Gabriel Roeder Smith & Company
Consultants & Actuaries

OHIO STATE HIGHWAY PATROL RETIREMENT SYSTEM

ANNUAL ACTUARIAL VALUATION REPORT

DECEMBER 31, 2013

TABLE OF CONTENTS

GRS
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September 2, 2014

The 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, 2013** 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,
- 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.

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 otherwise 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 2013 valuation were adopted by the Board in conjunction with a five year experience investigation for the period ending December 31, 2009.

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, Randall J. Dziubek 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, ASA, MAAA

Randall J. Dziubek, ASA, EA, MAAA

Brian B. Murphy, FSA, MAAA

MDD:RJD:BBM

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, 2013 actuarial valuation results, the Board at its August, 2014 meeting voted to maintain the member contribution rate and COLA schedule that was adopted in August 2013. The member contribution rate is as follows: 11.5% for calendar year 2014 and 12.5% for calendar years 2015 and later. The COLA schedule is as follows: 1.5% for calendar year 2014 and 1.25% for calendar years 2015 and later. In addition, the Board voted to allocate as much of the 26.50% of payroll employer contribution rate to the retiree health program as possible (to the nearest tenth of a percent) while keeping the pension amortization period at 30 years or less. The purpose of this report is to provide information on the results of the December 31, 2013 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		
	Retirement, Survivor & Disability Allowances	**Post Retirement Health Care**	**Totals**
Employer	22.20%	4.30%	26.50%
Employee	11.50%	0.00 %	11.50%
Totals	**33.70%**	**4.30%**	**38.00%**

The ultimate employee contribution rate (i.e., calendar year 2015 and later) will be 12.5% of payroll.

Items of significant importance for the December 31, 2013 actuarial valuation include:

1. The rate of market value investment return for the calendar year was above the actuarial assumed investment return rate of 8.0%. (The market value rate of return for calendar year 2013 was approximately 18.4%. 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 was also above the assumed investment return rate. The funding value rate of return for calendar year 2013 was approximately 9.5%. The market value of assets currently exceeds the funding value of assets by approximately $44 million.

2. Experience during calendar year 2013 in the retiree health plan was favorable. In addition, changes to the member paid portion of the retiree health premiums also improved the solvency period (assuming that the member premium points system for retirements on or after January 1, 2015 do not affect post-65 member premiums). Based upon the calendar year 2013 retiree health employer contribution rate of 3.65%, the retiree health plan is expected to remain solvent until 2025. (If the changes to the member paid portion of the retiree health premiums had not been adopted, the retiree health plan would have been expected to remain solvent for approximately six fewer months.) Based upon the calendar year 2014 retiree health employer contribution rate of 4.30% (adopted at the August 2014 Board meeting), the retiree health plan is expected to remain solvent until 2026. The prior valuation indicated that the retiree health care plan was expected to remain solvent until 2024. Note that changes to the Medicare Part B monthly reimbursements (i.e., $60 in calendar year 2015, $30 in calendar year 2016 and $0 thereafter) and monthly member premiums for Medicare eligible beneficiaries adopted at the August 2014 Board meeting are not reflected in this report. Based upon the 4.30% employer contribution rate to the retiree health program, these changes are expected to extend the solvency period to approximately 2028. These changes to the retiree health program will be reflected in the December 31, 2014 annual actuarial valuation.

This valuation indicates that a total employer contribution rate of 26.50% with changes that the Board adopted at its August 2014 Board meeting produces a 30-year amortization period for the pension program. The calculations reflect a 4.30% employer rate allocation to the retiree health program and are based upon the Funding Value of Assets. 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.

Comment on Post Retirement Health Care:

The retiree health plan is expected to remain solvent until about 2026. (Changes to the retiree health program adopted by the Board at its August 2014 meeting are expected to extend the solvency of the retiree health program to approximately 2028.) Beyond that date, higher contributions are required to extend the solvency of the fund. The benefit payout rate is approximately 12%-13% of payroll, approximately three times the contribution income. This situation cannot continue indefinitely. **Further changes to the retiree health plan (i.e., in addition to those made at the August 2014 Board meeting) and/or further increases in contribution rates will need to be a part of the future.**

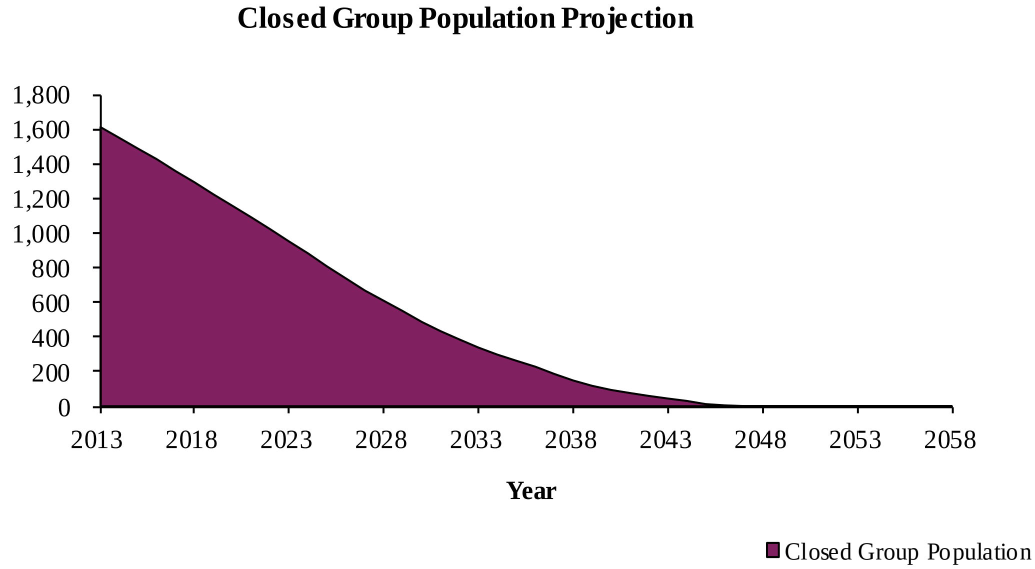
Recommendation: The following reserve transfers are recommended as of December 31, 2013:

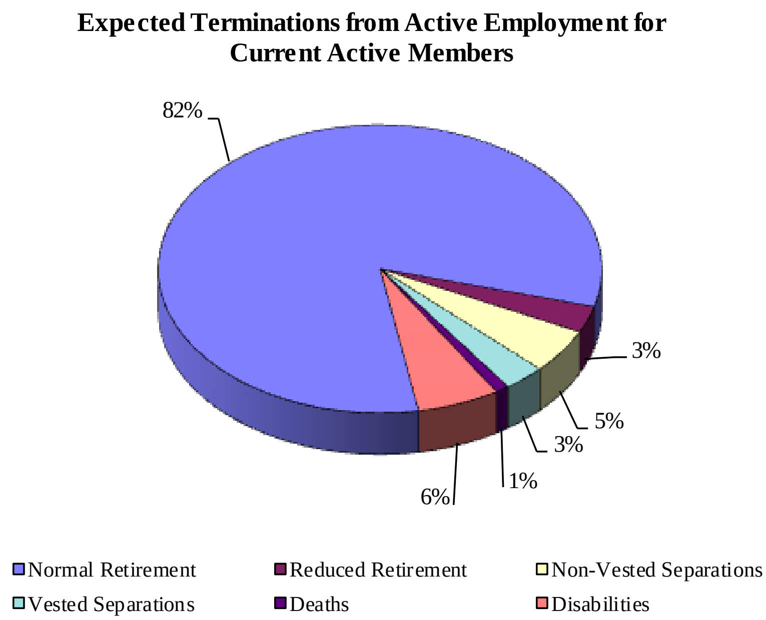
Transfer To (From)	Total Amount
Pension Reserve Fund:	$1,217,177
Survivor Benefit Fund:	7,331,677
Total	**$8,548,854**

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, 2014 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.

Conclusion: Based upon the results of the December 31, 2013 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 (or 2028 after consideration of the changes the Board adopted at the August 2014 Board meeting) is a relatively 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 (or 2028 after consideration of the changes the Board adopted at the August 2014 Board meeting). 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, 2013





The charts above show the expected future development of the present population in simplified terms. The Retirement System presently covers 1,613 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 14 years, over half of the covered membership is expected to consist of new hires.

SECTION A

RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES

RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES
BENEFITS AND CONDITIONS VALUED
DECEMBER 31, 2013

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. **On-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, 2013 valuation, the assumed member contribution rate is 11.5% for 2014 and 12.5% thereafter.

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: As of December 31, 2013, the basic benefit for all retirants is increased by 1.5 percent in 2014 and 1.25 percent each year thereafter 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 1/7/13 are eligible for the increase after receiving benefits for twelve months. Disability members retired prior to 1/7/13 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. As of December 31, 2013, the basic benefit for all retirants is increased by 1.5% in 2014 and 1.25% each year thereafter 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	**2013**	**2012**
Normal Cost:		
Age & Service Benefits	13.95%	14.03%
Disability Benefits	2.36%	2.37%
Survivor Benefits	0.13%	0.15%
Separation Benefits	0.94%	0.93%
Purchase of Military Service	0.75%	0.75%
Total Normal Cost	18.13%	18.23%
Less Member Contributions#	11.50%	10.00%
Employer Normal Cost	6.63%	8.23%
Unfunded Actuarial Accrued Liabilities	15.57%	14.62%
Amortization Period	30	30
PENSION EMPLOYER CONTRIBUTION RATE	22.20%	22.85%

 # For the determination of the amortization period in the 2012 column, the member contribution rate is 10.0% for calendar year 2013, 11.5% for calendar year 2014 and 12.5% for calendar years 2015 and later.

For the determination of the amortization period in the 2013 column, the member contribution rate is 11.5% for calendar year 2014 and 12.5% for calendar years 2015 and later.

The amortization period is the period of years over which the employer contribution rate and the employee contribution rate will finance the unfunded liabilities.

