Expressed as Percents of Payroll
Normal Cost	16.44%
UAL Payment (30-year amortization)	12.34%
Total (Annual Required Contribution)	**28.78%**

Accrued Health and Medicare Reimbursement Liabilities, $412,352,083 were more than applicable assets of $106,550,139.

The calculations above show the employer's Annual Required Contribution (ARC) for the year ended June 30, 2017. The System's ARC for the year ended December 31, 2016 will be ½ of 24.56% and ½ of the 28.78% shown above.

GASB STATEMENT NO. 43/NO. 45
NOTES TO TREND DATA

The information presented in the required supplementary schedules was determined as part of the actuarial valuation at the dates indicated. Additional information as of the latest actuarial valuation follows:

Valuation Date	December 31, 2015
Actuarial Cost Method	Entry Age
Amortization Method	Level Percent Open
Remaining Amortization Period	30 years for retiree health benefits in determining the Annual Required Contribution
Asset Valuation Method	4-year smoothed market 20 % Corridor
Actuarial Assumptions:	
Investment Rate of Return	5.0%
Projected Salary Increases	3.8% - 13.5%
Includes Wage Inflation at	3.5%
Health Trend	Intermediate Trend (See Page B-10)

POST-RETIREMENT HEALTH AND MEDICARE REIMBURSEMENT RESULTS WITH ALTERNATE HEALTH INFLATION ASSUMPTIONS DECEMBER 31, 2015

Optimistic, Intermediate and Pessimistic assumption sets were described on page B-10. For each assumption set, four questions are asked.

Question 1. How long will the Health Care fund remain solvent if the present employer contribution rate allocation, "Funding Level 1", is not changed?

Question 2. What is the lowest employer contribution rate, "Funding Level 2", that would maintain the solvency of the fund for 20 years?

Question 3. What is the lowest employer contribution rate, "Funding Level 3", that would maintain the solvency of the fund for 30 years?

Question 4. What is the lowest employer contribution rate, "Funding Level 4", that would maintain the solvency of the fund indefinitely?

The answers to these questions are summarized below. In reviewing the answers, it is important to keep in mind that the alternates are intended to be helpful in understanding the range of potential outcomes. They are not predictions.

	Funding Level 1			Funding Level 2			Funding Level 3			Funding Level 4		
	Employer Rate Allocation			Lowest Employer Rate to Maintain Solvency of Fund for 20 Years			Lowest Employer Rate to Maintain Solvency of Fund for 30 Years			Lowest Employer Rate to Maintain Solvency of Fund Indefinitely		
Assumption Set	**%***	**Fund Solvent Until**	**Prior Valuation %**	**%**	**Fund Solvent Until**	**Prior Valuation %**	**%**	**Fund Solvent Until**	**Prior Valuation %**	**%**	**Fund Solvent Until**	**Prior Valuation %**
A (Optimistic)	0.00%	2027	4.00%	5.80%	2036	5.10%	8.30%	2046	7.40%	12.20%	Indefinitely	10.00%
B (Intermediate)	0.00%	2026	4.00%	7.40%	2036	6.70%	10.20%	2046	9.20%	14.40%	Indefinitely	12.00%
C (Pessimistic)	0.00%	2025	4.00%	9.30%	2036	8.50%	12.20%	2046	11.20%	16.90%	Indefinitely	14.20%

The above results show that:

- Under the optimistic assumptions, the employer rate will need to be raised prior to 2027 in order to maintain the solvency of the fund. The ultimate rate needed to support the plan would be 12.20% of payroll if the increase were made today.
- Under the intermediate assumptions, the employer rate will need to be raised prior to 2026 in order to maintain the solvency of the fund. The ultimate rate needed to support the plan would be 14.40% of payroll if the increase were made today.
- Under the pessimistic assumptions, the employer rate will need to be raised prior to 2025 in order to maintain the solvency of the fund. The ultimate rate needed to support the plan would be 16.90% of payroll if the increase were made today.

The following pages show projected fund activity based upon Alternate Assumptions A, B and C, and Funding Levels 1, 2, 3 and 4.

** The employer contribution rate is 4.0% for calendar year 2016 and 0.0% thereafter.*

POST-RETIREMENT HEALTH CARE & MEDICARE REIMBURSEMENT
CASH FLOW PROJECTION
OPTIMISTIC ASSUMPTIONS: A
FUNDING LEVEL 1
($ in Thousands)

Calendar Year	Fund Balance BOY	Contributions	Benefits	Net	Investment Return %	Investment Return $	Fund Balance EOY		% of Payroll	
							Nominal $	Real $	Contrib.	Benefits
2016	$106,550	$4,138	$ 10,884	$ (6,744)	7.75%	$8,000	$107,806	$107,806	4.00%	10.52%
2017	107,806	0	10,690	(10,690)	7.75%	7,946	105,062	101,509	0.00%	10.01%
2018	105,062	0	11,506	(11,506)	7.75%	7,702	101,258	94,525	0.00%	10.44%
2019	101,258	0	12,536	(12,536)	7.75%	7,368	96,090	86,668	0.00%	11.03%
2020	96,090	0	13,469	(13,469)	7.75%	6,932	89,553	78,040	0.00%	11.49%
2021	89,553	0	14,496	(14,496)	7.75%	6,386	81,443	68,573	0.00%	11.99%
2022	81,443	0	15,651	(15,651)	7.75%	5,713	71,505	58,169	0.00%	12.56%
2023	71,505	0	16,423	(16,423)	7.75%	4,913	59,995	47,156	0.00%	12.79%
2024	59,995	0	17,178	(17,178)	7.75%	3,992	46,809	35,547	0.00%	12.96%
2025	46,809	0	18,434	(18,434)	7.75%	2,922	31,297	22,964	0.00%	13.48%
2026	31,297	0	19,977	(19,977)	7.75%	1,661	12,981	9,202	0.00%	14.16%
2027	12,981	0	21,740	(21,740)	7.75%	174	(8,585)	(5,880)	0.00%	14.92%

Funding Level 1 is the present contribution rate for post-retirement Health Care and Medicare reimbursement. The fund remains solvent until 2027 in this projection.

POST-RETIREMENT HEALTH CARE & MEDICARE REIMBURSEMENT
CASH FLOW PROJECTION
OPTIMISTIC ASSUMPTIONS: A
FUNDING LEVEL 2
($ in Thousands)

Calendar	Fund Balance				Investment	Investment	Fund Balance EOY		% of Payroll	
Year	BOY	Contributions	Benefits	Net	Return %	Return $	Nominal $	Real $	Contrib.	Benefits
2016	$ 106,550	$ 6,000	$ 10,884	$ (4,882)	7.75%	$ 8,071	$ 109,739	$109,739	5.80%	10.52%
2017	109,739	6,197	10,690	(4,493)	7.75%	8,333	113,579	108,170	5.80%	10.01%
2018	113,579	6,392	11,506	(5,114)	7.75%	8,607	117,072	106,188	5.80%	10.44%
2019	117,072	6,591	12,536	(5,945)	7.75%	8,846	119,973	103,637	5.80%	11.03%
2020	119,973	6,797	13,469	(6,672)	7.75%	9,043	122,344	100,653	5.80%	11.49%
2021	122,344	7,012	14,496	(7,484)	7.75%	9,195	124,055	97,200	5.80%	11.99%
2022	124,055	7,229	15,651	(8,422)	7.75%	9,292	124,925	93,221	5.80%	12.56%
2023	124,925	7,450	16,423	(8,973)	7.75%	9,338	125,290	89,041	5.80%	12.79%
2024	125,290	7,686	17,178	(9,492)	7.75%	9,347	125,145	84,703	5.80%	12.96%
2025	125,145	7,929	18,434	(10,505)	7.75%	9,297	123,937	79,891	5.80%	13.48%
2026	123,937	8,181	19,977	(11,796)	7.75%	9,154	121,295	74,465	5.80%	14.16%
2027	121,295	8,450	21,740	(13,290)	7.75%	8,892	116,897	68,347	5.80%	14.92%
2028	116,897	8,740	23,453	(14,713)	7.75%	8,496	110,680	61,631	5.80%	15.56%
2029	110,680	9,047	25,190	(16,143)	7.75%	7,960	102,497	54,356	5.80%	16.15%
2030	102,497	9,362	27,001	(17,639)	7.75%	7,269	92,127	46,530	5.80%	16.73%
2031	92,127	9,697	28,893	(19,196)	7.75%	6,405	79,336	38,162	5.80%	17.28%
2032	79,336	10,057	30,708	(20,651)	7.75%	5,358	64,043	29,339	5.80%	17.71%
2033	64,043	10,436	32,359	(21,923)	7.75%	4,124	46,244	20,176	5.80%	17.98%
2034	46,244	10,832	33,957	(23,125)	7.75%	2,699	25,818	10,728	5.80%	18.18%
2035	25,818	11,249	35,408	(24,159)	7.75%	1,076	2,735	1,082	5.80%	18.26%
2036	2,735	11,686	36,489	(24,803)	7.75%	(737)	(22,805)	(8,595)	5.80%	18.11%

Funding Level 2 is the lowest funding level that will keep the fund solvent for 20 years.

POST-RETIREMENT HEALTH CARE & MEDICARE REIMBURSEMENT
CASH FLOW PROJECTION
OPTIMISTIC ASSUMPTIONS: A
FUNDING LEVEL 3
($ in Thousands)

Calendar Year	Fund Balance BOY	Contributions	Benefits	Net	Investment Return %	Investment Return $	Fund Balance EOY Nominal $	Fund Balance EOY Real $	% of Payroll Contrib.	% of Payroll Benefits
2016	$ 106,550	$ 8,586	$ 10,884	$ (2,296)	7.75%	$ 8,170	$ 112,424	$112,424	8.30%	10.52%
2017	112,424	8,868	10,690	(1,822)	7.75%	8,643	119,245	115,213	8.30%	10.01%
2018	119,245	9,147	11,506	(2,359)	7.75%	9,151	126,037	117,657	8.30%	10.44%
2019	126,037	9,431	12,536	(3,105)	7.75%	9,649	132,581	119,580	8.30%	11.03%
2020	132,581	9,727	13,469	(3,742)	7.75%	10,132	138,971	121,105	8.30%	11.49%
2021	138,971	10,035	14,496	(4,461)	7.75%	10,600	145,110	122,179	8.30%	11.99%
2022	145,110	10,344	15,651	(5,307)	7.75%	11,043	150,846	122,713	8.30%	12.56%
2023	150,846	10,661	16,423	(5,762)	7.75%	11,470	156,554	123,050	8.30%	12.79%
2024	156,554	10,999	17,178	(6,179)	7.75%	11,896	162,271	123,230	8.30%	12.96%
2025	162,271	11,347	18,434	(7,087)	7.75%	12,305	167,489	122,892	8.30%	13.48%
2030	178,435	13,398	27,001	(13,603)	7.75%	13,308	178,140	110,052	8.30%	16.73%
2035	162,292	16,098	35,408	(19,310)	7.75%	11,839	154,821	80,531	8.30%	18.26%
2040	113,663	19,452	40,823	(21,371)	7.75%	7,991	100,283	43,920	8.30%	17.42%
2045	28,212	23,420	48,830	(25,410)	7.75%	1,214	4,016	1,481	8.30%	17.31%
2046	4,016	24,270	51,033	(26,763)	7.75%	(713)	(23,460)	(8,358)	8.30%	17.45%

Funding Level 3 is the lowest funding level that will keep the fund solvent for 30 years.