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;

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

Actuarial Accrued Liabilities, $989,101,470, less pension assets of $690,605,582 resulted in unfunded actuarial accrued liabilities of $298,495,888, 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 4.00% and an Investment Return Assumption of 8.00% Compounded Annually

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

Year	Active Employee Payroll	Unfunded Actuarial Accrued Liability	Annual Contributions Dollars	Annual Contributions % of Payroll	UAAL as % of Payroll
1	$ 102,461	$ 298,496	$ 16,978	16.57%	291.3%
2	106,559	304,732	17,657	16.57%	286.0%
3	110,821	310,761	18,363	16.57%	280.4%
4	115,254	316,538	19,098	16.57%	274.6%
5	119,864	322,014	19,861	16.57%	268.6%
6	124,659	327,134	20,656	16.57%	262.4%
7	129,645	331,838	21,482	16.57%	256.0%
8	134,831	336,060	22,341	16.57%	249.2%
9	140,224	339,727	23,235	16.57%	242.3%
10	145,833	342,759	24,165	16.57%	235.0%
11	151,666	345,067	25,131	16.57%	227.5%
12	157,733	346,555	26,136	16.57%	219.7%
13	164,042	347,118	27,182	16.57%	211.6%
14	170,604	346,639	28,269	16.57%	203.2%
15	177,428	344,992	29,400	16.57%	194.4%
16	184,525	342,038	30,576	16.57%	185.4%
17	191,906	337,626	31,799	16.57%	175.9%
18	199,582	331,590	33,071	16.57%	166.1%
19	207,565	323,749	34,394	16.57%	156.0%
20	215,868	313,906	35,769	16.57%	145.4%
21	224,503	301,846	37,200	16.57%	134.5%
22	233,483	287,334	38,688	16.57%	123.1%
23	242,822	270,115	40,236	16.57%	111.2%
24	252,535	249,910	41,845	16.57%	99.0%
25	262,636	226,416	43,519	16.57%	86.2%
26	273,141	199,303	45,259	16.57%	73.0%
27	284,067	168,212	47,070	16.57%	59.2%
28	295,430	132,752	48,953	16.57%	44.9%
29	307,247	92,499	50,911	16.57%	30.1%
30	319,537	46,991	52,947	16.57%	14.7%

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, 2013

Benefits Payable	Number	Monthly Amount	Actuarial Value
From Employer Accumulation Fund:			
Regular Retirements Effective Before 1/1/66	0	$ 0	$ 0
Disability Retirements Effective Before 1/1/66	0	0	0
Total Benefits Payable from Employer Accumulation Fund	0	0	0
From Pension Reserve Fund:			
Regular Retirements Effective After 1/1/66	1,096	3,932,939	508,835,246
Disability Retirements Effective After 1/1/66	124	346,812	49,831,949
Total Benefits Payable from Pension Reserve Fund	1,220	4,279,751	558,667,195
From Survivor Benefit Fund:			
Surviving Spouses, Dependent Children & Dependent Parents	303	387,529	38,737,428
Total Benefits Payable from Survivor Benefit Fund	303	387,529	38,737,428
Total Retirement Benefits Payable	1,523	4,667,280	597,404,623
Total Vested Deferred Benefits Payable	14	37,594	3,937,458
Grand Total	**1,537**	**$4,704,874**	**$601,342,081**

RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES
DEVELOPMENT OF ACTUARIAL ACCRUED LIABILITIES
DECEMBER 31, 2013

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	$ 524,024,653	$ 140,822,289	$ 383,202,364
Disability allowances likely to be paid to present active members who become totally and permanently disabled	27,988,195	22,666,711	5,321,484
Survivor benefits likely to be paid to spouses and children of present active members who die before retiring	2,119,158	1,199,782	919,376
Separation benefits (refunds of contributions and deferred allowances likely to be paid on behalf of present active members)	7,095,199	8,779,034	(1,683,835)
Retirement benefits likely to be paid to current retirants and beneficiaries and to present inactive members	601,342,081	0	601,342,081
Total	$ 1,162,569,286	$ 173,467,816	$ 989,101,470
Member portion	235,952,709	119,307,291	116,645,418
Employer portion	$ 926,616,577	$ 54,160,525	$ 872,456,052

RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES
SUMMARY STATEMENT OF SYSTEM RESOURCES AND OBLIGATIONS
DECEMBER 31, 2013

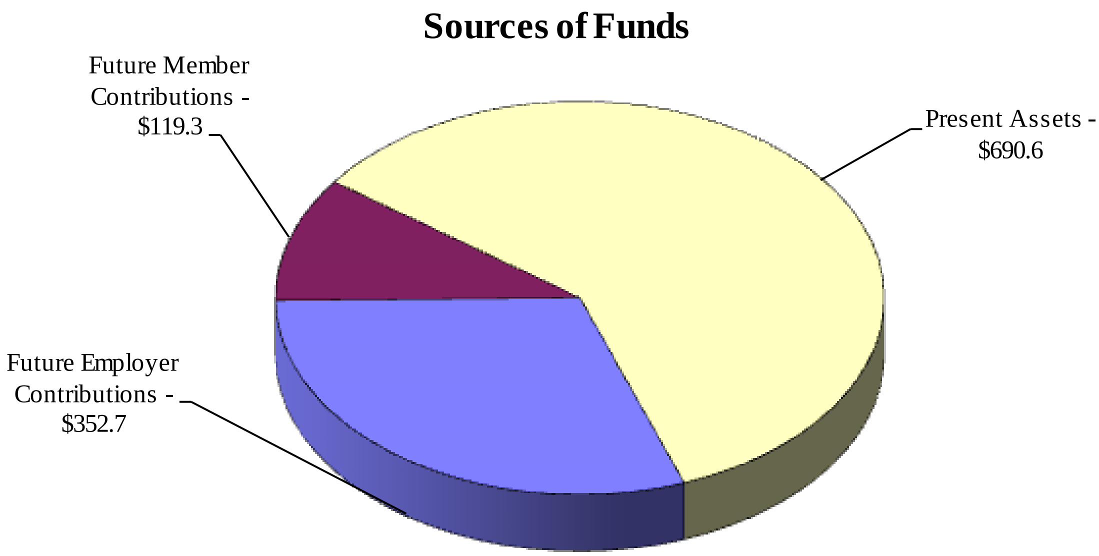
PRESENT RESOURCES AND EXPECTED FUTURE RESOURCES

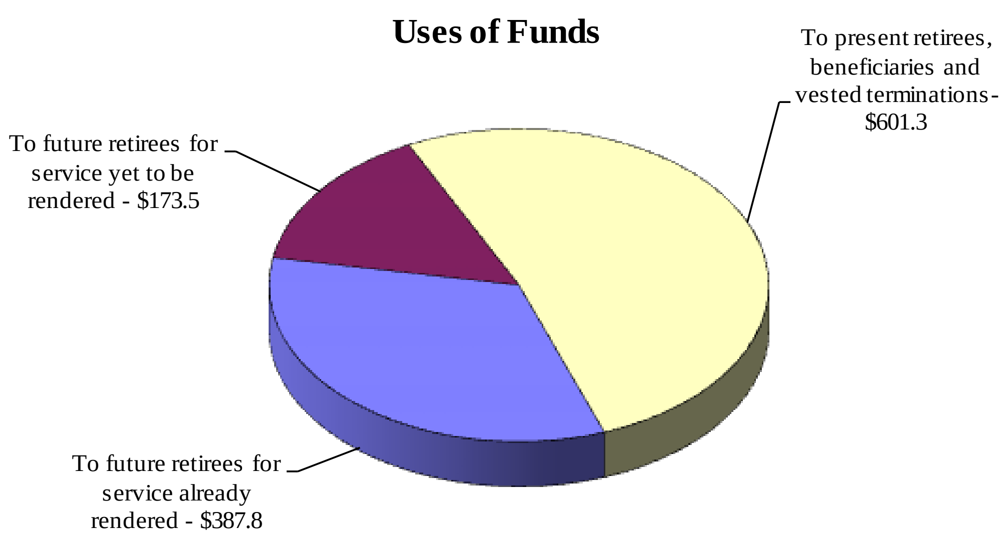
A. Present valuation assets		
1. Net assets from system financial statements	$ 836,722,779	
2. Market value adjustment	(44,033,274)	
3. Health assets	102,083,923	
4. Valuation assets: 1 + 2 - 3		$ 690,605,582
B. Actuarial present value of expected future employer contributions		
1. For normal costs	54,160,525	
2. For unfunded actuarial accrued liability	298,495,888	
3. Total		352,656,413
C. Actuarial present value of expected future member contributions		119,307,291
D. Total Present and Expected Future Resources		$ 1,162,569,286

ACTUARIAL PRESENT VALUE OF EXPECTED FUTURE BENEFIT PAYMENTS

A. To retirants and beneficiaries	$ 597,404,623
B. To terminated members	3,937,458
C. To present active members	
1. Allocated to service rendered prior to valuation date (actuarial accrued liability)	387,759,389
2. Allocated to service likely to be rendered after valuation date	173,467,816
3. Total	561,227,205
D. Total Actuarial Present Value of Expected Future Benefit Payments	$ 1,162,569,286

RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES
FINANCING $1,162.6 MILLION OF BENEFIT PROMISES
DECEMBER 31, 2013





RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES
COMPARATIVE STATEMENT

Valuation Date December 31	No.	Annual Payroll	Actuarial Accrued Liabilities Total	Funded	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	487,392,406	460,667,112	26,725,294	0.4	94.5%	9
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	564,672,560	546,510,779	18,161,781	0.3	96.8%	7
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	607,411,320	569,858,387	37,552,933	0.5	93.8%	26
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	668,605,932	492,430,826	176,175,106	2.2	73.7%	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	737,867,378	569,858,387	168,008,991	2.1	77.2%	37
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	766,741,437	591,922,200	174,819,237	2.1	77.2%	37
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	981,351,514	630,971,500	350,380,014	3.7	64.3%	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**	**991,042,165**	**690,605,582**	**300,436,583**	**3.0**	**69.7%**	**30**
2013 #	**1,613**	**98,519,844**	**989,101,470**	**690,605,582**	**298,495,888**	**3.0**	**69.8%**	**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
1999	1,445	$66,017,381	$45,687	1.4%	5.6%	2.7%
2000	1,489	69,028,285	46,359	1.5%	5.5%	3.4%
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%	N/A	1.5%
		10 Year Average		1.4%	3.0% *	2.4%

+ *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.

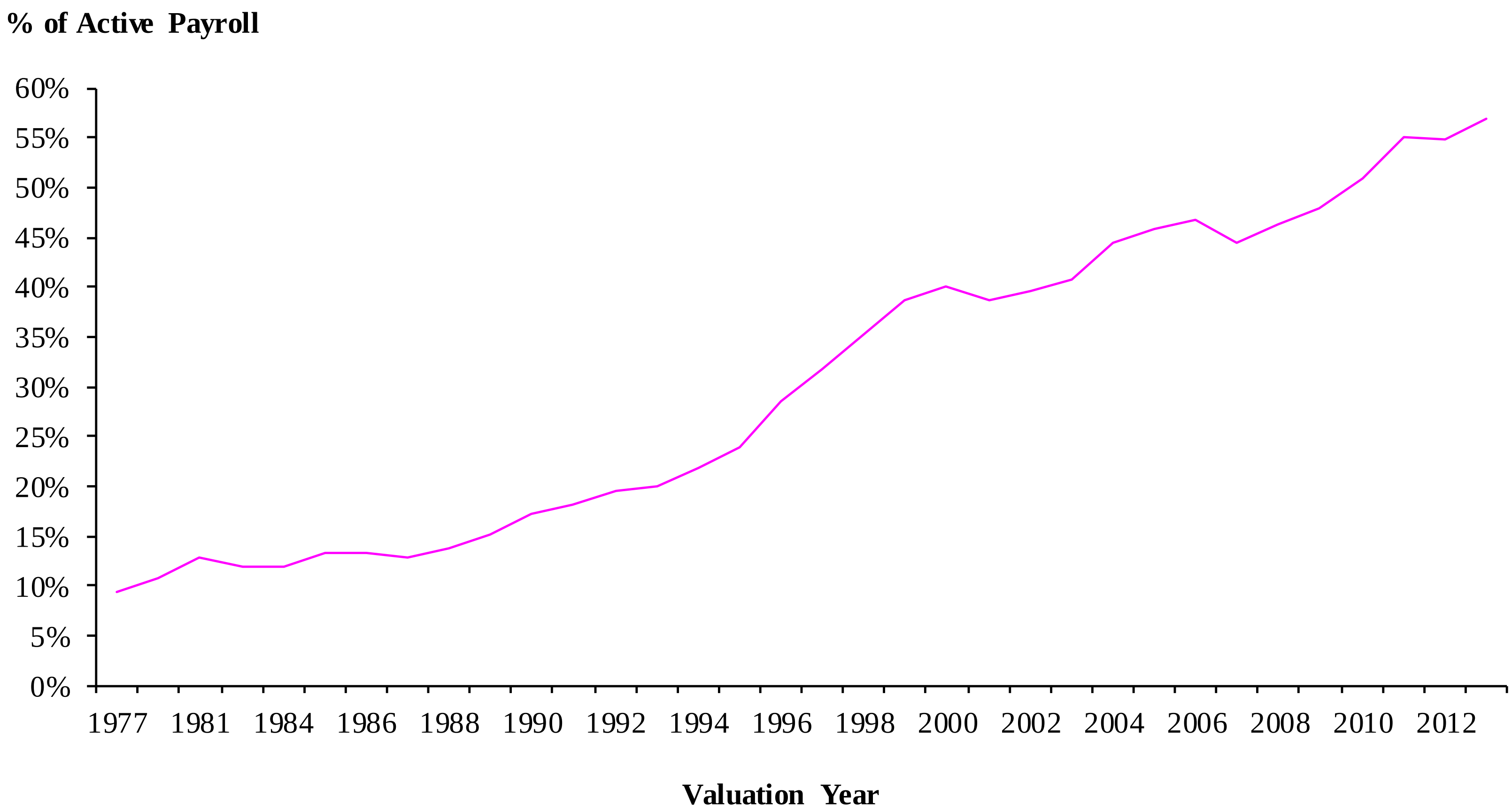
Retirement, Survivor, and Disability Benefits in Pay Status Comparative Statement

Valuation Date December 31	Number of People	Monthly Pensions	Active Payroll	Average Amount	% of Active Member Pays
1987 *#	558	$ 427,132	$ 39,938,921	$ 765	12.8%
1988	575	466,519	40,674,634	811	13.8%
1989	599	544,631	43,053,057	909	15.2%
1990 *#	654	660,112	45,679,355	1,009	17.3%
1993 *	723	927,168	55,781,585	1,282	19.9%
1994 #	764	1,057,577	58,116,787	1,384	21.8%
1995 *#	826	1,184,405	59,825,356	1,434	23.8%
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%**

* *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, 2013



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)
1994 #	$ 47,947,979	$ 156,363,745	$ 169,695,043	$ 330,787,044	100%	100%	75%
1995 *#	50,547,938	189,010,261	184,793,495	370,425,462	100%	100%	71%
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**	**276,366,017**	**690,605,582**	**100%**	**96%**	**0%**
2013 #	**113,334,067**	**601,342,081**	**274,425,322**	**690,605,582**	**100%**	**96%**	**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	981,351,514	630,971,500	350,380,014	64.3%	94,767,852	369.7%
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	**991,042,165**	**690,605,582**	**300,436,583**	**69.7%**	**98,519,844**	**305.0%**
2013 #	**989,101,470**	**690,605,582**	**298,495,888**	**69.8%**	**98,519,844**	**303.0%**

* *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.

GASB STATEMENT NO. 25
SCHEDULE OF EMPLOYER CONTRIBUTIONS

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%**

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.

GASB STATEMENT NO. 25
ANNUAL REQUIRED CONTRIBUTION

For calendar year 2014, Governmental Accounting Standards Board (GASB) Statement No. 67 will become applicable to the System, and therefore the calculation of the Annual Required Contribution under GASB Statement No. 25 will not be needed.

GASB STATEMENT NO. 25
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, 2013
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	8.0%
Projected Salary Increases	4.3% - 14.0%
Includes Wage Inflation at	4.0%

OTHER REQUESTED CAFR INFORMATION

As of December 31, 2013, 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	$ 113,334,067
Employer - financed vested	186,008,244
Employer - financed non-vested	33,861,939

As of December 31, 2013, there were 727 vested active members and 886 non-vested active members.

SECTION B

POST-RETIREMENT HEALTH CARE AND MEDICARE REIMBURSEMENT

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 Life & Casualty Company 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 premium for 2014 applicable to retirees without Medicare A & B is $59 per month and $12 for retirees with Medicare A & B. The premium for 2014 applicable to spouses without Medicare A & B is $117 per month and $17 for spouses with Medicare A & B. The dependent child premium is $50 for each child. For calendar years 2015, 2016 and 2017, member premium amounts are as follows:

Premium Scale for Members Ineligible for Medicare

2015

	Monthly Premium		
Age	**Retiree**	**Spouse**	**Retiree/Spouse**
65+	$83	$132	$215
60-64	$83	$132	$215
56-59	$99	$165	$264
52-55	$132	$198	$330
Under 52	$149	$231	$380

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

Benefits Provided (continued)

Premium Scale For Members Eligible for Medicare

Calendar Year	Monthly Premium: Retiree	Monthly Premium: Spouse
2015	$13	$18
2016	$14	$19
2017	$15	$20

After calendar year 2017 premiums 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 Aetna Traditional and 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 $90 monthly.

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**
$5	$20

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%**

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
Year

ASSUMPTIONS FOR HEALTH CARE COVERAGES
DECEMBER 31, 2013

Development of Health Care Rates: Based on the 2013 retired life data, the HPRS portion of the total health care rates was developed as follows:

		Age/Gender Weighted HPRS Monthly Rates	
		This Year Gross Rate	**Prior Year Gross Rate**
A.	One person without Medicare	$574.18	$531.01
B.	One person with Medicare*	185.90	193.04
C.	Two persons without Medicare	1,148.36	1,062.02
D.	Two persons with Medicare*	371.80	386.08
E.	Child	107.61	126.99
F.	Medicare Part B Reimbursement	90.00	96.40

** Does not include Medicare Part B monthly premium of $90. Includes a reduction to the premium due to Medicare Part D reimbursements.*

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		Age	Gross Rate		Age	Gross Rate	
	Male	Female		Male	Female		Male	Female
16	$ 217.33	$ 340.50	51	$ 422.94	$ 468.05	86	$ 366.68	$ 321.68
17	217.33	340.50	52	447.10	484.11	87	368.35	322.30
18	217.33	340.50	53	471.59	501.08	88	368.35	322.30
19	217.33	340.50	54	496.63	518.63	89	368.35	322.30
20	217.33	340.50	55	522.13	536.70	90	368.35	322.30
21	217.33	340.50	56	548.01	555.24	91	368.35	322.30
22	217.33	340.50	57	574.18	574.18	92	368.35	322.30
23	217.33	340.50	58	601.30	592.73	93	368.35	322.30
24	217.33	340.50	59	628.59	611.53	94	368.35	322.30
25	217.33	340.50	60	655.94	630.51	95	368.35	322.30
26	217.33	340.50	61	683.28	649.60	96	368.35	322.30
27	217.33	340.50	62	710.51	668.74	97	368.35	322.30
28	217.33	340.50	63	737.15	688.24	98	368.35	322.30
29	217.33	340.50	64	763.49	707.68	99	368.35	322.30
30	217.33	340.50	65	255.59	235.37	100	368.35	322.30
31	217.33	340.50	66	263.84	241.54	101	368.35	322.30
32	217.33	340.50	67	271.92	247.63	102	368.35	322.30
33	217.33	340.50	68	279.79	253.60	103	368.35	322.30
34	217.33	340.50	69	287.43	259.43	104	368.35	322.30
35	217.33	340.50	70	294.82	265.11	105	368.35	322.30
36	217.33	340.50	71	301.94	270.61	106	368.35	322.30
37	217.33	340.50	72	308.77	275.91	107	368.35	322.30
38	217.33	340.50	73	315.28	281.00	108	368.35	322.30
39	217.33	340.50	74	321.47	285.86	109	368.35	322.30
40	217.33	340.50	75	327.31	290.48	110	368.35	322.30
41	230.62	348.10	76	332.79	294.83	111	368.35	322.30
42	245.08	356.50	77	337.90	298.90	112	368.35	322.30
43	260.69	365.70	78	342.63	302.68	113	368.35	322.30
44	277.44	375.73	79	346.98	306.16	114	368.35	322.30
45	295.28	386.58	80	350.94	309.34	115	368.35	322.30
46	314.19	398.24	81	354.51	312.20	116	368.35	322.30
47	334.12	410.70	82	357.69	314.74	117	368.35	322.30
48	355.02	423.94	83	360.49	316.96	118	368.35	322.30
49	376.83	437.93	84	362.91	318.85	119	368.35	322.30
50	399.49	452.65	85	364.97	320.43	120	368.35	322.30

ASSUMPTIONS FOR HEALTH CARE COVERAGES
DECEMBER 31, 2013

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, 2013

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, 2013 valuations were used. It was assumed that eligible retirees would elect coverage under this program. It was further assumed that 90% of males and 50% of females who retire would 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 8.0% 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. The rates of pay growth used in the Retirement System valuations are 4.00% per year. Stability can only be achieved if the rate of increase in Health Care premiums is brought in line with the rate of growth of employee pays. Consequently, it was assumed that average Health Care cost increases would eventually stabilize at 4.00% per year. Higher or lower rates of increase could, however be possible for an extended period before that happens.

POST-RETIREMENT HEALTH PREMIUM AND MEDICARE REIMBURSEMENT SELECTION OF ASSUMPTIONS DECEMBER 31, 2013

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.