POST-RETIREMENT HEALTH CARE & MEDICARE REIMBURSEMENT
CASH FLOW PROJECTION
OPTIMISTIC ASSUMPTIONS: A
FUNDING LEVEL 4
($ in Thousands)

Calendar Year	Fund Balance BOY	Contributions	Benefits	Net	Investment Return %	Investment Return $	Fund Balance EOY Nominal $	Fund Balance EOY Real $	% of Payroll Contrib.	% of Payroll Benefits
2016	$ 106,550	$ 12,620	$ 10,884	$1,738	7.75%	$ 8,324	$ 116,612	$116,612	12.20%	10.52%
2017	116,612	13,034	10,690	2,344	7.75%	9,127	128,083	123,752	12.20%	10.01%
2018	128,083	13,444	11,506	1,938	7.75%	10,001	140,022	130,712	12.20%	10.44%
2019	140,022	13,863	12,536	1,327	7.75%	10,902	152,251	137,322	12.20%	11.03%
2020	152,251	14,297	13,469	828	7.75%	11,831	164,910	143,710	12.20%	11.49%
2021	164,910	14,750	14,496	254	7.75%	12,790	177,954	149,832	12.20%	11.99%
2022	177,954	15,205	15,651	(446)	7.75%	13,774	191,282	155,608	12.20%	12.56%
2023	191,282	15,671	16,423	(752)	7.75%	14,796	205,326	161,384	12.20%	12.79%
2024	205,326	16,167	17,178	(1,011)	7.75%	15,874	220,189	167,214	12.20%	12.96%
2025	220,189	16,679	18,434	(1,755)	7.75%	16,997	235,431	172,743	12.20%	13.48%
2030	296,900	19,693	27,001	(7,308)	7.75%	22,730	312,322	192,947	12.20%	16.73%
2035	375,197	23,663	35,408	(11,745)	7.75%	28,628	392,080	203,943	12.20%	18.26%
2040	472,120	28,592	40,823	(12,231)	7.75%	36,121	496,010	217,231	12.20%	17.42%
2045	608,326	34,424	48,830	(14,406)	7.75%	46,594	640,514	236,188	12.20%	17.31%
2050	783,292	41,039	62,468	(21,429)	7.75%	59,885	821,748	255,133	12.20%	18.57%
2055	980,951	48,637	82,506	(33,869)	7.75%	74,728	1,021,810	267,114	12.20%	20.70%
2060	1,191,653	57,750	103,529	(45,779)	7.75%	90,601	1,236,475	272,151	12.20%	21.87%
2065	1,428,726	68,750	125,035	(56,285)	7.75%	108,572	1,481,013	274,462	12.20%	22.19%
2075	2,075,147	97,101	173,588	(76,487)	7.75%	157,897	2,156,557	283,322	12.20%	21.81%
2085	2,998,981	136,645	260,146	(123,501)	7.75%	227,695	3,103,175	289,016	12.20%	23.23%
2095	4,169,296	193,003	370,785	(177,782)	7.75%	316,317	4,307,831	284,427	12.20%	23.44%
2105	5,830,096	272,333	512,420	(240,087)	7.75%	442,645	6,032,654	282,369	12.20%	22.96%
2115	8,145,280	383,749	734,999	(351,250)	7.75%	617,818	8,411,848	279,124	12.20%	23.37%

Funding Level 4 is the lowest funding level that will keep the fund solvent indefinitely, i.e., throughout the entire 100-year projection period assuming all assumptions are realized.

POST-RETIREMENT HEALTH CARE & MEDICARE REIMBURSEMENT
CASH FLOW PROJECTION
INTERMEDIATE ASSUMPTIONS: B
FUNDING LEVEL 1
($ in Thousands)

Calendar Year	Fund Balance BOY	Contributions	Benefits	Net	Investment Return %	Investment Return $	Fund Balance EOY		% of Payroll	
							Nominal $	Real $	Contrib.	Benefits
2016	$106,550	$4,138	$ 10,884	$ (6,746)	7.75%	$7,999	$107,803	$107,803	4.00%	10.52%
2017	107,803	0	11,075	(11,075)	7.75%	7,931	104,659	101,120	0.00%	10.37%
2018	104,659	0	12,200	(12,200)	7.75%	7,644	100,103	93,447	0.00%	11.07%
2019	100,103	0	13,540	(13,540)	7.75%	7,240	93,803	84,605	0.00%	11.92%
2020	93,803	0	14,786	(14,786)	7.75%	6,704	85,721	74,701	0.00%	12.62%
2021	85,721	0	16,135	(16,135)	7.75%	6,026	75,612	63,663	0.00%	13.35%
2022	75,612	0	17,624	(17,624)	7.75%	5,185	63,173	51,391	0.00%	14.14%
2023	63,173	0	18,663	(18,663)	7.75%	4,182	48,692	38,271	0.00%	14.53%
2024	48,692	0	19,654	(19,654)	7.75%	3,022	32,060	24,347	0.00%	14.83%
2025	32,060	0	21,182	(21,182)	7.75%	1,674	12,552	9,210	0.00%	15.49%
2026	12,552	0	22,966	(22,966)	7.75%	94	(10,320)	(7,316)	0.00%	16.28%

Funding Level 1 is the present contribution rate for post-retirement Health Care and Medicare reimbursement. The fund remains solvent until 2026 in this projection.

POST-RETIREMENT HEALTH CARE & MEDICARE REIMBURSEMENT
CASH FLOW PROJECTION
INTERMEDIATE ASSUMPTIONS: B
FUNDING LEVEL 2
($ in Thousands)

Calendar Year	Fund Balance BOY	Contributions	Benefits	Net	Investment Return %	Investment Return $	Fund Balance EOY		% of Payroll	
							Nominal $	Real $	Contrib.	Benefits
2016	$ 106,550	$ 7,655	$ 10,884	$(3,229)	7.75%	$ 8,134	$ 111,455	$111,455	7.40%	10.52%
2017	111,455	7,906	11,075	(3,169)	7.75%	8,516	116,802	112,852	7.40%	10.37%
2018	116,802	8,155	12,200	(4,045)	7.75%	8,897	121,654	113,565	7.40%	11.07%
2019	121,654	8,409	13,540	(5,131)	7.75%	9,232	125,755	113,424	7.40%	11.92%
2020	125,755	8,672	14,786	(6,114)	7.75%	9,512	129,153	112,549	7.40%	12.62%
2021	129,153	8,947	16,135	(7,188)	7.75%	9,734	131,699	110,887	7.40%	13.35%
2022	131,699	9,223	17,624	(8,401)	7.75%	9,885	133,183	108,344	7.40%	14.14%
2023	133,183	9,505	18,663	(9,158)	7.75%	9,971	133,996	105,320	7.40%	14.53%
2024	133,996	9,806	19,654	(9,848)	7.75%	10,008	134,156	101,880	7.40%	14.83%
2025	134,156	10,117	21,182	(11,065)	7.75%	9,974	133,065	97,634	7.40%	15.49%
2026	133,065	10,438	22,966	(12,528)	7.75%	9,833	130,370	92,422	7.40%	16.28%
2027	130,370	10,781	24,992	(14,211)	7.75%	9,560	125,719	86,111	7.40%	17.15%
2028	125,719	11,151	26,958	(15,807)	7.75%	9,138	119,050	78,785	7.40%	17.89%
2029	119,050	11,542	28,951	(17,409)	7.75%	8,560	110,201	70,463	7.40%	18.56%
2030	110,201	11,945	31,029	(19,084)	7.75%	7,810	98,927	61,115	7.40%	19.22%
2031	98,927	12,372	33,199	(20,827)	7.75%	6,870	84,970	50,718	7.40%	19.86%
2032	84,970	12,832	35,280	(22,448)	7.75%	5,726	68,248	39,359	7.40%	20.35%
2033	68,248	13,315	37,171	(23,856)	7.75%	4,376	48,768	27,174	7.40%	20.66%
2034	48,768	13,820	39,000	(25,180)	7.75%	2,816	26,404	14,215	7.40%	20.88%
2035	26,404	14,353	40,659	(26,306)	7.75%	1,040	1,138	592	7.40%	20.96%
2036	1,138	14,909	41,896	(26,987)	7.75%	(945)	(26,794)	(13,466)	7.40%	20.79%

Funding Level 2 is the lowest funding level that will keep the fund solvent for 20 years.

POST-RETIREMENT HEALTH CARE & MEDICARE REIMBURSEMENT
CASH FLOW PROJECTION
INTERMEDIATE ASSUMPTIONS: B
FUNDING LEVEL 3
($ in Thousands)

Calendar Year	Fund Balance BOY	Contributions	Benefits	Net	Investment Return %	Investment Return $	Fund Balance EOY		% of Payroll	
							Nominal $	Real $	Contrib.	Benefits
2016	$ 106,550	$ 10,551	$ 10,884	$(333)	7.75%	$ 8,245	$ 114,462	$114,462	10.20%	10.52%
2017	114,462	10,897	11,075	(178)	7.75%	8,864	123,148	118,984	10.20%	10.37%
2018	123,148	11,240	12,200	(960)	7.75%	9,507	131,695	122,939	10.20%	11.07%
2019	131,695	11,591	13,540	(1,949)	7.75%	10,132	139,878	126,162	10.20%	11.92%
2020	139,878	11,954	14,786	(2,832)	7.75%	10,732	147,778	128,780	10.20%	12.62%
2021	147,778	12,332	16,135	(3,803)	7.75%	11,307	155,282	130,743	10.20%	13.35%
2022	155,282	12,712	17,624	(4,912)	7.75%	11,846	162,216	131,963	10.20%	14.14%
2023	162,216	13,102	18,663	(5,561)	7.75%	12,359	169,014	132,843	10.20%	14.53%
2024	169,014	13,516	19,654	(6,138)	7.75%	12,864	175,740	133,459	10.20%	14.83%
2025	175,740	13,945	21,182	(7,237)	7.75%	13,343	181,846	133,426	10.20%	15.49%
2030	195,257	16,465	31,029	(14,564)	7.75%	14,575	195,268	120,633	10.20%	19.22%
2035	179,263	19,783	40,659	(20,876)	7.75%	13,094	171,481	89,197	10.20%	20.96%
2040	128,685	23,905	46,874	(22,969)	7.75%	9,094	114,810	50,282	10.20%	20.00%
2045	39,922	28,781	56,089	(27,308)	7.75%	2,049	14,663	5,407	10.20%	19.88%
2046	14,663	29,825	58,624	(28,799)	7.75%	34	(14,102)	(5,024)	10.20%	20.05%

Funding Level 3 is the lowest funding level that will keep the fund solvent for 30 years.