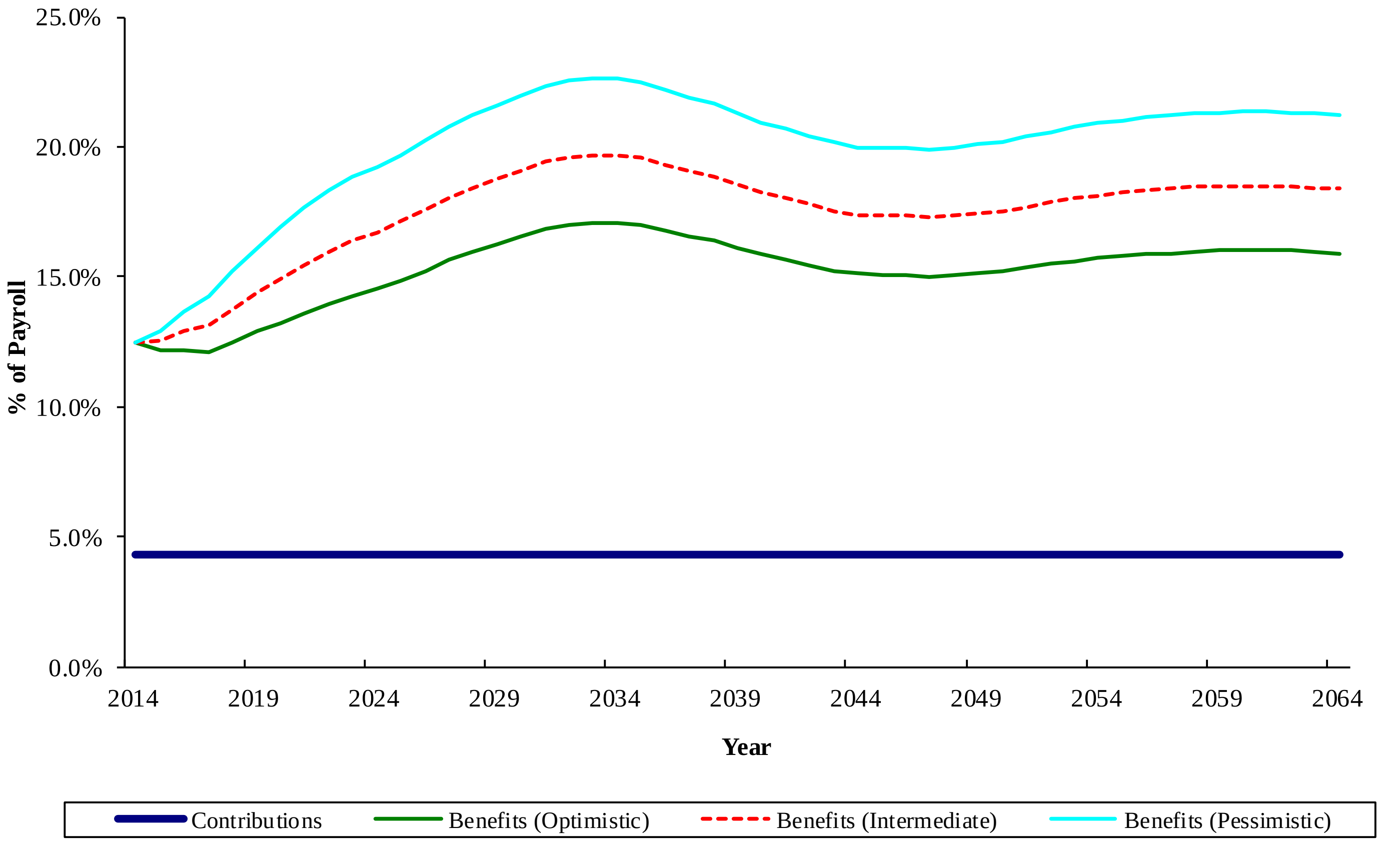
Alternate C (Pessimistic): This scenario envisions poorer experience than the other two.

	Health Trend Assumption			
	Medical and Prescription Drug			Medicare
	Alt. A	Alt. B	Alt. C	Part
Year	Optimistic	Intermediate	Pessimistic	B
2014				
2015	6.00%	9.00%	12.00%	0.00%
2016	5.75%	8.25%	11.00%	0.00%
2017	5.50%	7.50%	10.00%	0.00%
2018	5.25%	7.00%	9.00%	0.00%
2019	5.00%	6.50%	8.00%	0.00%
2020	4.75%	6.00%	7.00%	0.00%
2021	4.50%	5.50%	6.25%	0.00%
2022	4.25%	5.00%	5.50%	0.00%
2023	4.00%	4.50%	4.75%	0.00%
2024	4.00%	4.00%	4.00%	0.00%
2025	4.00%	4.00%	4.00%	0.00%
2026	4.00%	4.00%	4.00%	0.00%
2027	4.00%	4.00%	4.00%	0.00%
2028 & Later	4.00%	4.00%	4.00%	0.00%

POST-RETIREMENT HEALTH CARE AND MEDICARE REIMBURSEMENT
PROJECTED BENEFITS
DECEMBER 31, 2013

	Projected Benefits as a % of Payroll		
	Alt. A	Alt. B	Alt. C
Year Ended 12/31	Optimistic	Intermediate	Pessimistic
2014	12.5%	12.5%	12.5%
2015	12.2%	12.5%	12.9%
2016	12.2%	12.9%	13.6%
2017	12.1%	13.1%	14.3%
2018	12.4%	13.7%	15.2%
2019	12.9%	14.4%	16.1%
2020	13.2%	14.9%	16.9%
2021	13.6%	15.5%	17.6%
2022	13.9%	16.0%	18.3%
2023	14.2%	16.4%	18.8%
2028	16.0%	18.4%	21.2%
2033	17.1%	19.7%	22.6%
2038	16.4%	18.8%	21.7%
2043	15.2%	17.5%	20.1%
2048	15.1%	17.4%	20.0%
2053	15.6%	18.0%	20.7%
2058	16.0%	18.4%	21.3%
2063	16.0%	18.4%	21.3%
2068	15.5%	17.9%	20.7%
2073	15.2%	17.5%	20.2%

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. 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.

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, 2014 to June 30, 2015	**Contributions Expressed as Percents of Payroll**
Normal Cost	13.48%
UAL Payment (30-year amortization)	12.84%
Total (Annual Required Contribution)	**26.32%**
Current Employer Contribution Rate Allocation	4.30%

Accrued Health and Medicare Reimbursement Liabilities, $438,561,694 were more than applicable assets of $102,083,923.

The calculations above show the employer's Annual Required Contribution (ARC) for the year ended June 30, 2015. The System's ARC for the year ended December 31, 2014 will be ½ of 22.47% and ½ of the 26.32% 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, 2013
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	4.3% - 14.0%
Includes Wage Inflation at	4.0%
Health Trend	Intermediate Trend (See Page B-9)

Post-Retirement Health and Medicare Reimbursement
Results with Alternate Health Inflation Assumptions
December 31, 2013

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)	4.30%	2028	3.65%	6.70%	2034	6.65%	8.80%	2044	8.35%	10.90%	Indefinitely	9.60%
B (Intermediate)	4.30%	2026	3.65%	8.40%	2034	8.15%	10.70%	2044	9.95%	12.90%	Indefinitely	11.20%
C (Pessimistic)	4.30%	2025	3.65%	10.30%	2034	9.90%	12.80%	2044	11.80%	15.20%	Indefinitely	13.00%

The above results show that:

- Under the optimistic assumptions, the employer rate will need to be raised prior to 2028 in order to maintain the solvency of the fund. The ultimate rate needed to support the plan would be 10.90% 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 12.90% 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 15.20% 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.

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

Fiscal 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
2014	$102,084	$4,405	$ 12,750	$ (8,345)	8.00%	$7,837	$101,576	$101,576	4.30%	12.45%
2015	101,576	4,573	12,933	(8,360)	8.00%	7,796	101,012	97,127	4.30%	12.16%
2016	101,012	4,747	13,434	(8,687)	8.00%	7,738	100,063	92,514	4.30%	12.17%
2017	100,063	4,924	13,877	(8,953)	8.00%	7,652	98,762	87,799	4.30%	12.12%
2018	98,762	5,103	14,766	(9,663)	8.00%	7,519	96,618	82,589	4.30%	12.44%
2019	96,618	5,290	15,842	(10,552)	8.00%	7,313	93,379	76,751	4.30%	12.88%
2020	93,379	5,485	16,857	(11,372)	8.00%	7,021	89,028	70,360	4.30%	13.22%
2021	89,028	5,686	17,964	(12,278)	8.00%	6,637	83,387	63,367	4.30%	13.58%
2022	83,387	5,894	19,111	(13,217)	8.00%	6,149	76,319	55,766	4.30%	13.94%
2023	76,319	6,108	20,200	(14,092)	8.00%	5,549	67,776	47,619	4.30%	14.22%
2024	67,776	6,334	21,382	(15,048)	8.00%	4,828	57,556	38,883	4.30%	14.52%
2025	57,556	6,568	22,686	(16,118)	8.00%	3,968	45,406	29,495	4.30%	14.85%
2026	45,406	6,812	24,139	(17,327)	8.00%	2,948	31,027	19,379	4.30%	15.24%
2027	31,027	7,073	25,730	(18,657)	8.00%	1,745	14,115	8,477	4.30%	15.64%
2028	14,115	7,353	27,329	(19,976)	8.00%	340	(5,521)	(3,188)	4.30%	15.98%

Funding Level 1 is the present contribution rate for post-retirement Health Care and Medicare reimbursement. The fund remains solvent until 2028 in this projection.

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

Fiscal 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
2014	$ 102,084	$ 6,863	$ 12,750	$ (5,887)	8.00%	$ 7,934	$ 104,131	$104,131	6.70%	12.45%
2015	104,131	7,126	12,933	(5,807)	8.00%	8,101	106,425	102,332	6.70%	12.16%
2016	106,425	7,396	13,434	(6,038)	8.00%	8,276	108,663	100,465	6.70%	12.17%
2017	108,663	7,672	13,877	(6,205)	8.00%	8,448	110,906	98,595	6.70%	12.12%
2018	110,906	7,951	14,766	(6,815)	8.00%	8,603	112,694	96,331	6.70%	12.44%
2019	112,694	8,242	15,842	(7,600)	8.00%	8,715	113,809	93,543	6.70%	12.88%
2020	113,809	8,546	16,857	(8,311)	8.00%	8,777	114,275	90,313	6.70%	13.22%
2021	114,275	8,860	17,964	(9,104)	8.00%	8,783	113,954	86,596	6.70%	13.58%
2022	113,954	9,183	19,111	(9,928)	8.00%	8,724	112,750	82,385	6.70%	13.94%
2023	112,750	9,518	20,200	(10,682)	8.00%	8,598	110,666	77,752	6.70%	14.22%
2024	110,666	9,870	21,382	(11,512)	8.00%	8,399	107,553	72,659	6.70%	14.52%
2025	107,553	10,234	22,686	(12,452)	8.00%	8,113	103,214	67,046	6.70%	14.85%
2026	103,214	10,614	24,139	(13,525)	8.00%	7,723	97,412	60,843	6.70%	15.24%
2027	97,412	11,020	25,730	(14,710)	8.00%	7,212	89,914	54,000	6.70%	15.64%
2028	89,914	11,458	27,329	(15,871)	8.00%	6,566	80,609	46,550	6.70%	15.98%
2029	80,609	11,924	28,931	(17,007)	8.00%	5,777	69,379	38,524	6.70%	16.26%
2030	69,379	12,402	30,650	(18,248)	8.00%	4,830	55,961	29,878	6.70%	16.56%
2031	55,961	12,907	32,424	(19,517)	8.00%	3,706	40,150	20,612	6.70%	16.83%
2032	40,150	13,452	34,115	(20,663)	8.00%	2,396	21,883	10,802	6.70%	16.99%
2033	21,883	14,027	35,721	(21,694)	8.00%	894	1,083	514	6.70%	17.06%
2034	1,083	14,632	37,315	(22,683)	8.00%	(809)	(22,409)	(10,227)	6.70%	17.09%

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)

Fiscal 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
2014	$ 102,084	$ 9,014	$ 12,750	$ (3,736)	8.00%	$ 8,019	$ 106,367	$106,367	8.80%	12.45%
2015	106,367	9,360	12,933	(3,573)	8.00%	8,368	111,162	106,887	8.80%	12.16%
2016	111,162	9,715	13,434	(3,719)	8.00%	8,746	116,189	107,423	8.80%	12.17%
2017	116,189	10,077	13,877	(3,800)	8.00%	9,145	121,534	108,043	8.80%	12.12%
2018	121,534	10,444	14,766	(4,322)	8.00%	9,552	126,764	108,358	8.80%	12.44%
2019	126,764	10,826	15,842	(5,016)	8.00%	9,943	131,691	108,240	8.80%	12.88%
2020	131,691	11,225	16,857	(5,632)	8.00%	10,313	136,372	107,777	8.80%	13.22%
2021	136,372	11,637	17,964	(6,327)	8.00%	10,660	140,705	106,924	8.80%	13.58%
2022	140,705	12,061	19,111	(7,050)	8.00%	10,978	144,633	105,682	8.80%	13.94%
2023	144,633	12,501	20,200	(7,699)	8.00%	11,267	148,201	104,124	8.80%	14.22%
2028	156,244	15,049	27,329	(12,280)	8.00%	12,015	155,979	90,074	8.80%	15.98%
2033	142,955	18,424	35,721	(17,297)	8.00%	10,753	136,411	64,746	8.80%	17.06%
2038	97,966	22,792	42,419	(19,627)	8.00%	7,062	85,401	33,317	8.80%	16.38%
2043	22,347	28,126	48,706	(20,580)	8.00%	975	2,742	879	8.80%	15.24%
2044	2,742	29,288	50,300	(21,012)	8.00%	(610)	(18,880)	(5,821)	8.80%	15.11%

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)

Fiscal 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
2014	$ 102,084	$ 11,165	$ 12,750	$ (1,585)	8.00%	$ 8,104	$ 108,603	$108,603	10.90%	12.45%
2015	108,603	11,593	12,933	(1,340)	8.00%	8,635	115,898	111,440	10.90%	12.16%
2016	115,898	12,033	13,434	(1,401)	8.00%	9,217	123,714	114,381	10.90%	12.17%
2017	123,714	12,482	13,877	(1,395)	8.00%	9,842	132,161	117,491	10.90%	12.12%
2018	132,161	12,936	14,766	(1,830)	8.00%	10,501	140,832	120,384	10.90%	12.44%
2019	140,832	13,409	15,842	(2,433)	8.00%	11,170	149,569	122,935	10.90%	12.88%
2020	149,569	13,903	16,857	(2,954)	8.00%	11,849	158,464	125,236	10.90%	13.22%
2021	158,464	14,414	17,964	(3,550)	8.00%	12,537	167,451	127,249	10.90%	13.58%
2022	167,451	14,940	19,111	(4,171)	8.00%	13,231	176,511	128,975	10.90%	13.94%
2023	176,511	15,484	20,200	(4,716)	8.00%	13,935	185,730	130,491	10.90%	14.22%
2028	222,566	18,640	27,329	(8,689)	8.00%	17,462	231,339	133,593	10.90%	15.98%
2033	264,014	22,820	35,721	(12,901)	8.00%	20,612	271,725	128,972	10.90%	17.06%
2038	304,900	28,231	42,419	(14,188)	8.00%	23,832	314,544	122,710	10.90%	16.38%
2043	362,339	34,837	48,706	(13,869)	8.00%	28,439	376,909	120,856	10.90%	15.24%
2048	443,934	42,542	58,799	(16,257)	8.00%	34,873	462,550	121,906	10.90%	15.07%
2053	541,163	51,649	73,919	(22,270)	8.00%	42,414	561,307	121,591	10.90%	15.60%
2058	643,938	62,736	91,858	(29,122)	8.00%	50,365	665,181	118,433	10.90%	15.96%
2063	753,700	76,407	111,826	(35,419)	8.00%	58,897	777,178	113,733	10.90%	15.95%
2073	1,043,994	113,390	157,759	(44,369)	8.00%	81,768	1,081,393	106,910	10.90%	15.17%
2083	1,462,252	167,547	237,836	(70,289)	8.00%	114,205	1,506,168	100,594	10.90%	15.47%
2093	1,882,041	248,021	355,332	(107,311)	8.00%	146,326	1,921,056	86,677	10.90%	15.62%
2103	2,228,644	367,500	515,823	(148,323)	8.00%	172,435	2,252,756	68,667	10.90%	15.30%
2113	2,177,965	543,514	769,810	(226,296)	8.00%	165,301	2,116,970	43,593	10.90%	15.44%

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)

Fiscal Year	Fund Balance BOY	Contributions	Benefits	Net	Investment Return %	Investment Return $	Fund Balance EOY		% of Payroll	
							Nominal $	Real $	Contrib.	Benefits
2014	$102,084	$4,405	$ 12,750	$ (8,363)	8.00%	$7,836	$101,557	$101,557	4.30%	12.46%
2015	101,557	4,573	13,336	(8,763)	8.00%	7,779	100,573	96,705	4.30%	12.54%
2016	100,573	4,747	14,217	(9,470)	8.00%	7,672	98,775	91,323	4.30%	12.88%
2017	98,775	4,924	15,025	(10,101)	8.00%	7,503	96,177	85,501	4.30%	13.12%
2018	96,177	5,103	16,248	(11,145)	8.00%	7,254	92,286	78,886	4.30%	13.69%
2019	92,286	5,290	17,666	(12,376)	8.00%	6,894	86,804	71,347	4.30%	14.36%
2020	86,804	5,485	19,010	(13,525)	8.00%	6,410	79,689	62,979	4.30%	14.90%
2021	79,689	5,686	20,442	(14,756)	8.00%	5,792	70,725	53,745	4.30%	15.46%
2022	70,725	5,894	21,900	(16,006)	8.00%	5,026	59,745	43,655	4.30%	15.98%
2023	59,745	6,108	23,253	(17,145)	8.00%	4,103	46,703	32,813	4.30%	16.37%
2024	46,703	6,334	24,628	(18,294)	8.00%	3,014	31,423	21,228	4.30%	16.72%
2025	31,423	6,568	26,137	(19,569)	8.00%	1,741	13,595	8,831	4.30%	17.11%
2026	13,595	6,812	27,822	(21,010)	8.00%	258	(7,157)	(4,470)	4.30%	17.56%

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)

Fiscal 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
2014	$ 102,084	$ 8,604	$ 12,750	$(4,164)	8.00%	$ 8,002	$ 105,922	$105,922	8.40%	12.46%
2015	105,922	8,934	13,336	(4,402)	8.00%	8,300	109,820	105,596	8.40%	12.54%
2016	109,820	9,273	14,217	(4,944)	8.00%	8,590	113,466	104,906	8.40%	12.88%
2017	113,466	9,619	15,025	(5,406)	8.00%	8,864	116,924	103,945	8.40%	13.12%
2018	116,924	9,969	16,248	(6,279)	8.00%	9,106	119,751	102,364	8.40%	13.69%
2019	119,751	10,334	17,666	(7,332)	8.00%	9,291	121,710	100,037	8.40%	14.36%
2020	121,710	10,714	19,010	(8,296)	8.00%	9,409	122,823	97,069	8.40%	14.90%
2021	122,823	11,108	20,442	(9,334)	8.00%	9,457	122,946	93,429	8.40%	15.46%
2022	122,946	11,513	21,900	(10,387)	8.00%	9,426	121,985	89,133	8.40%	15.98%
2023	121,985	11,933	23,253	(11,320)	8.00%	9,312	119,977	84,294	8.40%	16.37%
2024	119,977	12,374	24,628	(12,254)	8.00%	9,114	116,837	78,931	8.40%	16.72%
2025	116,837	12,831	26,137	(13,306)	8.00%	8,822	112,353	72,982	8.40%	17.11%
2026	112,353	13,307	27,822	(14,515)	8.00%	8,415	106,253	66,365	8.40%	17.56%
2027	106,253	13,816	29,665	(15,849)	8.00%	7,874	98,278	59,023	8.40%	18.04%
2028	98,278	14,365	31,511	(17,146)	8.00%	7,185	88,317	51,001	8.40%	18.43%
2029	88,317	14,949	33,358	(18,409)	8.00%	6,338	76,246	42,337	8.40%	18.74%
2030	76,246	15,549	35,340	(19,791)	8.00%	5,318	61,773	32,981	8.40%	19.09%
2031	61,773	16,182	37,383	(21,201)	8.00%	4,105	44,677	22,936	8.40%	19.41%
2032	44,677	16,866	39,328	(22,462)	8.00%	2,687	24,902	12,292	8.40%	19.59%
2033	24,902	17,586	41,169	(23,583)	8.00%	1,061	2,380	1,130	8.40%	19.66%
2034	2,380	18,345	42,993	(24,648)	8.00%	(783)	(23,051)	(10,520)	8.40%	19.69%

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)

Fiscal 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
2014	$ 102,084	$ 10,960	$ 12,750	$(1,808)	8.00%	$ 8,095	$ 108,371	$108,371	10.70%	12.46%
2015	108,371	11,381	13,336	(1,955)	8.00%	8,592	115,008	110,585	10.70%	12.54%
2016	115,008	11,812	14,217	(2,405)	8.00%	9,106	121,709	112,527	10.70%	12.88%
2017	121,709	12,253	15,025	(2,772)	8.00%	9,627	128,564	114,293	10.70%	13.12%
2018	128,564	12,698	16,248	(3,550)	8.00%	10,145	135,159	115,534	10.70%	13.69%
2019	135,159	13,163	17,666	(4,503)	8.00%	10,635	141,291	116,131	10.70%	14.36%
2020	141,291	13,648	19,010	(5,362)	8.00%	11,092	147,021	116,193	10.70%	14.90%
2021	147,021	14,149	20,442	(6,293)	8.00%	11,513	152,241	115,691	10.70%	15.46%
2022	152,241	14,665	21,900	(7,235)	8.00%	11,894	156,900	114,645	10.70%	15.98%
2023	156,900	15,200	23,253	(8,053)	8.00%	12,234	161,081	113,173	10.70%	16.37%
2028	170,918	18,298	31,511	(13,213)	8.00%	13,152	170,857	98,666	10.70%	18.43%
2033	157,494	22,402	41,169	(18,767)	8.00%	11,858	150,585	71,474	10.70%	19.66%
2038	110,134	27,713	48,817	(21,104)	8.00%	7,977	97,007	37,845	10.70%	18.85%
2043	31,730	34,198	56,048	(21,850)	8.00%	1,676	11,556	3,705	10.70%	17.54%
2044	11,556	35,612	57,895	(22,283)	8.00%	45	(10,682)	(3,293)	10.70%	17.40%

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)