POST-RETIREMENT HEALTH CARE & MEDICARE REIMBURSEMENT
CASH FLOW PROJECTION
INTERMEDIATE ASSUMPTIONS: B
FUNDING LEVEL 4
($ in Thousands)

Calendar Year	Fund Balance BOY	Contributions	Benefits	Net	Investment Return %	Investment Return $	Fund Balance EOY Nominal $	Fund Balance EOY Real $	% of Payroll Contrib.	% of Payroll Benefits
2016	$ 106,550	$ 14,896	$ 10,884	$ 4,012	7.75%	$ 8,411	$ 118,973	$118,973	14.40%	10.52%
2017	118,973	15,385	11,075	4,310	7.75%	9,385	132,668	128,182	14.40%	10.37%
2018	132,668	15,869	12,200	3,669	7.75%	10,422	146,759	137,001	14.40%	11.07%
2019	146,759	16,363	13,540	2,823	7.75%	11,482	161,064	145,270	14.40%	11.92%
2020	161,064	16,876	14,786	2,090	7.75%	12,562	175,716	153,126	14.40%	12.62%
2021	175,716	17,410	16,135	1,275	7.75%	13,667	190,658	160,529	14.40%	13.35%
2022	190,658	17,947	17,624	323	7.75%	14,788	205,769	167,393	14.40%	14.14%
2023	205,769	18,497	18,663	(166)	7.75%	15,941	221,544	174,132	14.40%	14.53%
2024	221,544	19,082	19,654	(572)	7.75%	17,148	238,120	180,831	14.40%	14.83%
2025	238,120	19,686	21,182	(1,496)	7.75%	18,397	255,021	187,117	14.40%	15.49%
2030	322,845	23,245	31,029	(7,784)	7.75%	24,723	339,784	209,912	14.40%	19.22%
2035	408,559	27,930	40,659	(12,729)	7.75%	31,176	427,006	222,110	14.40%	20.96%
2040	514,739	33,748	46,874	(13,126)	7.75%	39,390	541,003	236,936	14.40%	20.00%
2045	664,695	40,632	56,089	(15,457)	7.75%	50,922	700,160	258,183	14.40%	19.88%
2050	857,278	48,440	71,773	(23,333)	7.75%	65,546	899,491	279,270	14.40%	21.34%
2055	1,073,402	57,408	94,786	(37,378)	7.75%	81,758	1,117,782	292,202	14.40%	23.78%
2060	1,301,192	68,164	118,911	(50,747)	7.75%	98,900	1,349,345	296,994	14.40%	25.12%
2065	1,554,898	81,148	143,574	(62,426)	7.75%	118,116	1,610,588	298,475	14.40%	25.48%
2075	2,239,900	114,611	199,331	(84,720)	7.75%	170,350	2,325,530	305,521	14.40%	25.04%
2085	3,195,001	161,286	298,726	(137,440)	7.75%	242,353	3,299,914	307,340	14.40%	26.67%
2095	4,338,126	227,807	425,689	(197,882)	7.75%	328,632	4,468,876	295,060	14.40%	26.91%
2105	5,853,443	321,443	588,342	(266,899)	7.75%	443,428	6,029,972	282,244	14.40%	26.36%
2115	7,728,357	452,949	843,925	(390,976)	7.75%	583,986	7,921,367	262,849	14.40%	26.83%

Funding Level 4 is the lowest funding level that will keep the fund solvent indefinitely, i.e., throughout the entire 100-year projection period assuming all assumptions are realized.

POST-RETIREMENT HEALTH CARE & MEDICARE REIMBURSEMENT
CASH FLOW PROJECTION
PESSIMISTIC ASSUMPTIONS: C
FUNDING LEVEL 1
($ in Thousands)

Calendar Year	Fund Balance BOY	Contributions	Benefits	Net	Investment Return %	Investment Return $	Fund Balance EOY Nominal $	Fund Balance EOY Real $	% of Payroll Contrib.	% of Payroll Benefits
2016	$106,550	$4,138	$ 10,884	$ (6,748)	7.75%	$7,999	$107,801	$107,801	4.00%	10.52%
2017	107,801	0	11,461	(11,461)	7.75%	7,916	104,256	100,730	0.00%	10.73%
2018	104,256	0	12,945	(12,945)	7.75%	7,584	98,895	92,320	0.00%	11.75%
2019	98,895	0	14,694	(14,694)	7.75%	7,102	91,303	82,350	0.00%	12.93%
2020	91,303	0	16,339	(16,339)	7.75%	6,451	81,415	70,948	0.00%	13.94%
2021	81,415	0	18,076	(18,076)	7.75%	5,618	68,957	58,060	0.00%	14.95%
2022	68,957	0	19,929	(19,929)	7.75%	4,582	53,610	43,612	0.00%	15.99%
2023	53,610	0	21,250	(21,250)	7.75%	3,342	35,702	28,061	0.00%	16.54%
2024	35,702	0	22,479	(22,479)	7.75%	1,907	15,130	11,490	0.00%	16.96%
2025	15,130	0	24,283	(24,283)	7.75%	243	(8,910)	(6,538)	0.00%	17.76%

Funding Level 1 is the present contribution rate for post-retirement Health Care and Medicare reimbursement. The fund remains solvent until 2025 in this projection.

POST-RETIREMENT HEALTH CARE & MEDICARE REIMBURSEMENT
CASH FLOW PROJECTION
PESSIMISTIC ASSUMPTIONS: C
FUNDING LEVEL 2
($ in Thousands)

Calendar Year	Fund Balance BOY	Contributions	Benefits	Net	Investment Return %	Investment Return $	Fund Balance EOY Nominal $	Fund Balance EOY Real $	% of Payroll Contrib.	% of Payroll Benefits
2016	$106,550	$ 9,620	$ 10,884	$ (1,266)	7.75%	$ 8,209	$113,493	$113,493	9.30%	10.52%
2017	113,493	9,936	11,461	(1,525)	7.75%	8,737	120,705	116,623	9.30%	10.73%
2018	120,705	10,249	12,945	(2,696)	7.75%	9,251	127,260	118,799	9.30%	11.75%
2019	127,260	10,568	14,694	(4,126)	7.75%	9,705	132,839	119,813	9.30%	12.93%
2020	132,839	10,899	16,339	(5,440)	7.75%	10,087	137,486	119,811	9.30%	13.94%
2021	137,486	11,244	18,076	(6,832)	7.75%	10,394	141,048	118,759	9.30%	14.95%
2022	141,048	11,591	19,929	(8,338)	7.75%	10,612	143,322	116,593	9.30%	15.99%
2023	143,322	11,946	21,250	(9,304)	7.75%	10,751	144,769	113,787	9.30%	16.54%
2024	144,769	12,324	22,479	(10,155)	7.75%	10,831	145,445	110,453	9.30%	16.96%
2025	145,445	12,714	24,283	(11,569)	7.75%	10,829	144,705	106,175	9.30%	17.76%
2026	144,705	13,118	26,334	(13,216)	7.75%	10,709	142,198	100,807	9.30%	18.67%
2027	142,198	13,549	28,655	(15,106)	7.75%	10,442	137,534	94,203	9.30%	19.67%
2028	137,534	14,014	30,907	(16,893)	7.75%	10,012	130,653	86,464	9.30%	20.51%
2029	130,653	14,506	33,188	(18,682)	7.75%	9,411	121,382	77,612	9.30%	21.28%
2030	121,382	15,012	35,566	(20,554)	7.75%	8,621	109,449	67,616	9.30%	22.03%
2031	109,449	15,548	38,048	(22,500)	7.75%	7,621	94,570	56,448	9.30%	22.76%
2032	94,570	16,126	40,427	(24,301)	7.75%	6,399	76,668	44,215	9.30%	23.31%
2033	76,668	16,733	42,588	(25,855)	7.75%	4,952	55,765	31,072	9.30%	23.67%
2034	55,765	17,369	44,676	(27,307)	7.75%	3,277	31,735	17,085	9.30%	23.92%
2035	31,735	18,038	46,570	(28,532)	7.75%	1,368	4,571	2,378	9.30%	24.01%
2036	4,571	18,738	47,981	(29,243)	7.75%	(765)	(25,437)	(12,784)	9.30%	23.81%

Funding Level 2 is the lowest funding level that will keep the fund solvent for 20 years.

POST-RETIREMENT HEALTH CARE & MEDICARE REIMBURSEMENT
CASH FLOW PROJECTION
PESSIMISTIC ASSUMPTIONS: C
FUNDING LEVEL 3
($ in Thousands)

Calendar Year	Fund Balance BOY	Contributions	Benefits	Net	Investment Return %	Investment Return $	Fund Balance EOY Nominal $	Fund Balance EOY Real $	% of Payroll Contrib.	% of Payroll Benefits
2016	$106,550	$12,620	$10,884	$ 1,734	7.75%	$ 8,324	$116,608	$116,608	12.20%	10.52%
2017	116,608	13,034	11,461	1,573	7.75%	9,097	127,278	122,974	12.20%	10.73%
2018	127,278	13,444	12,945	499	7.75%	9,883	137,660	128,507	12.20%	11.75%
2019	137,660	13,863	14,694	(831)	7.75%	10,637	147,466	133,006	12.20%	12.93%
2020	147,466	14,297	16,339	(2,042)	7.75%	11,350	156,774	136,619	12.20%	13.94%
2021	156,774	14,750	18,076	(3,326)	7.75%	12,023	165,471	139,322	12.20%	14.95%
2022	165,471	15,205	19,929	(4,724)	7.75%	12,643	173,390	141,053	12.20%	15.99%
2023	173,390	15,671	21,250	(5,579)	7.75%	13,224	181,035	142,292	12.20%	16.54%
2024	181,035	16,167	22,479	(6,312)	7.75%	13,789	188,512	143,158	12.20%	16.96%
2025	188,512	16,679	24,283	(7,604)	7.75%	14,319	195,227	143,244	12.20%	17.76%
2030	209,473	19,693	35,566	(15,873)	7.75%	15,627	209,227	129,257	12.20%	22.03%
2035	190,052	23,663	46,570	(22,907)	7.75%	13,852	180,997	94,147	12.20%	24.01%
2040	131,771	28,592	53,687	(25,095)	7.75%	9,252	115,928	50,771	12.20%	22.91%
2045	30,901	34,424	64,264	(29,840)	7.75%	1,253	2,314	853	12.20%	22.78%
2046	2,314	35,673	67,174	(31,501)	7.75%	(1,026)	(30,213)	(10,764)	12.20%	22.97%