Fiscal 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
2014	$ 102,084	$ 13,214	$ 12,750	$ 446	8.00%	$ 8,184	$ 110,714	$110,714	12.90%	12.46%
2015	110,714	13,720	13,336	384	8.00%	8,872	119,970	115,356	12.90%	12.54%
2016	119,970	14,241	14,217	24	8.00%	9,599	129,593	119,816	12.90%	12.88%
2017	129,593	14,772	15,025	(253)	8.00%	10,357	139,697	124,190	12.90%	13.12%
2018	139,697	15,309	16,248	(939)	8.00%	11,139	149,897	128,133	12.90%	13.69%
2019	149,897	15,870	17,666	(1,796)	8.00%	11,921	160,022	131,526	12.90%	14.36%
2020	160,022	16,454	19,010	(2,556)	8.00%	12,701	170,167	134,485	12.90%	14.90%
2021	170,167	17,059	20,442	(3,383)	8.00%	13,480	180,264	136,986	12.90%	15.46%
2022	180,264	17,681	21,900	(4,219)	8.00%	14,255	190,300	139,050	12.90%	15.98%
2023	190,300	18,325	23,253	(4,928)	8.00%	15,029	200,401	140,799	12.90%	16.37%
2028	240,405	22,060	31,511	(9,451)	8.00%	18,859	249,813	144,261	12.90%	18.43%
2033	284,327	27,008	41,169	(14,161)	8.00%	22,187	292,353	138,763	12.90%	19.66%
2038	326,938	33,411	48,817	(15,406)	8.00%	25,547	337,079	131,502	12.90%	18.85%
2043	387,939	41,230	56,048	(14,818)	8.00%	30,450	403,571	129,406	12.90%	17.54%
2048	475,535	50,348	67,761	(17,413)	8.00%	37,355	495,477	130,584	12.90%	17.36%
2053	579,035	61,126	85,329	(24,203)	8.00%	45,367	600,199	130,015	12.90%	18.01%
2058	685,874	74,247	106,134	(31,887)	8.00%	53,611	707,598	125,985	12.90%	18.44%
2063	796,921	90,426	129,215	(38,789)	8.00%	62,222	820,354	120,052	12.90%	18.43%
2073	1,084,616	134,195	182,286	(48,091)	8.00%	84,870	1,121,395	110,864	12.90%	17.52%
2083	1,481,601	198,289	275,070	(76,781)	8.00%	115,496	1,520,316	101,539	12.90%	17.90%
2093	1,803,099	293,529	411,019	(117,490)	8.00%	139,609	1,825,218	82,353	12.90%	18.06%
2103	1,888,261	434,931	596,653	(161,722)	8.00%	144,675	1,871,214	57,037	12.90%	17.70%
2113	1,202,289	643,242	890,766	(247,524)	8.00%	86,409	1,041,174	21,440	12.90%	17.86%

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)

Fiscal Year	Fund Balance BOY	Contributions	Benefits	Net	Investment Return %	Investment Return $	Fund Balance EOY		% of Payroll	
							Nominal $	Real $	Contrib.	Benefits
2014	$102,084	$4,405	$ 12,750	$ (8,380)	8.00%	$7,836	$101,540	$101,540	4.30%	12.48%
2015	101,540	4,573	13,742	(9,169)	8.00%	7,761	100,132	96,281	4.30%	12.92%
2016	100,132	4,747	15,060	(10,313)	8.00%	7,603	97,422	90,072	4.30%	13.64%
2017	97,422	4,924	16,350	(11,426)	8.00%	7,343	93,339	82,978	4.30%	14.28%
2018	93,339	5,103	18,007	(12,904)	8.00%	6,958	87,393	74,704	4.30%	15.17%
2019	87,393	5,290	19,843	(14,553)	8.00%	6,417	79,257	65,143	4.30%	16.13%
2020	79,257	5,485	21,548	(16,063)	8.00%	5,706	68,900	54,453	4.30%	16.89%
2021	68,900	5,686	23,334	(17,648)	8.00%	4,815	56,067	42,606	4.30%	17.65%
2022	56,067	5,894	25,119	(19,225)	8.00%	3,726	40,568	29,643	4.30%	18.33%
2023	40,568	6,108	26,738	(20,630)	8.00%	2,431	22,369	15,716	4.30%	18.82%
2024	22,369	6,334	28,331	(21,997)	8.00%	921	1,293	874	4.30%	19.23%
2025	1,293	6,568	30,076	(23,508)	8.00%	(825)	(23,040)	(14,966)	4.30%	19.69%

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)

Fiscal 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
2014	$102,084	$10,551	$ 12,750	$ (2,234)	8.00%	$8,079	$107,929	$107,929	10.30%	12.48%
2015	107,929	10,955	13,742	(2,787)	8.00%	8,524	113,666	109,294	10.30%	12.92%
2016	113,666	11,370	15,060	(3,690)	8.00%	8,948	118,924	109,952	10.30%	13.64%
2017	118,924	11,795	16,350	(4,555)	8.00%	9,334	123,703	109,972	10.30%	14.28%
2018	123,703	12,224	18,007	(5,783)	8.00%	9,668	127,588	109,063	10.30%	15.17%
2019	127,588	12,671	19,843	(7,172)	8.00%	9,924	130,340	107,130	10.30%	16.13%
2020	130,340	13,138	21,548	(8,410)	8.00%	10,095	132,025	104,341	10.30%	16.89%
2021	132,025	13,620	23,334	(9,714)	8.00%	10,178	132,489	100,681	10.30%	17.65%
2022	132,489	14,117	25,119	(11,002)	8.00%	10,165	131,652	96,197	10.30%	18.33%
2023	131,652	14,632	26,738	(12,106)	8.00%	10,054	129,600	91,055	10.30%	18.82%
2024	129,600	15,173	28,331	(13,158)	8.00%	9,848	126,290	85,317	10.30%	19.23%
2025	126,290	15,733	30,076	(14,343)	8.00%	9,537	121,484	78,914	10.30%	19.69%
2026	121,484	16,317	32,025	(15,708)	8.00%	9,098	114,874	71,750	10.30%	20.22%
2027	114,874	16,941	34,154	(17,213)	8.00%	8,510	106,171	63,764	10.30%	20.77%
2028	106,171	17,614	36,282	(18,668)	8.00%	7,757	95,260	55,010	10.30%	21.22%
2029	95,260	18,331	38,408	(20,077)	8.00%	6,828	82,011	45,538	10.30%	21.58%
2030	82,011	19,066	40,688	(21,622)	8.00%	5,707	66,096	35,289	10.30%	21.98%
2031	66,096	19,842	43,035	(23,193)	8.00%	4,372	47,275	24,270	10.30%	22.34%
2032	47,275	20,680	45,267	(24,587)	8.00%	2,811	25,499	12,587	10.30%	22.55%
2033	25,499	21,564	47,376	(25,812)	8.00%	1,021	708	336	10.30%	22.63%
2034	708	22,494	49,457	(26,963)	8.00%	(1,008)	(27,263)	(12,442)	10.30%	22.65%

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)

Fiscal 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
2014	$102,084	$13,111	$12,750	$326	8.00%	$ 8,180	$110,590	$110,590	12.80%	12.48%
2015	110,590	13,614	13,742	(128)	8.00%	8,842	119,304	114,715	12.80%	12.92%
2016	119,304	14,130	15,060	(930)	8.00%	9,508	127,882	118,234	12.80%	13.64%
2017	127,882	14,658	16,350	(1,692)	8.00%	10,164	136,354	121,218	12.80%	14.28%
2018	136,354	15,191	18,007	(2,816)	8.00%	10,797	144,335	123,378	12.80%	15.17%
2019	144,335	15,747	19,843	(4,096)	8.00%	11,385	151,624	124,624	12.80%	16.13%
2020	151,624	16,327	21,548	(5,221)	8.00%	11,924	158,327	125,128	12.80%	16.89%
2021	158,327	16,926	23,334	(6,408)	8.00%	12,413	164,332	124,879	12.80%	17.65%
2022	164,332	17,544	25,119	(7,575)	8.00%	12,847	169,604	123,928	12.80%	18.33%
2023	169,604	18,183	26,738	(8,555)	8.00%	13,231	174,280	122,447	12.80%	18.82%
2028	185,130	21,889	36,282	(14,393)	8.00%	14,242	184,979	106,821	12.80%	21.22%
2033	169,623	26,798	47,376	(20,578)	8.00%	12,757	161,802	76,798	12.80%	22.63%
2038	116,622	33,152	56,092	(22,940)	8.00%	8,424	102,106	39,834	12.80%	21.66%
2043	30,574	40,910	64,396	(23,486)	8.00%	1,519	8,607	2,760	12.80%	20.15%
2044	8,607	42,601	66,531	(23,930)	8.00%	(256)	(15,579)	(4,803)	12.80%	19.99%

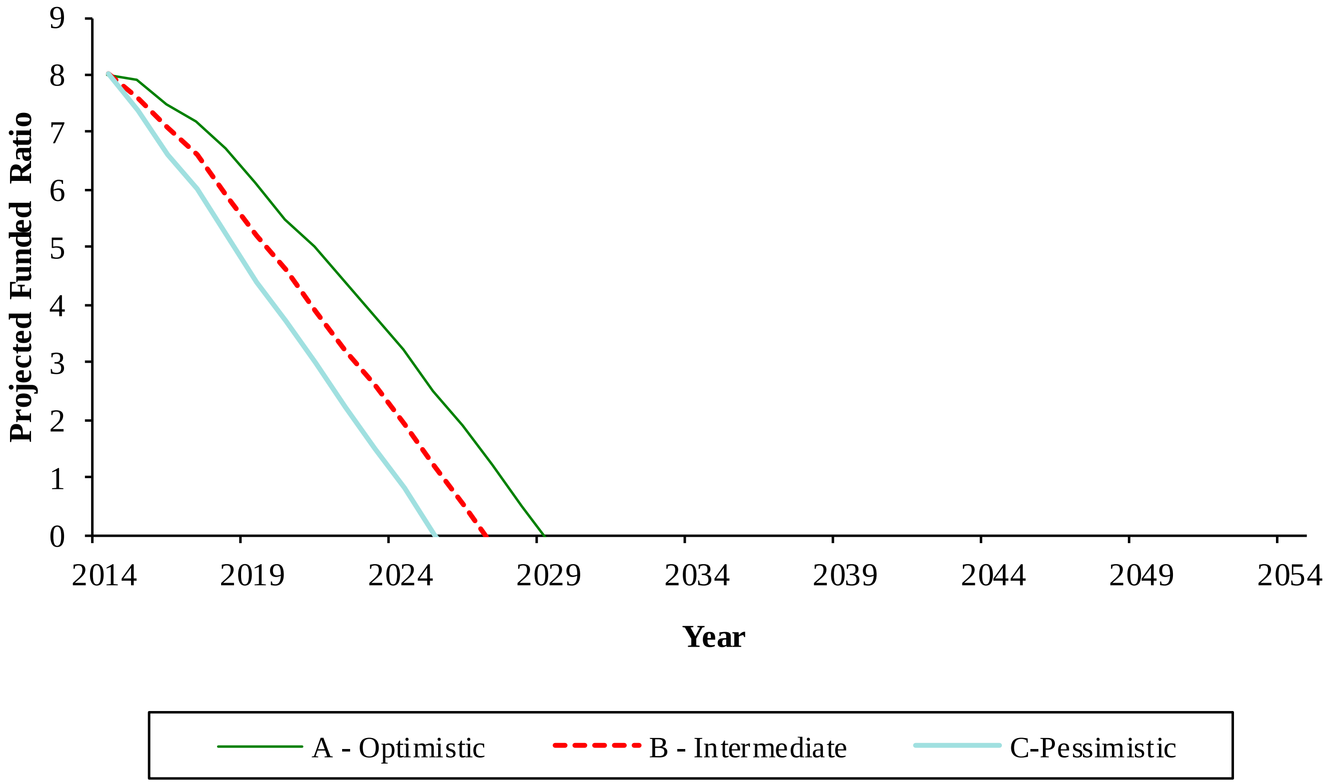
Funding Level 3 is the lowest funding level that will keep the fund solvent for 30 years.

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

Fiscal 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
2014	$ 102,084	$ 15,570	$ 12,750	$ 2,785	8.00%	$ 8,277	$ 113,146	$ 113,146	15.20%	12.48%
2015	113,146	16,167	13,742	2,425	8.00%	9,147	124,718	119,921	15.20%	12.92%
2016	124,718	16,780	15,060	1,720	8.00%	10,045	136,483	126,186	15.20%	13.64%
2017	136,483	17,406	16,350	1,056	8.00%	10,960	148,499	132,015	15.20%	14.28%
2018	148,499	18,039	18,007	32	8.00%	11,881	160,412	137,121	15.20%	15.17%
2019	160,412	18,699	19,843	(1,144)	8.00%	12,788	172,056	141,417	15.20%	16.13%
2020	172,056	19,388	21,548	(2,160)	8.00%	13,679	183,575	145,082	15.20%	16.89%
2021	183,575	20,100	23,334	(3,234)	8.00%	14,558	194,899	148,107	15.20%	17.65%
2022	194,899	20,833	25,119	(4,286)	8.00%	15,423	206,036	150,548	15.20%	18.33%
2023	206,036	21,593	26,738	(5,145)	8.00%	16,280	217,171	152,581	15.20%	18.82%
2028	260,931	25,993	36,282	(10,289)	8.00%	20,468	271,110	156,559	15.20%	21.22%
2033	307,982	31,823	47,376	(15,553)	8.00%	24,024	316,453	150,202	15.20%	22.63%
2038	353,127	39,368	56,092	(16,724)	8.00%	27,590	363,993	142,001	15.20%	21.66%
2043	419,150	48,581	64,396	(15,815)	8.00%	32,908	436,243	139,882	15.20%	20.15%
2048	515,086	59,324	77,958	(18,634)	8.00%	40,471	536,923	141,507	15.20%	19.97%
2053	628,014	72,025	98,321	(26,296)	8.00%	49,203	650,921	141,003	15.20%	20.75%
2058	742,930	87,485	122,392	(34,907)	8.00%	58,056	766,079	136,398	15.20%	21.26%
2063	860,661	106,549	149,012	(42,463)	8.00%	67,176	885,374	129,567	15.20%	21.26%
2073	1,165,212	158,122	210,197	(52,075)	8.00%	91,161	1,204,298	119,060	15.20%	20.21%
2083	1,582,155	233,643	317,458	(83,815)	8.00%	123,263	1,621,603	108,304	15.20%	20.65%
2093	1,889,046	345,864	474,404	(128,540)	8.00%	146,048	1,906,554	86,023	15.20%	20.85%
2103	1,889,925	512,477	688,645	(176,168)	8.00%	144,238	1,857,995	56,634	15.20%	20.43%
2113	945,828	757,928	1,028,451	(270,523)	8.00%	64,984	740,289	15,244	15.20%	20.62%

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 FUNDING RATIOS BASED ON
4.30% EMPLOYER CONTRIBUTION RATE
DECEMBER 31, 2013



The ***funding 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 funding 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 funded 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%**

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, 2013 TO DECEMBER 31, 2013

Unfunded Accrued Liabilities (UAL), January 1	$307,881,571
Normal Cost	18,443,575
Contributions	33,831,486
Interest	24,015,009
Expected UAL Before Any Changes	316,508,669
Effect of Changes in Assumptions and Benefits	(1,940,695)
Expected UAL After All Changes	314,567,974
Actual UAL	298,495,888
Gain/(Loss) for Year from Financial Experience	**$ 16,072,086**

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, 2013 AND 2012

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 2013	2012
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.	**$ (103,886)**	$ (173,926)
Disability Retirements. If disability claims are less than assumed, there is a gain. If more claims, a loss.	**410,735**	142,398
Death-in-Service Benefits. If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	**(139,409)**	67,718
Withdrawal From Employment. If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	**254,877**	722,990
Pay Increases. If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	**7,802,910**	9,912,757
Investment Income. If there is greater investment return on pension assets than assumed, there is a gain. If less return, a loss.	**9,288,759**	9,850,905
Other. Miscellaneous gains and losses resulting from data adjustments, timing of financial transactions, valuation methods, etc.	**(1,441,900)**	(885,173)
Gain (or Loss) During Year From Experience	**$ 16,072,086**	$ 19,637,669
Non-Recurring Items (Effect of Benefit/Assumption Changes)	**1,940,695**	117,486,392
Composite Gain (or Loss) During Year	**$ 18,012,781**	$ 137,124,061

INVESTMENT GAIN (LOSS)
DEVELOPMENT OF PORTION ATTRIBUTABLE TO RETIREMENT, SURVIVOR AND DISABILITY ALLOWANCES
JANUARY 1, 2013 TO DECEMBER 31, 2013

Assets, Beginning of Year	$658,428,914
Net Cash Flow	(28,640,773)
Assumed Investment Return	51,528,682
Expected Assets End of Year	$681,316,823
Actual Assets End of Year	690,605,582
Gain/(Loss) for Year	**$ 9,288,759**

The total investment gain (loss) was $11,289,374, including the gain (loss) on health assets.

ACTIVE MEMBER POPULATION RECONCILIATION
JANUARY 1, 2013 TO DECEMBER 31, 2013

	Actual	Expected
Active Members Beginning of Year	1,645	
Plus New Hires	44	
Minus Retirements	34	36.5
Minus Deaths	0	0.9
Minus Disabilities	7	7.2
Minus Other Terminations	45	22.5
Returned to Active Status	10	
Plus or Minus Data Correction	0	
Active Members End of Year	**1,613**	

SECTION D

FINANCIAL INFORMATION

CURRENT ASSET INFORMATION FURNISHED FOR THE VALUATION DECEMBER 31, 2013

Balance Sheet

Current Assets (Market Value)		Fund Balance	
Cash & Short-Term Investments	$ 12,036,341	Employees' Savings Fund	$ 116,645,418
Fixed Income	178,617,278	Employer Accumulation Fund	108,451,417
Stocks	463,102,633	Pension Reserve Fund	557,450,018
Real Estate	36,074,398	Survivors Benefit Fund	31,405,751
Alternatives	147,084,226	Health Care Fund	107,754,604
Other Short-Term	75,149	Income Fund	(107,754,603)
Accruals & Receivables	(23,037,420)		
Total Current Assets	**$ 813,952,605**	**Total Fund Balance**	**$ 813,952,605**

Revenues and Expenditures

	Year Ended December 31,	
	2013	**2012**
Net Assets Held in Trust for Pension and Postemployment Health Care Benefits	$717,867,678	$679,404,486
DROP Liabilities	22,200,917	19,853,482
Total	740,068,595	699,257,968
Revenues*		
Employee contributions		
For non-DROP members	9,082,857	8,755,937
For DROP members	954,389	885,835
Employer contributions (net)	27,452,429	25,625,105
Investment income (net)		
Non-DROP investment income	133,572,045	73,702,001
DROP investment income	195,862	281,382
Miscellaneous	0	0
Total	171,257,582	109,250,260
Expenditures		
Benefit payments		
Retirees and Beneficiaries	54,816,860	52,503,455
From DROP account	6,591,966	4,457,195
Health insurance	11,080,534	10,151,949
Refund of member contributions	943,433	179,614
Administrative expenses	1,050,605	997,420
Death benefit	120,000	150,000
Total	74,603,398	68,439,633
Net Addition to Assets	96,654,184	40,810,627
Net Assets Held in Trust for Pension and Postemployment Health Care Benefits	$813,952,605	$717,867,678
DROP Liabilities	22,770,174	22,200,917
Total	**836,722,779**	**740,068,595**

** Revenues include transfers to and from systems.*

CAFR ASSET INFORMATION FURNISHED FOR THE VALUATION
DECEMBER 31, 2013

ADDITIONS BY SOURCE

	Pension Benefits					Other Postemployment Benefits		
	Contributions		Net Investment	Transfers from		Employer	Net Investment	
Year	Member*	Employer	Income	Other Systems	Total	Contributions	Income	Total
2004	$8,192,944	$17,205,609	$ 62,907,281	$ 856,496	$ 89,162,330	$2,867,602	$ 12,051,961	$ 14,919,563
2005	8,582,130	18,467,789	35,511,228	1,180,951	63,742,098	3,006,385	8,603,479	11,609,864
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**

** Does not include service purchases.*

DEDUCTIONS BY TYPE

	Pension Benefits					Other Postemployment Benefits		
			Transfers to					
Year	Benefits#	Refunds	Other Systems	Administrative	Total	Benefits	Administrative	Total
2004	$35,187,531	$ 155,989	$ 602,345	$ 518,834	$ 36,464,699	$ 6,948,650	$ 86,031	$ 7,034,681
2005	37,716,268	495,640	403,975	561,817	39,177,700	8,932,259	92,344	9,024,603
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**

 # Includes death benefits.

DEVELOPMENT OF FUNDING VALUE OF RETIREMENT SYSTEM ASSETS
DECEMBER 31, 2013

		2011	2012	2013	2014	2015	2016
A.	Funding Value From Prior Year	$ 735,709,837	$ 722,361,877	$ 758,246,087			
B.	Market Value End of Year	699,257,968	740,068,595	836,722,779			
C.	Market Value Beginning of Year	754,509,648	699,257,968	740,068,595			
D.	Non-Investment Net Cash Flow	(35,358,745)	(32,175,336)	(36,063,118)			
E.	Investment Return:						
	E1. Market Total: B - C - D	(19,892,935)	72,985,963	132,717,302			
	E2. For Immediate Recognition (8.0%)	57,442,437	56,501,937	59,217,162			
	E3. Amount for Phased-In Recognition E1-E2	(77,335,372)	16,484,026	73,500,140			
F.	Phased-In Recognition of Investment Return:						
	F1. Current Year: 25% x E3	(19,333,843)	4,121,007	18,375,035			
	F2. First Prior Year	8,127,176	(19,333,843)	4,121,007	$ 18,375,035		
	F3. Second Prior Year	18,643,268	8,127,176	(19,333,843)	4,121,007	$ 18,375,035	
	F4. Third Prior Year	(42,868,253)	18,643,269	8,127,175	(19,333,843)	4,121,005	$ 18,375,035
	F5. Total Recognized Phase-ins	$ (35,431,652)	$ 11,557,609	$ 11,289,374	$ 3,162,199	$ 22,496,040	$ 18,375,035
G.	Funding Value End of Year:						
	G1. Preliminary Funding Value End of Year: A + D + E2 + F5	$ 722,361,877	$ 758,246,087	$ 792,689,505			
	G2. Corridor Percent	20%	20%	20%			
	G3. Upper Corridor Limit: (100% + G2) x B	839,109,562	888,082,314	1,004,067,335			
	G4. Lower Corridor Limit: (100% - G2) x B	559,406,374	592,054,876	669,378,223			
	G5. Funding Value End of Year	$ 722,361,877	$ 758,246,087	$ 792,689,505			
H.	Difference between Market Value and Funding Value	$ (23,103,909)	$ (18,177,492)	$ 44,033,274	$ 40,871,075	$ 18,375,035	$ -
I.	Funding Value Rate of Return	3.1 %	9.6 %	9.5 %			
J.	Market Value Rate of Return	(2.7)%	10.7 %	18.4 %			
K.	Ratio of Funding Value to Market Value	103%	102%	95%			

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, 2013

	Pension	Health	Total
A. Market Value Beginning of Year	$642,644,347	$ 97,424,248	$740,068,595
B. Member Contributions			
B1. Pension Contributions	9,082,857		9,082,857
B2. DROP Contributions	954,389		954,389
B3. Retiree Health Contributions		1,562,609	1,562,609
C. Employer Contributions			
C1. System Contributions	22,908,182	3,658,189	26,566,371
C2. Transfers	886,058		886,058
C3. Medicare Part D Reimbursement		1,060,462	1,060,462
D. Benefits Paid			
D1. Pension Benefits	54,816,860		54,816,860
D2. Benefit Payments from DROP Account	6,591,966		6,591,966
D3. HPRS Paid Retiree Health Benefits		11,244,026	11,244,026
D4. HPRS Paid Medicare Part B Benefits		896,970	896,970
D5. Member Paid Retiree Health Benefits		1,562,609	1,562,609
E. Refunds of Member Contributions	943,433	0	943,433
F. Death Benefits	120,000	0	120,000
G. Net External Cash Flow (B + C - D - E - F)	(28,640,773)	(7,422,345)	(36,063,118)
H. Other Changes in Market Value	114,964,601	17,752,701	132,717,302
I. Market Value End of Year (A + G + H)	728,968,175	107,754,604	836,722,779
J. Funding Value Adjustment	(38,362,593)	(5,670,681)	(44,033,274)
K. Funding Value End of Year (I + J)	$690,605,582	$102,083,923	$792,689,505

Line J is allocated in proportion to Line I.