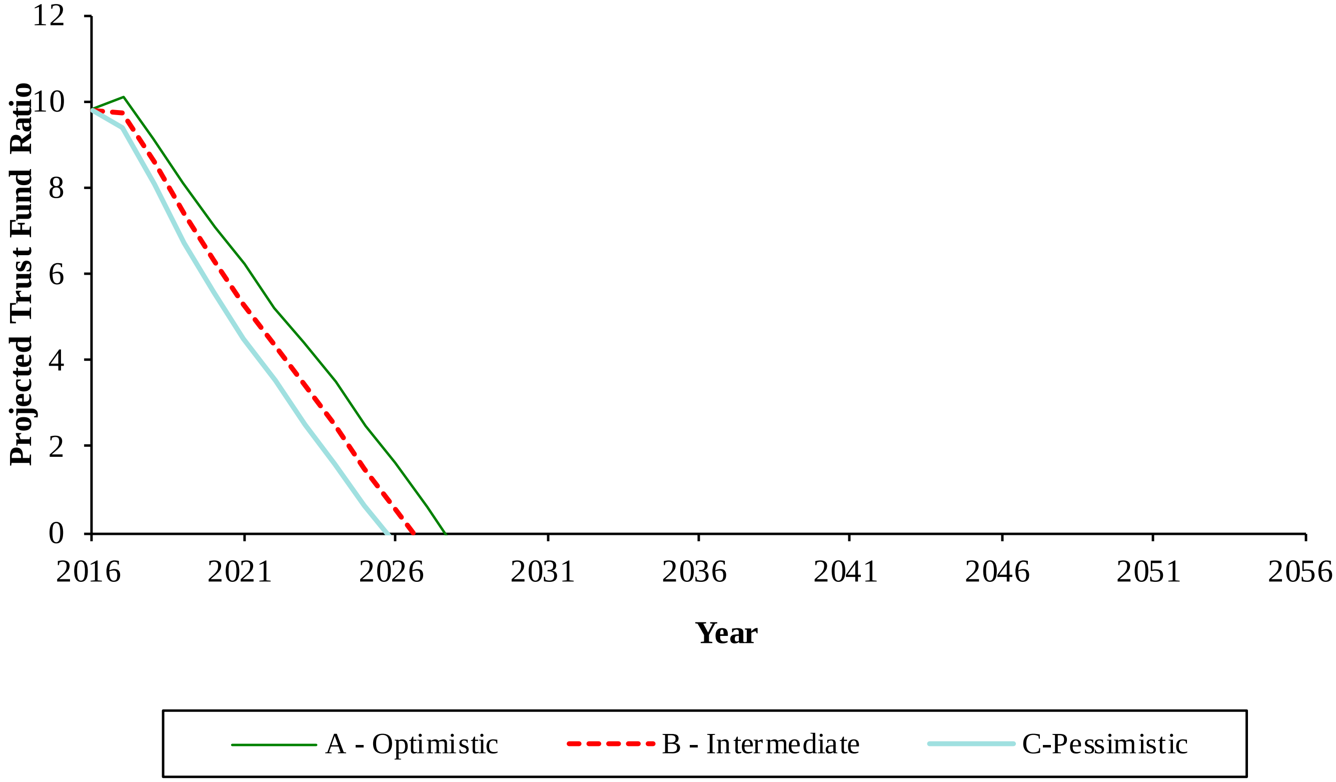
Funding Level 3 is the lowest funding level that will keep the fund solvent for 30 years.

POST-RETIREMENT HEALTH CARE & MEDICARE REIMBURSEMENT
CASH FLOW PROJECTION
PESSIMISTIC ASSUMPTIONS: C
FUNDING LEVEL 4
($ in Thousands)

Calendar Year	Fund Balance BOY	Contributions	Benefits	Net	Investment Return %	Investment Return $	Fund Balance EOY Nominal $	Fund Balance EOY Real $	% of Payroll Contrib.	% of Payroll Benefits
2016	$ 106,550	$ 17,482	$ 10,884	$ 6,596	7.75%	$ 8,510	$ 121,656	$ 121,656	16.90%	10.52%
2017	121,656	18,056	11,461	6,595	7.75%	9,681	137,932	133,268	16.90%	10.73%
2018	137,932	18,624	12,945	5,679	7.75%	10,907	154,518	144,244	16.90%	11.75%
2019	154,518	19,204	14,694	4,510	7.75%	12,148	171,176	154,391	16.90%	12.93%
2020	171,176	19,806	16,339	3,467	7.75%	13,399	188,042	163,868	16.90%	13.94%
2021	188,042	20,432	18,076	2,356	7.75%	14,663	205,061	172,656	16.90%	14.95%
2022	205,061	21,062	19,929	1,133	7.75%	15,936	222,130	180,703	16.90%	15.99%
2023	222,130	21,708	21,250	458	7.75%	17,233	239,821	188,497	16.90%	16.54%
2024	239,821	22,395	22,479	(84)	7.75%	18,583	258,320	196,171	16.90%	16.96%
2025	258,320	23,104	24,283	(1,179)	7.75%	19,975	277,116	203,329	16.90%	17.76%
2030	352,254	27,280	35,566	(8,286)	7.75%	26,983	370,951	229,167	16.90%	22.03%
2035	446,648	32,778	46,570	(13,792)	7.75%	34,087	466,943	242,883	16.90%	24.01%
2040	563,786	39,607	53,687	(14,080)	7.75%	43,155	592,861	259,648	16.90%	22.91%
2045	730,054	47,686	64,264	(16,578)	7.75%	55,945	769,421	283,723	16.90%	22.78%
2050	943,730	56,850	82,254	(25,404)	7.75%	72,167	990,493	307,524	16.90%	24.45%
2055	1,182,538	67,374	108,615	(41,241)	7.75%	90,068	1,231,365	321,894	16.90%	27.24%
2060	1,432,427	79,998	136,232	(56,234)	7.75%	108,861	1,485,054	326,864	16.90%	28.78%
2065	1,709,134	95,236	164,447	(69,211)	7.75%	129,809	1,769,732	327,967	16.90%	29.18%
2075	2,453,289	134,508	228,321	(93,813)	7.75%	186,540	2,546,016	334,488	16.90%	28.69%
2085	3,477,593	189,288	342,167	(152,879)	7.75%	263,663	3,588,377	334,206	16.90%	30.55%
2095	4,663,170	267,357	487,504	(220,147)	7.75%	352,971	4,795,994	316,658	16.90%	30.82%
2105	6,170,631	377,249	673,828	(296,579)	7.75%	466,874	6,340,926	296,798	16.90%	30.19%
2115	7,881,246	531,586	966,570	(434,984)	7.75%	594,151	8,040,413	266,799	16.90%	30.73%

Funding Level 4 is the lowest funding level that will keep the fund solvent indefinitely, i.e., throughout the entire 100-year projection period assuming all assumptions are realized.

POST-RETIREMENT HEALTH CARE & MEDICARE REIMBURSEMENT PROJECTED TRUST FUND RATIOS BASED ON 0.00% EMPLOYER CONTRIBUTION RATE (4.0% FOR CALENDAR YEAR 2016) DECEMBER 31, 2015



The ***trust fund ratio*** is the ratio of the fund balance at the beginning of the year to the projected benefit payout during the year. It is one measure of the Plan's ability to pay benefits. A trust fund ratio on the order of about 15 to 25 is expected in a plan that is funding health care payouts as a level percentage of payroll. Given the experience of the last several years, very few, if any plans, are likely to be able to report such a trust fund ratio.

APPROXIMATE IRC SECTION 401(h) COMPUTATION
($ in Thousands)

Year	(1) Covered Pay	(2) Pension EANC %	(3) Pension PUCNC %	(4) Pension PUCNC $	(5) Health Contribution	(6) (4) + (5)	(7) Sum of (5)	(8) Sum of (6)	(9) IRC Ratio (7) / (8)
1990	$45,640	22.75%	23.66%	$ 10,798.4	$1,835.5	$12,633.9	$ 8,761.7	$ 63,353.5	13.8%
1991	48,586	22.15%	23.04%	11,194.2	2,165.1	13,359.3	10,926.8	76,712.8	14.2%
1992	50,255	22.15%	23.04%	11,578.8	2,542.7	14,121.5	13,469.5	90,834.3	14.8%
1993	54,715	22.36%	23.25%	12,721.2	2,563.5	15,284.7	16,033.0	106,119.0	15.1%
1994	58,341	22.36%	23.25%	13,564.3	3,053.4	16,617.7	19,086.4	122,736.7	15.6%
1995	56,833	23.79%	24.74%	14,060.5	3,122.0	17,182.5	22,208.4	139,919.2	15.9%
1996	60,909	23.79%	24.74%	15,068.9	2,860.8	17,929.7	25,069.2	157,848.9	15.9%
1997	61,714	24.47%	25.45%	15,706.2	2,548.8	18,255.0	27,618.0	176,103.9	15.7%
1998	65,848	24.45%	25.55%	16,824.2	2,719.5	19,543.7	30,337.5	195,647.6	15.5%
1999	69,030	24.96%	26.08%	18,003.0	3,278.9	21,281.9	33,616.4	216,929.5	15.5%
2000	68,505	24.96%	26.08%	17,866.1	3,254.0	21,120.1	36,870.4	238,049.6	15.5%
2001	74,140	23.10%	23.63%	17,519.3	3,521.7	21,041.0	40,392.1	259,090.6	15.6%
2002	79,594	23.14%	23.71%	18,871.7	3,780.7	22,652.4	44,172.8	281,743.0	15.7%
2003	80,641	21.88%	22.72%	18,321.6	3,395.7	21,717.3	47,568.5	303,460.3	15.7%
2004	81,931	21.91%	22.83%	18,704.8	2,867.6	21,572.4	50,436.1	325,032.7	15.5%
2005	85,828	21.68%	22.59%	19,388.5	3,006.4	22,394.9	53,442.5	347,427.6	15.4%
2006	87,563	20.99%	21.83%	19,115.0	3,384.8	22,499.8	56,827.3	369,927.4	15.4%
2007	95,032	20.78%	21.92%	20,831.0	4,575.1	25,406.1	61,402.4	395,333.5	15.5%
2008	93,029	20.81%	21.89%	20,364.0	4,668.0	25,032.0	66,070.4	420,365.5	15.7%
2009	93,339	21.21%	22.92%	21,393.3	4,794.7	26,188.0	70,865.1	446,553.5	15.9%
2010	92,226	21.23%	23.25%	21,445.7	3,699.8	25,145.5	74,564.9	471,699.0	15.8%
2011	92,790	21.72%	24.03%	22,297.8	2,418.4	24,716.2	76,983.3	496,415.2	15.5%
2012	96,022	21.80%	24.19%	23,227.8	2,553.0	25,780.8	79,536.3	522,196.0	15.2%
2013	100,250	18.23%	20.37%	20,418.9	4,718.7	25,137.6	84,255.0	547,333.6	15.4%
2014	100,569	18.13%	21.00%	21,117.3	5,859.3	26,976.6	90,114.3	574,310.2	15.7%
2015	**101,751**	**18.13%**	**21.01%**	**21,375.1**	**5,637.4**	**27,012.5**	**95,751.7**	**601,322.7**	**15.9%**

The approximate computations above indicate compliance with IRC Section 401(h) because the ratio in Column 9 is below 25%. The ratio in Column 9 would appear lower if the computations were extended farther into the past.

SECTION C

GAIN/LOSS ANALYSIS

GAIN (LOSS) ANALYSIS

Purpose of Gain/Loss Analysis. Regular actuarial valuations provide information about the composite change in unfunded actuarial accrued liabilities -- whether or not the liabilities are increasing or decreasing, and by how much.

However, valuations do not show the portion of the change attributable to each risk area within the Retirement System: the rate of investment income on plan assets; the rates of withdrawal of active members who leave covered employment; the rates of mortality; the rates of disability; the rates of salary increases; the assumed ages at actual retirement. In an actuarial valuation, assumptions are made as to what these rates will be for the next year and for decades in the future.

The objective of a gain and loss analysis is to determine the portion of the change in unfunded actuarial accrued liabilities attributable to each risk area.

The fact that actual experience differs from assumed experience is to be expected. The future cannot be predicted with precision. Changes in the valuation assumption for a risk area should be made when the differences between assumed and actual experience have been observed to be sizable and persistent. One year's gain and loss analysis may or may not be indicative of ***long-term trends, which are the basis of financial assumptions***.

DEVELOPMENT OF TOTAL GAIN (LOSS)
JANUARY 1, 2015 TO DECEMBER 31, 2015

Unfunded Accrued Liabilities (UAL), January 1	$300,466,733
Normal Cost	18,528,203
Contributions	37,367,911
Interest	23,283,750
Expected UAL Before Any Changes	304,910,775
Effect of Changes in Assumptions and Benefits	48,811,895
Expected UAL After All Changes	353,722,670
Actual UAL	339,135,677
Gain (Loss) for Year from Financial Experience	**$ 14,586,993**

This page measures the actual gain or loss for the year after adjusting for the effect of benefit and assumption changes.

ANALYSIS OF FINANCIAL EXPERIENCE
FOR THE YEAR ENDED DECEMBER 31, 2015 AND 2014

Gains and Losses in Pension Accrued Liabilities Resulting from Differences Between Assumed Experience and Actual Experience

Type of Activity	Gain or (Loss) for Year Ended 12/31 2015	2014
Age & Service Retirements. If members retire at older ages or with lower final average pay than assumed, there is a gain. If younger ages or higher average pays, a loss.	**$ (365,491)**	$ (139,594)
Disability Retirements. If disability claims are less than assumed, there is a gain. If more claims, a loss.	**419,882**	1,290,916
Death-in-Service Benefits. If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	**(50,114)**	(81,706)
Withdrawal From Employment. If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	**1,272,449**	558,083
Pay Increases. If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	**6,155,599**	8,493,589
Investment Income. If there is greater investment return on pension assets than assumed, there is a gain. If less return, a loss.	**1,471,554**	106,548
Other. Miscellaneous gains and losses resulting from data adjustments, timing of financial transactions, valuation methods, DROP account interest crediting, etc.	**5,683,114**	(4,872,188)
Gain (or Loss) During Year from Experience	**$ 14,586,993**	$ 5,355,648
Non-Recurring Items (Effect of Benefit/Assumption Changes)	**(48,811,895)**	0
Composite Gain (or Loss) During Year	**$ (34,224,902)**	$ 5,355,648

INVESTMENT GAIN (LOSS)
DEVELOPMENT OF PORTION ATTRIBUTABLE TO RETIREMENT, SURVIVOR AND DISABILITY ALLOWANCES
JANUARY 1, 2015 TO DECEMBER 31, 2015

Assets, Beginning of Year	$712,285,604
Net Cash Flow	(29,702,968)
Assumed Investment Return	55,794,730
Expected Assets End of Year	$738,377,366
Actual Assets End of Year	739,848,920
Gain (Loss) for Year	**$ 1,471,554**

The total investment gain (loss) was $1,857,475, including the gain (loss) on health assets.

ACTIVE MEMBER POPULATION RECONCILIATION
JANUARY 1, 2015 TO DECEMBER 31, 2015

	Actual	Expected
Active Members Beginning of Year	1,622	
Plus New Hires	87	
Minus Retirements	44	36.4
Minus Deaths	1	0.8
Minus Disabilities	4	7.4
Minus Other Terminations	44	18.2
Returned to Active Status	5	
Plus or Minus Data Correction	0	
Active Members End of Year	**1,621**	

SECTION D

FINANCIAL INFORMATION

CURRENT ASSET INFORMATION
FURNISHED FOR THE VALUATION
DECEMBER 31, 2015

Balance Sheet

Current Assets (Market Value)*		Fund Balance	
Cash & Short-Term Investments	$ 13,515,013	Employees' Savings Fund	$ 110,331,637
Fixed Income	159,275,836	Employer Accumulation Fund	101,419,727
Stocks	435,953,247	Pension Reserve Fund	593,893,396
Real Estate	31,643,309	Survivors Benefit Fund	0
Alternatives	166,864,861	Health Care Fund	101,419,727
Other Short-Term	104,616	Income Fund	(101,419,727)
Deferred Outflows - Pension	32,776		
Accruals & Receivables	(25,222,018)		
Total Current Assets	**$ 782,167,640**	**Total Fund Balance**	**$ 805,644,760**

** Does not include $23,477,120 for DROP Account Balances*

Revenues and Expenditures

	Year Ended December 31, 2015	Year Ended December 31, 2014
Net Assets Held in Trust for Pension and Postemployment Health Care Benefits	$ 825,399,760	$ 813,952,605
DROP Liabilities	22,615,829	22,770,174
Total	$ 848,015,589	$ 836,722,779
Revenues**		
Employee contributions		
For non-DROP members	12,711,676	10,637,385
For DROP members	974,616	939,883
Employer contributions (net)	27,750,506	27,071,839
Investment income (net)		
Non-DROP investment income	(5,112,383)	51,639,210
DROP investment income	(589,539)	265,016
Miscellaneous	0	0
Total	35,734,876	90,553,333
Expenditures		
Benefit payments		
Retirees and Beneficiaries	59,772,972	57,218,360
From DROP account	6,330,281	7,237,618
Health insurance	9,793,515	10,774,592
Refund of member contributions	857,626	2,177,476
Administrative expenses	1,241,311	1,187,649
Death benefit	110,000	70,000
Total	78,105,705	78,665,695
Net Addition to Assets	(42,370,829)	11,887,638
Net Assets Held in Trust for Pension and Postemployment Health Care Benefits	$ 782,167,640	$ 825,994,588
DROP Liabilities	23,477,120	22,615,829
Total	**$ 805,644,760**	**$ 848,610,417**

*** Revenues include transfers to and from systems.*

CAFR Asset Information Furnished for the Valuation
December 31, 2015

Additions by Source

	Pension Benefits					Other Postemployment Benefits		
	Contributions							
Year	Member*	Employer	Net Investment Income	Transfers from Other Systems	Total	Employer Contributions	Net Investment Income	Total
2006	$8,610,088	$19,263,941	$ 85,757,656	$ 648,282	$ 114,279,967	$3,384,780	$ 15,312,122	$ 18,696,902
2007	8,901,454	19,956,700	51,176,733	717,017	80,751,904	4,575,072	10,475,428	15,050,500
2008	9,666,665	20,302,216	(207,368,115)	632,894	(176,766,340)	4,667,972	(30,809,552)	(26,141,580)
2009	9,503,526	20,453,914	109,523,583	1,009,422	140,490,445	4,794,710	21,030,418	25,825,128
2010	9,221,920	21,211,944	72,158,093	329,335	102,921,292	3,699,814	17,734,416	21,434,230
2011	9,278,533	22,966,338	(16,039,272)	608,366	16,813,965	2,418,411	(2,746,073)	(327,662)
2012	9,641,772	23,766,361	63,783,964	557,316	97,749,413	2,553,023	10,199,419	12,752,442
2013	10,037,246	22,908,182	115,874,530	1,353,520	150,173,478	4,718,651	17,893,377	22,612,028
2014	11,577,268	22,325,421	45,104,959	586,929	79,594,577	5,859,320	6,799,267	12,658,587
2015	**13,686,292**	**22,895,242**	**(5,649,718)**	**947,265**	**31,879,081**	**5,637,420**	**(647,032)**	**4,990,388**

** Does not include service purchases.*

Deductions by Type

	Pension Benefits					Other Postemployment Benefits		
Year	Benefits#	Refunds	Transfers to Other Systems	Administrative	Total	Benefits	Administrative	Total
2006	$40,408,244	$ 299,128	$ 914,949	$ 572,616	$ 42,194,937	$ 7,980,823	$ 92,761	$ 8,073,584
2007	44,741,510	98,628	330,539	605,165	45,775,842	10,652,642	97,101	10,749,743
2008	43,455,149	570,827	282,987	613,447	44,922,410	8,864,161	98,082	8,962,243
2009	46,009,029	1,076,685	406,147	758,818	48,250,679	8,899,533	123,210	9,022,743
2010	49,106,165	476,936	566,615	637,943	50,787,659	10,536,554	106,450	10,643,004
2011	57,288,210	451,682	1,797,986	948,319	60,486,197	11,092,515	159,271	11,251,786
2012	57,110,650	179,614	377,994	859,477	58,527,735	11,025,550	137,943	11,163,493
2013	61,528,826	943,433	467,462	909,929	63,849,650	12,140,996	140,676	12,281,672
2014	64,525,978	2,177,476	165,945	1,031,473	67,900,872	12,308,478	156,176	12,464,654
2015	**66,213,253**	**857,626**	**160,888**	**1,084,161**	**68,315,928**	**11,362,048**	**157,150**	**11,519,198**

 # Includes death benefits.

DEVELOPMENT OF FUNDING VALUE OF RETIREMENT SYSTEM ASSETS
DECEMBER 31, 2015

		2013	2014	2015	2016	2017	2018
A.	Funding Value From Prior Year	$ 758,246,087	$ 792,689,505	**$ 816,098,411**			
B.	Market Value End of Year	836,722,779	848,610,417	**805,644,760**			
C.	Market Value Beginning of Year	740,068,595	836,722,779	**848,610,417**			
D.	Non-Investment Net Cash Flow	(36,063,118)	(38,828,939)	**(35,427,596)**			
E.	Investment Return:						
	E1. Market Total: B - C - D	132,717,302	50,716,577	**(7,538,061)**			
	E2. Assumed Rate	8.0%	8.0%	**8.0%**	**7.75%**		
	E3. For Immediate Recognition (8.0%)	59,217,162	61,862,003	**63,870,769**			
	E4. Amount for Phased-In Recognition E1-E3	73,500,140	(11,145,426)	**(71,408,830)**			
F.	Phased-In Recognition of Investment Return:						
	F1. Current Year: 25% x E4	18,375,035	(2,786,357)	**(17,852,208)**			
	F2. First Prior Year	4,121,007	18,375,035	**(2,786,357)**	$ (17,852,208)		
	F3. Second Prior Year	(19,333,843)	4,121,007	**18,375,035**	(2,786,357)	$ (17,852,208)	
	F4. Third Prior Year	8,127,175	(19,333,843)	**4,121,005**	18,375,035	(2,786,355)	$ (17,852,206)
	F5. Total Recognized Phased-In	$ 11,289,374	$ 375,842	**$ 1,857,475**	$ (2,263,530)	$ (20,638,563)	$ (17,852,206)
G.	Funding Value End of Year:						
	G1. Preliminary Funding Value End of Year: A + D + E3 + F5	$ 792,689,505	$ 816,098,411	**$ 846,399,059**			
	G2. Corridor Percent	20%	20%	**20%**			
	G3. Upper Corridor Limit: (100% + G2) x B	1,004,067,335	1,018,332,500	**966,773,712**			
	G4. Lower Corridor Limit: (100% - G2) x B	669,378,223	678,888,334	**644,515,808**			
	G5. Funding Value End of Year	$ 792,689,505	$ 816,098,411	**$ 846,399,059**			
H.	Difference between Market Value and Funding Value	$ 44,033,274	$ 32,512,006	**$ (40,754,299)**	$ (38,490,769)	$ (17,852,206)	$ -
I.	Funding Value Rate of Return	9.5 %	8.0 %	**8.2 %**			
J.	Market Value Rate of Return	18.4 %	6.2 %	**(0.9)%**			

The asset valuation method recognizes assumed investment income (line E2) fully each year. Differences between actual and expected investment income (line E3) are phased-in over a closed 4-year period. When investment markets are performing well, Funding Value will tend to lag market value. When investment markets are performing poorly, Funding Value will tend to exceed market value. From a Funding standpoint, the asset valuation method is *neutral*.

SEPARATION OF ASSETS BETWEEN PENSION AND HEALTH
DECEMBER 31, 2015

	Pension	Health	Total
A. Market Value Beginning of Year	$740,661,880	$ 107,948,537	$848,610,417
B. Member Contributions			
B1. Pension Contributions	12,711,676		12,711,676
B2. DROP Contributions	974,616		974,616
B3. Retiree Health Contributions		2,397,055	2,397,055
C. Employer Contributions			
C1. System Contributions	22,895,242	4,068,887	26,964,129
C2. Transfers	786,377		786,377
C3. Medicare Part D Reimbursement		1,568,533	1,568,533
D. Benefits Paid			
D1. Pension Benefits	59,772,972		59,772,972
D2. Benefit Payments from DROP Account	6,330,281		6,330,281
D3. HPRS Paid Retiree Health Benefits		10,760,188	10,760,188
D4. HPRS Paid Medicare Part B Benefits		601,860	601,860
D5. Member Paid Retiree Health Benefits		2,397,055	2,397,055
E. Refunds of Member Contributions	857,626	0	857,626
F. Death Benefits	110,000	0	110,000
G. Net External Cash Flow (B + C - D - E - F)	(29,702,968)	(5,724,628)	(35,427,596)
H. Other Changes in Market Value	(6,733,879)	(804,182)	(7,538,061)
I. Market Value End of Year (A + G + H)	704,225,033	101,419,727	805,644,760
J. Funding Value Adjustment	35,623,887	5,130,412	40,754,299
K. **Funding Value End of Year (I + J)**	**$739,848,920**	**$106,550,139**	**$846,399,059**

Line J is allocated in proportion to Line I.

SECTION E

SUMMARY OF MEMBER DATA

ACTIVE MEMBERS AS OF DECEMBER 31, 2015
BY ATTAINED AGE AND YEARS OF SERVICE*

Attained	Years of Service to Valuation Date							Totals	
Age	0-4	5-9	10-14	15-19	20-24	25-29	30 Up	No.	Payroll
20-24	88							88	$ 3,641,906
25-29	200	11						211	10,022,341
30-34	95	83	55					233	12,699,791
35-39	25	40	120	91				276	17,366,265
40	1	4	20	34	1			60	3,856,814
41	2	6	17	39	13			77	5,155,418
42	1	6	13	31	16			67	4,496,053
43		3	13	24	23			63	4,200,609
44		1	11	25	30	2		69	4,825,761
45	1		12	26	35	1		75	5,061,649
46			14	13	46	7		80	5,524,500
47			7	10	37	11		65	4,458,472
48			4	5	28	16		53	3,842,765
49		1	3	4	22	13	3	46	3,332,878
50				2	14	9	5	30	2,360,435
51				6	12	16	2	36	2,546,813
52			1		7	12	5	25	1,866,104
53				1	2	11	4	18	1,279,245
54					5	13	5	23	1,723,957
55					2	2	5	9	544,910
56					2	2	4	8	546,074
57						1	2	3	229,561
58							3	3	194,870
59						1	2	3	206,033
Totals	**413**	**155**	**290**	**311**	**295**	**117**	**40**	**1,621**	**$ 99,983,224**

While not used in valuations, the following group averages are computed and shown for their general interest.

Age: 38.7 years.

Service: 13.8 years.

Annual Pay: $61,680

** Includes 125 DROP members.*

ACTIVE MEMBERS
BY AGES OF ENTRY INTO SERVICE
DECEMBER 31, 2015

Entry Age Nearest Birthday	Number	Cumulative Number	Percent	Cumulative Percent
Less than 18	0	0	0.00%	0.00%
18	18	18	1.11%	1.11%
19	51	69	3.15%	4.26%
20	92	161	5.67%	9.93%
21	173	334	10.67%	20.60%
22	235	569	14.50%	35.10%
23	208	777	12.83%	47.93%
24	188	965	11.60%	59.53%
25	156	1,121	9.62%	69.15%
26	106	1,227	6.54%	75.69%
27	94	1,321	5.80%	81.49%
28	70	1,391	4.32%	85.81%
29	56	1,447	3.46%	89.27%
30	40	1,487	2.46%	91.73%
31	36	1,523	2.22%	93.95%
32	40	1,563	2.47%	96.42%
33	31	1,594	1.91%	98.33%
34	19	1,613	1.18%	99.51%
35	0	1,613	0.00%	99.51%
36	0	1,613	0.00%	99.51%
37	4	1,617	0.24%	99.75%
38	1	1,618	0.06%	99.81%
39	0	1,618	0.00%	99.81%
40 & Up	3	1,621	0.19%	100.00%
Total	**1,621**			

ACTIVE DROP MEMBERS AS OF DECEMBER 31, 2015
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Ages	DROP No.	DROP Annual Benefit	DROP Annual Pay	DROP Account Balance
48	8	$ 471,225	$ 717,281	$ 327,275
49	14	689,653	1,155,767	856,391
50	13	701,860	1,173,368	1,647,655
51	20	881,002	1,481,572	2,549,506
52	17	730,334	1,208,719	2,254,183
53	16	691,386	1,148,462	2,530,184
54	16	702,111	1,206,887	3,157,402
55	9	381,159	582,975	1,884,360
56	6	299,560	435,597	1,833,037
57	2	89,518	122,488	370,905
58	2	109,750	144,709	788,181
59	2	92,046	133,707	714,269
Totals	**125**	**$ 5,839,605**	**$ 9,511,531**	**$ 18,913,347**

Average Age: 52.5 yrs.
Average Age at DROP: 49.7 yrs.

Average Service: 28.7 yrs.
Average Service at DROP: 24.7 yrs.

Average Annual Pay: $76,092

AGE AND SERVICE PENSIONS BEING PAID DECEMBER 31, 2015
BY ATTAINED AGES

Attained Ages	Number	Monthly Pensions	Number Married	Average Age of Spouse
48 & Under	7	$ 25,732	3	50
49	6	19,433	4	46
50	15	58,528	10	52
51	16	57,557	11	48
52	27	99,256	17	48
53	22	74,712	14	51
54	26	100,424	19	53
55	33	126,232	28	54
56	47	183,209	39	53
57	47	174,426	36	55
58	34	132,744	29	55
59	34	136,300	31	58
60	49	193,568	43	57
61	34	140,156	29	60
62	23	102,929	22	60
63	36	155,550	33	59
64	44	171,281	38	61
65	45	176,062	39	62
66	37	150,826	32	64
67	50	187,622	44	65
68	68	257,498	57	65
69	46	181,029	42	68
70	37	146,676	33	67
71	51	191,351	50	68
72	35	124,850	32	70
73	47	161,740	42	69
74	34	122,130	30	70
75	25	89,755	21	72
76	24	90,058	20	74
77	23	68,785	23	74
78	21	70,002	20	74
79	14	41,211	12	75
80	11	33,046	11	78
81	9	26,404	7	77
82	7	18,258	5	78
83	10	27,716	10	78
84	8	19,154	6	79
85 & Over	46	108,489	30	81
Totals	**1,148**	**$ 4,244,699**	**972**	

DISABILITY PENSIONS BEING PAID DECEMBER 31, 2015
BY ATTAINED AGE

Attained Ages	Number	Monthly Pensions	Number Married	Average Age of Spouse
29	1	$ 2,298		
33	1	2,023		N/A
35	1	2,668	1	35
36	1	3,444		N/A
37	3	8,362	2	37
38	1	1,928		N/A
40	1	2,375		N/A
41	2	5,150	1	41
42	1	2,342	1	41
43	6	17,286	3	45
44	6	15,168	5	34
45	3	7,654	2	41
46	3	9,496	3	41
47	6	15,734	3	49
48	5	13,736	4	40
49	5	13,082	3	49
50	4	11,722	3	55
51	6	18,941	3	51
52	5	14,141	5	49
53	5	17,226	3	47
54	3	12,437	3	55
55	6	17,875	5	54
56	5	15,402	4	51
57	6	17,309	4	56
58	6	18,674	3	58
59	4	12,779	3	58
60	2	7,003	2	62
62	3	9,219	3	60
63	3	8,368	2	62
64	3	9,749	3	62
65	1	1,926	1	60
66	2	5,933	2	64
67	6	14,098	5	64
68	1	2,671	1	68
69	2	5,758	1	58
71	2	5,912	1	73
72	2	4,354	2	71
74	1	1,734	1	68
78	1	3,327		N/A
86	1	1,867	1	82
Totals	**126**	**$361,171**	**89**	

DEPENDENTS BEING PAID AS OF DECEMBER 31, 2015
TABULATED BY ATTAINED AGE

Attained Ages	Number	Monthly Pensions
14 & Under	4	$ 636
15	1	208
16	3	525
17	3	525
18	2	393
19	1	208
20	2	361
21	1	161
23	1	150
28	1	1,850
29	1	1,087
35	1	150
36	1	1,114
38	3	3,049
42	1	1,259
43	1	1,328
45	2	2,566
47	1	1,423
49	2	3,119
50	1	1,303
51	3	2,585
53	4	6,710
54	1	2,551
56	3	2,425
57	1	1,215
58	3	4,682
59	1	1,070
60	3	5,332
61	3	3,816
62	2	3,310
63	4	8,117
64	7	10,211
65	4	6,227
66	6	10,509
67	5	7,771
68	10	15,721
69	8	15,727
70-79	66	103,303
80-89	88	113,365
90 & Over	19	25,010
Totals	**274**	**$371,072**

ACTIVE MEMBER VALUATION DATA, 2006 TO 2015

Actuarial Valuation as of December 31	Number of Active Members	Annual Payroll	Average Annual Salary	% Increase in Average Pay
2006	1,592	$85,878,329	$53,944	1.7 %
2007	1,597	93,752,908	58,706	8.8
2008	1,544	94,301,538	61,076	4.0
2009	1,547	94,824,789	61,296	0.4
2010	1,537	94,767,852	61,658	0.6
2011	1,520	93,126,449	61,267	(0.6)
2012	1,645	98,117,403	59,646	(2.6)
2013	1,613	98,519,844	61,079	2.4
2014	1,622	99,211,756	61,166	0.1
2015	**1,621**	**99,983,224**	**61,680**	**0.8**

RETIRANTS AND BENEFICIARIES VALUATION DATA, 2006 TO 2015

Actuarial Valuation as of December 31	Added to Rolls		Removed from Rolls		Number of People	Total Monthly Benefits	Average Benefit
	No.	Monthly Benefits	No.	Monthly Benefits			
2006	70	$ 215,820	34	$51,746	1,337	$ 3,341,805	$2,499
2007	53	184,644	31	56,120	1,359	3,470,329	2,554
2008	45	211,061	33	53,298	1,371	3,628,092	2,646
2009	45	207,598	31	42,636	1,385	3,793,054	2,739
2010	64	259,964	25	41,464	1,424	4,011,554	2,817
2011	73	327,709	32	68,456	1,465	4,270,807	2,915
2012	79	281,692	47	81,957	1,497	4,470,542	2,986
2013	61	267,055	35	70,317	1,523	4,667,280	3,065
2014	66	250,714	31	60,291	1,558	4,857,703	3,118
2015	**73**	**258,562**	**83 ***	**139,323**	**1,548**	**4,976,942**	**3,215**

Of the 1,548 retirants and beneficiaries as of December 31, 2015, 1,148 are service retirees, 126 are disability retirees and 274 are survivor beneficiaries. The average monthly benefits are $3,697 for service retirees, $2,866 for disability retirees and $1,354 for survivor beneficiaries.

* *Includes Alternate Payee records, which were combined with Participant records beginning with the December 31, 2015 valuation.*

NUMBER OF RETIRED LIVES COVERED BY AETNA & OTHER CARRIERS COMPARATIVE SCHEDULE

	Census Date										
	12/15	**12/14**	**12/13**	**12/12**	**12/11**	**12/10**	**12/09**	**12/08**	**12/07**	**12/06**	**12/05**
Recipients:											
w/o Medicare A	**685**	645	672	702	NA	732	692	762	751	779	806
Medicare A	**780**	753	717	669	NA	596	580	398	503	522	437
Spouses:											
w/o Medicare A	**302**	325	330	355	NA	365	368	518	372	420	375
Medicare A	**372**	360	338	305	NA	257	267	232	242	156	187
Dependent Children	**261**	273	302	279	NA	216	165	167	154	168	127
Orphans	**0**	0	0	0	NA	0	23	26	63	33	26
Totals	**2,400**	2,356	2,359	2,310	2,269	2,166	2,095	2,103	2,085	2,078	1,958

A summary of recipients and dependents covered by AETNA, Medicare Advantage and Medical Mutual of Ohio follows:

	AETNA		Medicare Advantage		Medical Mutual		
	Network	Non-Network	Network	Non-Network	Network	Non-Network	Totals
2003	815	486			546	65	1,912
2004	783	494			568	83	1,928
2005	767	505			588	98	1,958
2006	1,279	22			749	28	2,078
2007	1,264	25			723	73	2,085
2008	1,262	2			818	21	2,103
2009	1,260	0			835	0	2,095
2010	190	0	819	0	1,157	0	2,166
2011	197	0	891	0	1,181	0	2,269
2012	183	0	975	0	1,152	0	2,310
2013	162	0	1,056	0	1,141	0	2,359
2014	0	0	1,114	0	1,242	0	2,356
2015	**0**	**0**	**1,152**	**0**	**1,248**	**0**	**2,400**

DEFERRED PENSIONS AS OF DECEMBER 31, 2015
TABULATED BY ATTAINED AGE

Attained Ages	Number	Annual Pensions
45	2	$ 50,678
46	1	30,592
47	4	164,586
48	2	67,461
49	1	46,075
Totals	**10**	**$359,392**

A ***deferred retirant*** is a member who has left active service with at least 15 (and in most cases 20) years of service credit, and has not withdrawn his accumulated contributions. Such members are entitled to a pension upon attaining eligibility age.

SECTION F

ASSUMPTIONS USED IN THE VALUATION

SUMMARY OF VALUATION METHOD AND ASSUMPTIONS
DECEMBER 31, 2015

The actuarial assumptions used in the valuation are shown in this section of the report. The assumptions were established for the December 31, 2015 actuarial valuation, following a 5-year experience study covering the period January 1, 2010 through December 31, 2014. They were adopted by the Board after obtaining the advice of the Actuary and other professionals. The assumptions represent estimates of future experience.

Economic Assumptions

The investment return rate used in making the valuations was 7.75% per year, compounded annually (net after investment expenses). The real rate of return is defined to be the portion of total investment return, which is more than the wage inflation rate. Considering other financial assumptions, the 7.75% investment return rate translates to an assumed real rate of return of 4.25% over the wage inflation rate of 3.50%. In order to assume a 4.25% real return over wage inflation, it would be necessary to realize about a 5.0% real return over the assumed price inflation of 2.75%, after accounting for investment expenses and the difference between wage increases and price increases. The economic assumptions were last reviewed as part of the 5-year experience study for the period January 1, 2010 through December 31, 2014.

Pay increase assumptions for individual active members are shown for sample ages on page F-5. Part of the assumed increase at each age is for merit and/or seniority, and the other 3.50% recognizes changes in wage levels due to broad economic effects, including inflation and real wage growth.

The active member payroll is assumed to increase 3.50% annually, which is the portion of the individual pay increase assumptions attributable to broad economic effects.

The number of active members is assumed to continue at the present number.

Non-Economic Assumptions

The healthy retiree mortality tables, for post-retirement mortality, used in evaluating allowances to be paid were the RP-2014 Healthy Annuitant mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The base year for females was then established to be 2012. Mortality rates for a particular calendar year are determined by applying the MP-2015 mortality improvement scale to the above described tables. This assumption was last reviewed and updated as part of the 5-year experience study for the period January 1, 2010 through December 31, 2014.

The disabled retiree mortality tables, for post-retirement mortality, used in evaluating allowances to be paid were the RP-2014 disabled mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The base year for females was then established to be 2012. Mortality rates for a particular calendar year are determined by applying the MP-2015 mortality improvement scale to the above described tables. This assumption was last reviewed and updated as part of the 5-year experience study for the period January 1, 2010 through December 31, 2014.

The probabilities of age and service retirement are shown on page F-5.

The probabilities of withdrawal from service, disability and death-in-service are shown for sample ages on page F-5. The pre-retirement mortality tables used were the RP-2014 employees mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The base year for females was then established to be 2012. Mortality rates for a particular calendar year are determined by applying the MP-2015 mortality improvement scale to the above described tables. Fifty percent of disability retirements are assumed to be non-duty related and fifty percent are assumed to be duty related. This assumption was last reviewed and updated as part of the 5-year experience study for the period January 1, 2010 through December 31, 2014.

The entry age normal actuarial cost method of valuation was used in determining liabilities and normal cost. For GASB Statement Nos. 67 and 68 purposes, the DROP entry date is assumed to be the date of retirement for normal cost purposes.

> 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 payments (principal & interest), which are level percent of payroll contributions.

Employer contributions were assumed to be ***paid in equal installments*** throughout the employer fiscal year.

Non-Economic Assumptions (Concluded)

Present assets (cash & investments) were used with a market value adjustment that spreads differences between actual and assumed return over a closed four-year period for funding valuation purposes. Funding value is not permitted to deviate from market value by more than 20%. Details of the method may be found in the body of the funding valuation report on page D-3. Assets may be used in the valuation prior to the final audit. For GASB Statement Nos. 67 and 68 purposes, the market value of assets is used.

The data about persons now covered and about present assets were furnished by the System's administrative staff. Although examined for general reasonableness, the data was not audited by the Actuary.

The actuarial valuation computations were made by or under the supervision of a Member of the American Academy of Actuaries (MAAA) who has experience performing public plan valuations.

SINGLE LIFE RETIREMENT VALUES*
(7.75% INTEREST)

Sample Attained Ages	Present Value of $1 Monthly for Life		Future Life Expectancy (years)	
	Men	Women	Men	Women
50	$141.19	$143.89	34.89	36.63
55	135.18	138.15	30.13	31.69
60	127.70	130.65	25.57	26.90
65	118.14	121.20	21.18	22.34
70	106.08	109.50	17.01	18.04
75	91.77	95.63	13.17	14.08
80	75.87	79.91	9.79	10.56

** Applicable to calendar year 2015. Values for future years are determined using the MP-2015 projection scale.*

The present values shown above are for illustrative purposes only and do not include the value of future post-retirement increases.

SEPARATIONS FROM ACTIVE EMPLOYMENT & SALARY SCALE

Sample Ages	Percent of Active Members Separating Within Next Year					Salary Increase Assumptions for an Individual Member			
		Death*					Merit &	Base	Increase
	Disability	Men	Women	Service	Other	Service	Seniority	(Economic)	Next Year
20	0.08%	0.0355%	0.0180%	1	10.00%	1-2	10.00%	3.50%	13.50%
25	0.08%	0.0434%	0.0173%	2-5	4.00%	3-5	3.00%	3.50%	6.50%
30	0.23%	0.0422%	0.0208%	6-15	1.00%	6-10	1.00%	3.50%	4.50%
35	0.42%	0.0498%	0.0304%	16-20	0.75%	11 & Up	0.30%	3.50%	3.80%
40	0.70%	0.0594%	0.0455%	21 & up	0.50%				
45	0.85%	0.0916%	0.0705%						
50	1.13%	0.1639%	0.1103%						
55	1.32%	0.2760%	0.1730%						

* *Applicable to calendar year 2015. Rates in future years are determined by the above rates and the MP-2015 projection scale.*

Probabilities of Age & Service Retirement		
Retirement Ages	Percents of Eligible Members Retiring Within Next Year with an Unreduced Benefit	Percents of Eligible Members Retiring Within Next Year with a Reduced Benefit
48	30%	3.0%
49	15%	2.0%
50	15%	2.0%
51	15%	2.0%
52	15%	
53	15%	
54	10%	
55	30%	
56	25%	
57	30%	
58	30%	
59	40%	
60 & Over	100%	

In addition, it was assumed that 100% of eligible members age 55 and older would retire upon attaining 34 years of service. A member was assumed eligible for unreduced retirement at age 48 or greater with 25 or more years of service or age 52 or greater with 20 or more years of service. A member was assumed eligible for reduced retirement at age 48 or greater with 20 or more years of service.

It was assumed that members eligible to DROP would either retire or “DROP in” at first eligibility for unreduced retirement. 100% of members still working 8 years after first reaching retirement eligibility are assumed to retire.

ADDITIONS TO AND REMOVALS FROM ACTIVE MEMBERSHIP
ACTUAL AND EXPECTED NUMBERS

Year Ended December 31	Number Added During Year A	Number Added During Year E	Retirement A	Retirement E	Disability Retirement A	Disability Retirement E	Death-in-Service A	Death-in-Service E	Other Terminations A	Other Terminations E	Active Members
2006	80	70.4	26	41.9	9	6.7	2	0.8	24	21.0	1,592
2007	53	65.9	17	36.7	4	6.7	3	0.8	24	21.7	1,597
2008	9	71.8	27	44.8	4	6.9	0	0.8	31	19.3	1,544
2009	49	74.5	21	50.0	10	7.0	0	0.9	15	16.6	1,547
2010	51	79.7	39	54.5	4	7.1	1	0.9	17	17.2	1,537
2011	74	61.4	50	36.8	5	7.2	1	1.0	35	16.4	1,520
2012	204	63.9	37	38.8	10	7.2	1	1.0	31	16.9	1,645
2013	54	67.1	34	36.5	7	7.2	0	0.9	45	22.5	1,613
2014	84	62.3	40	36.2	3	7.4	1	0.8	31	17.9	1,622
2015	**92**	**62.8**	**44**	**36.4**	**4**	**7.4**	**1**	**0.8**	**44**	**18.2**	**1,621**
Total	**750**	**679.8**	**335**	**412.6**	**60**	**70.8**	**10**	**8.7**	**297**	**187.7**	

A: Actual

E: Expected

The following pages summarize the removals from active membership by age group and years of accrued service.

AGE AND SERVICE RETIREMENTS DURING CALENDAR YEAR 2015

	Years of Accrued Service				
Age Group	15-19	20-24	25-29	30 Plus	Total
Under 20					
20-24					
25-29					
30-34					
35-39					
40-44					
45					
46					
47					
48			6		6
49			4		4
50			6		6
51			5		5
52		3	1		4
53		3	2		5
54		1	3		4
55			1		1
56		1	1		2
57		2	3		5
58					
59			2		2
60 & Over					
Totals		**10**	**34**		**44**

DISABILITY RETIREMENTS DURING CALENDAR YEAR 2015

	Years of Accrued Service							
Age Group	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	Total
Under 20								
20-24								
25-29								
30-34	1	1						2
35-39								
40-44				2				2
45-49								
50 & Over								
Totals	**1**	**1**		**2**				**4**

DEATH-IN-SERVICE TERMINATIONS DURING CALENDAR YEAR 2015

Age Group	Years of Accrued Service							
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	Total
Under 20								
20-24								
25-29								
30-34								
35-39				1				1
40-44								
45-49								
50 & Over								
Totals				**1**				**1**

WITHDREW AND ELIGIBLE FOR DEFERRED BENEFIT TERMINATIONS DURING CALENDAR YEAR 2015

Age Group	Years of Accrued Service							
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	Total
Under 20								
20-24								
25-29								
30-34								
35-39								
40-44								
45-49						2		2
50 & Over								
Totals						**2**		**2**

WITHDREW AND PENDING CONTRIBUTIONS TERMINATION DURING CALENDAR YEAR 2015

Age Group	Years of Accrued Service							
	0-4	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30 Plus**	**Total**
Under 20								
20-24								
25-29								
30-34								
35-39								
40-44								
45-49								
50 & Over								
Totals								

WITHDREW AND REFUNDED TERMINATIONS DURING CALENDAR YEAR 2015

Age Group	Years of Accrued Service							
	0-4	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30 Plus**	**Total**
Under 20								
20-24	6	1						7
25-29	14	3						17
30-34	1	4	3					8
35-39	2		2	1				5
40-44			1		2			3
45-49				2				2
50 & Over								
Totals	**23**	**8**	**6**	**3**	**2**			**42**

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

Administrative Expenses:	For administrative expenses, a 1.20% of payroll load is added to the normal cost.
Marriage Assumption:	85% of active participants are assumed to be married for purposes of death-in-service benefits and for purposes of retiring with the automatic joint and survivor benefit.
Pay Increase Timing:	Beginning of year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
Decrement Timing:	Decrements of all types are assumed to occur mid-year.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
Benefit Service:	Exact fractional service is used to determine the amount of benefit payable.
Decrement Relativity:	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
Other:	Disability and turnover decrements do not operate during retirement eligibility. For death-in-service, two children are assumed to receive benefits for a 10-year period.
Miscellaneous Loading Factors:	A load of 0.75% of payroll is used to measure the effect of military service purchases.

SECTION G

FINANCIAL PRINCIPLES AND OPERATIONAL TECHNIQUES

FINANCIAL PRINCIPLES AND OPERATIONAL TECHNIQUES OF THE RETIREMENT SYSTEM

Promises Made, and To Be Paid For. As each year is completed, the Retirement System in effect hands an "IOU" to each member then acquiring a year of service credit -- the "IOU" says: "The Ohio State Highway Patrol Retirement System owes you one year's worth of retirement benefits, payments in cash commencing when you qualify for retirement."

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

The objective of level percent-of-payroll financing is that this year's taxpayers contribute the money to cover the IOUs being handed out this year. By following this objective, ***the employer contribution rate will remain approximately level from year-to-year*** --- and will not have to be increased for future generations of taxpayers.

(There are systems which have a design for deferring contributions to future taxpayers, lured by a lower contribution rate now and putting aside the consequence that the contribution rate must then relentlessly grow much greater over decades of time.)

An inevitable by-product of the level-cost design is the accumulation of reserve assets, for decades, and the income produced when the assets are invested. ***Invested assets are a by-product and not the objective***. Investment income becomes the third contributor for benefits to employees, and is interlocked with the contribution amounts required from employees and employer.

(Concluded on Next Page)

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

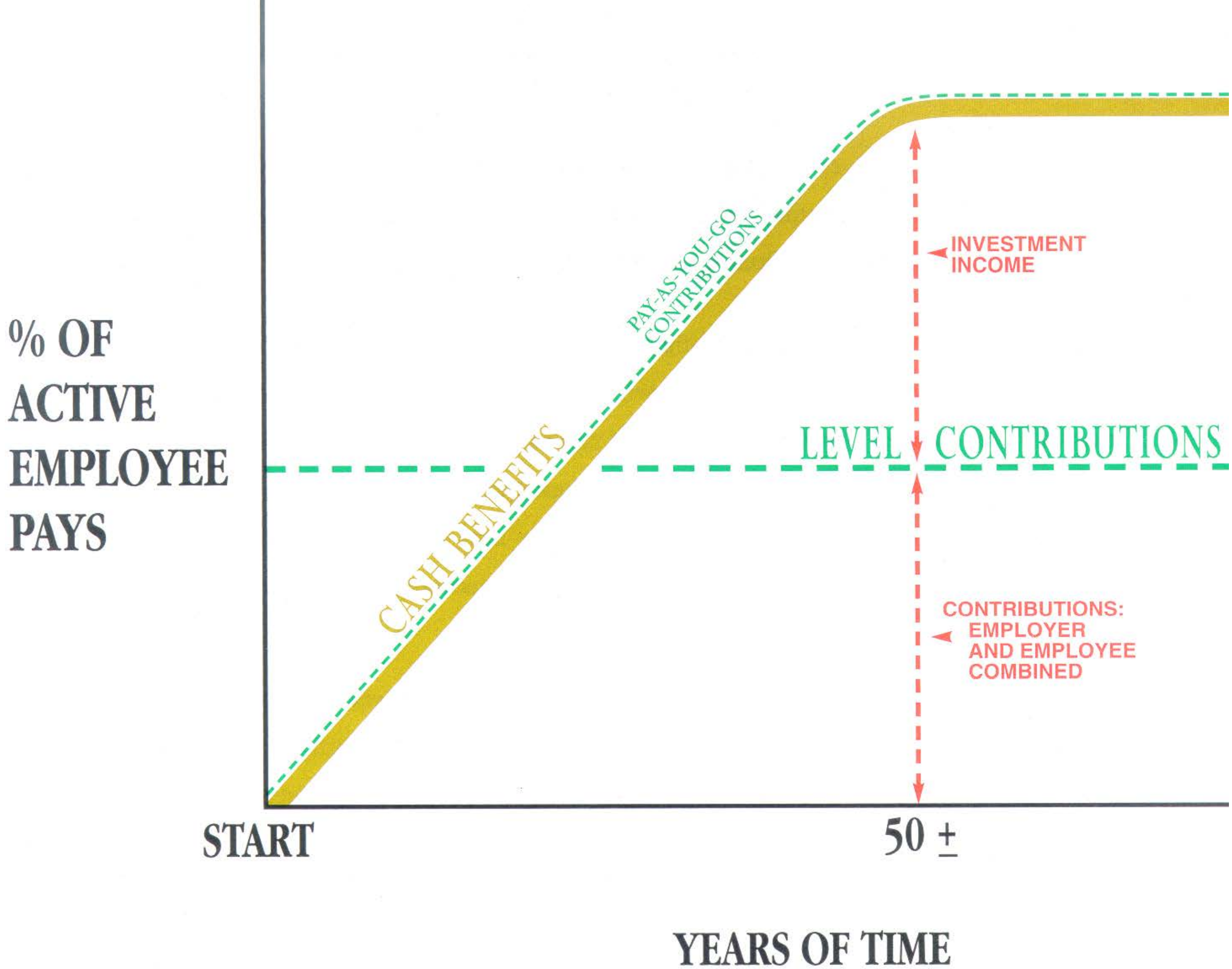
> ***Normal Cost*** (the value assigned to service being rendered this year)
>
> . . . plus . . .
>
> ***Interest on Unfunded Actuarial Accrued Liabilities*** (the difference between liabilities for service already rendered and the accrued assets of the Retirement System).

Computing Contributions To Support System Benefits From a given schedule of benefits and from the employee data and asset data furnished by the system, 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 return which plan assets will earn; the rates of withdrawal of active members who leave covered employment; 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 the actuary must assume what the above rates will be, for the next year and for decades in the future. Only the subsequent actual experience of the plan can indicate the degree of accuracy of the assumptions.

Reconciling Differences Between Assumed Experience and Actual Experience Once actual experience has occurred and has been observed, it will not coincide exactly with assumed experience, regardless of the skill of the actuary and the many calculations made. Most retirement systems cope with such 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 ***continuing adjustments to the financial position***.



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

THE ACTUARIAL VALUATION PROCESS

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

A. ***Covered people data*** furnished by plan administrator, including:
   - Retired lives now receiving benefits
   - Former employees with vested benefits not yet payable
   - Active employees

B. + ***Asset data*** (cash & investments), furnished by the plan administrator

C. + ***Benefit provisions*** which specify eligibility and amounts of pensions

D. + ***Assumptions concerning future experience in various risk areas***, which are established by the Retirement Board 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

MEANING OF "UNFUNDED ACTUARIAL ACCRUED LIABILITIES"

"Actuarial accrued liabilities" are ***the portion of the present value of plan promises to pay benefits in the future that are not covered by future normal cost contributions***. A liability has been established ("accrued") because the service has been rendered but the resulting monthly cash benefit may not be payable until years in the future. Actuarial accrued liabilities are the result of complex mathematical calculations, which are made by the plan's actuary.

If "actuarial accrued liabilities" exceed the plan's accrued assets (cash & investments), the difference is ***"unfunded actuarial accrued liabilities."*** This is the usual condition. If the plan's assets equaled the plan's "actuarial accrued liabilities," then the plan would be termed "fully funded." This is an unusual condition.

Each time a plan adds a new benefit, which applies to service already rendered, an "actuarial accrued liability" is created, which is also an "unfunded actuarial accrued liability" because the plan can't print instant cash to cover the value of the new benefit promises. Payment for such unfunded actuarial accrued liabilities is spread over a period of years, commonly in the 15-30 year range.

Unfunded actuarial accrued liabilities can occur in another way: if actual plan experience is less favorable than assumed plan experience, the difference is added to unfunded actuarial accrued liabilities. In plans where benefits are directly related to an employee's pay near time of retirement, unfunded actuarial accrued liabilities rose dramatically during the 1970's. Unexpected rates of pay increase created additional actuarial accrued liabilities, which could not be matched by reasonable investment results. More recent experience has generally been more favorable with some reductions in unfunded actuarial accrued liabilities.

The existence of unfunded actuarial accrued liabilities is not bad, but the changes from year to year in the amount of unfunded actuarial accrued liabilities are important, --- "bad" or "good" or somewhere in between.

Even though unfunded actuarial accrued liabilities don't constitute a bill payable immediately, it is important that policy-makers prevent the amount from becoming unreasonably high and ***it is vital for plans to have a sound method for making payments toward them*** so that they are controlled.

GRS

Gabriel Roeder Smith & Company
Consultants & Actuaries

One Towne Square
Suite 800
Southfield, MI 48076-3723

248.799.9000 phone
248.799.9020 fax
www.gabrielroeder.com

August 25, 2016

Mr. Mark Atkeson, Executive Director
Ohio State Highway Patrol Retirement System
1900 Polaris Parkway, Suite 201
Columbus, OH 43240-4037

Dear Mark:

Enclosed are 4 bound copies of the December 31, 2015 actuarial valuation of the Ohio State Highway Patrol Retirement System.

Sincerely,

Mita D. Drazilov, ASA, FCA, MAAA

MDD:dks:rmn
Enclosures

cc: Schneider Downs
Attn: Ms. Lara Fuller (+1 report copy)