SECTION E

SUMMARY OF MEMBER DATA

ACTIVE MEMBERS AS OF DECEMBER 31, 2013
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	78							78	$ 3,277,390
25-29	182	12	1					195	8,964,108
30-34	58	114	53					225	12,364,408
35-39	25	61	157	91	3			337	20,851,575
40	1	10	19	34	6			70	4,503,163
41	1	7	16	28	13			65	4,181,334
42		6	12	29	23			70	4,695,174
43		2	18	32	26			78	5,082,490
44		1	20	22	38			81	5,427,706
45			12	18	34	3		67	4,464,125
46			7	10	36	5		58	4,135,901
47	1		6	7	29	11		54	3,748,663
48				5	22	9		36	2,660,188
49			4	6	15	23		48	3,459,683
50			1	1	18	12	1	33	2,343,161
51			1		9	14	1	25	1,737,951
52				2	11	13	5	31	2,284,947
53					2	8	3	13	836,674
54					5	5	7	17	1,187,916
55					2	4	3	9	660,820
56						4	6	10	683,725
57						1	4	5	357,858
58						1	3	4	255,858
59						1	2	3	234,490
60							1	1	120,536
Totals	**346**	**213**	**327**	**285**	**292**	**114**	**36**	**1,613**	**$ 98,519,844**

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: $61,079

** Includes 134 DROP members.*

ACTIVE MEMBERS
BY AGES OF ENTRY INTO SERVICE
DECEMBER 31, 2013

Entry Age Nearest Birthday	Number	Cumulative Number	Percent	Cumulative Percent
Less than 18	0	0	0.00%	0.00%
18	21	21	1.30%	1.30%
19	50	71	3.10%	4.40%
20	81	152	5.02%	9.42%
21	173	325	10.73%	20.15%
22	225	550	13.95%	34.10%
23	216	766	13.39%	47.49%
24	195	961	12.09%	59.58%
25	157	1,118	9.73%	69.31%
26	112	1,230	6.95%	76.26%
27	93	1,323	5.76%	82.02%
28	61	1,384	3.78%	85.80%
29	53	1,437	3.29%	89.09%
30	43	1,480	2.66%	91.75%
31	38	1,518	2.36%	94.11%
32	40	1,558	2.48%	96.59%
33	28	1,586	1.74%	98.33%
34	20	1,606	1.24%	99.57%
35	1	1,607	0.06%	99.63%
36	0	1,607	0.00%	99.63%
37	5	1,612	0.31%	99.94%
38	0	1,612	0.00%	99.94%
39	0	1,612	0.00%	99.94%
40 & Up	1	1,613	0.06%	100.00%
Total	**1,613**			

ACTIVE DROP MEMBERS AS OF DECEMBER 31, 2013
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Ages	DROP No.	Annual Benefit	Annual Pay	DROP Account Balance
48	17	$ 897,510	$ 1,402,230	$ 545,675
49	16	729,048	1,202,678	1,027,730
50	15	642,327	1,036,294	1,268,508
51	17	725,054	1,190,834	1,702,312
52	16	680,314	1,167,201	2,317,283
53	13	578,291	903,538	1,698,074
54	14	669,350	1,038,276	3,183,469
55	9	374,279	577,969	2,029,647
56	6	305,848	467,403	1,808,730
57	4	174,852	256,802	1,090,197
58	5	260,101	367,893	1,865,793
59	2	114,721	181,583	831,565
Totals	**134**	**$ 6,151,694**	**$ 9,792,701**	**$ 19,368,984**

Average Age: 52.4 yrs.
Average Age at DROP: 49.7 yrs.

Average Service: 28.7 yrs.
Average Service at DROP: 24.8 yrs.

Average Annual Pay: $73,080

AGE AND SERVICE PENSIONS BEING PAID DECEMBER 31, 2013
BY ATTAINED AGES

Attained Ages	Number	Monthly Pensions	Number Married	Average Age of Spouse
48 & Under	4	$ 13,751	1	49
49	9	28,687	7	47
50	18	67,972	12	49
51	11	37,952	3	48
52	22	84,691	17	51
53	29	107,149	25	52
54	39	148,450	32	51
55	39	143,361	28	53
56	30	113,164	25	53
57	32	125,522	29	56
58	44	167,492	38	55
59	32	127,462	27	59
60	23	100,647	22	58
61	36	151,388	32	57
62	44	167,676	38	59
63	46	176,027	40	60
64	39	156,595	34	62
65	52	188,852	45	63
66	69	255,257	57	63
67	46	177,467	43	66
68	38	147,302	34	66
69	52	192,458	52	66
70	36	124,850	33	68
71	48	163,212	45	67
72	36	124,217	32	68
73	26	91,332	22	70
74	25	91,948	21	72
75	23	67,290	23	72
76	25	78,955	23	72
77	16	46,583	14	73
78	12	37,735	12	76
79	10	27,464	9	74
80	8	20,287	7	76
81	11	29,477	10	76
82	9	21,463	7	79
83	13	35,824	10	79
84	11	25,195	8	80
85 & Over	33	67,785	22	81
Totals	**1,096**	**$ 3,932,939**	**939**	

DISABILITY PENSIONS BEING PAID DECEMBER 31, 2013
BY ATTAINED AGE

Attained Ages	Number	Monthly Pensions	Number Married	Average Age of Spouse
27	1	$ 2,298		
35	3	8,362	2	35
36	2	4,236		N/A
38	1	2,345		N/A
39	1	2,675	1	39
40	1	2,342	1	39
41	5	14,131	3	43
42	6	15,266	5	32
43	3	8,032	3	39
44	3	9,344	3	39
45	7	17,797	5	43
46	5	12,811	4	39
47	5	12,858	3	47
48	3	8,445	2	52
49	6	18,550	3	49
50	5	13,814	5	47
51	5	16,935	3	45
52	3	12,156	3	53
53	6	17,489	5	52
54	5	15,048	4	49
55	6	16,928	4	54
56	7	20,660	4	56
57	4	12,508	3	56
58	2	6,861	2	60
60	3	9,026	3	58
61	3	8,194	2	60
62	3	9,556	3	60
63	1	1,873	1	58
64	2	5,816	2	62
65	6	13,693	5	62
66	1	2,623	1	66
67	2	5,617	1	56
69	2	5,756	1	71
70	2	4,246	2	69
72	1	1,671	1	66
76	1	3,270		N/A
83	1	1,781	1	78
84	1	1,799	1	80
Totals	**124**	**$346,812**	**92**	

DEPENDENTS BEING PAID AS OF DECEMBER 31, 2013
TABULATED BY ATTAINED AGE

Attained Ages	Number	Monthly Pensions
14 & Under	5	$ 899
15	3	513
16	2	386
17	2	359
18	1	207
19	1	159
20	1	155
21	2	399
22	1	159
26	1	1,802
27	1	1,062
34	1	1,089
36	1	1,224
39	1	656
40	1	1,236
41	1	1,305
43	2	2,507
44	1	340
45	2	2,184
47	4	4,587
48	3	2,552
49	5	5,901
50	1	765
51	4	6,598
52	1	1,711
53	3	3,176
54	2	462
55	5	6,738
56	5	5,529
57	1	1,043
58	3	5,221
59	3	3,745
60	2	1,852
61	7	11,568
62	11	14,907
63	3	4,507
64	4	6,565
65	6	8,582
66	10	14,613
67	8	14,613
68	6	9,590
69	4	6,861
70-79	66	94,616
80-89	90	114,032
90 & Over	16	20,554
Totals	**303**	**$387,529**

ACTIVE MEMBER VALUATION DATA, 2004 TO 2013

Actuarial Valuation as of December 31	Number of Active Members	Annual Payroll	Average Annual Salary	% Increase in Average Pay
2004	1,562	$81,757,707	$52,342	(1.3) %
2005	1,573	83,408,155	53,025	1.3
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**

RETIRANTS AND BENEFICIARIES VALUATION DATA, 2004 TO 2013

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			
2004	58	$ 287,345	29	$34,153	1,282	$ 3,023,341	$2,358
2005	45	194,666	26	40,276	1,301	3,177,731	2,443
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**

Of the 1,523 retirants and beneficiaries as of December 31, 2013, 1,096 are service retirees, 124 are disability retirees and 303 are survivor beneficiaries. The average monthly benefits are $3,588 for service retirees, $2,797 for disability retirees and $1,279 for survivor beneficiaries.

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

	Census Date									
	12/13	**12/12**	**12/11**	**12/10**	**12/09**	**12/08**	**12/07**	**12/06**	**12/05**	**12/04**
Recipients:										
w/o Medicare A	**672**	702	NA	732	692	762	751	779	806	808
Medicare A	**717**	669	NA	596	580	398	503	522	437	411
Spouses:										
w/o Medicare A	**330**	355	NA	365	368	518	372	420	375	373
w Medicare A	**338**	305	NA	257	267	232	242	156	187	176
Dependent Children	**302**	279	NA	216	165	167	154	168	127	130
Orphans	**0**	0	NA	0	23	26	63	33	26	30
Totals	**2,359**	2,310	2,269	2,166	2,095	2,103	2,085	2,078	1,958	1,928

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**

DEFERRED PENSIONS AS OF DECEMBER 31, 2013
TABULATED BY ATTAINED AGE

Attained Ages	Number	Annual Pensions
41	1	$ 19,450
42	2	58,485
43	1	19,752
44	1	32,014
45	2	79,225
46	1	34,750
47	4	136,530
50	1	39,174
51	1	31,745
Totals	**14**	**$451,125**

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, 2013

The actuarial assumptions used in the valuation are shown in this section of the report. The assumptions were established for the December 31, 2010 actuarial valuation, following a 5-year experience study covering the period January 1, 2005 through December 31, 2009. They were adopted by the Board after obtaining the advice of the Actuary and other professionals.

Economic Assumptions

The investment return rate used in making the valuations was 8.0% per year, compounded annually (net after administrative 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 8.0% investment return rate translates to an assumed real rate of return over wage growth of 4.0%. In order to assume a 4.0% real return over wage growth, it would be necessary to realize about a 5.0% real return over price inflation, after accounting for expenses and the difference between wage increases and price increases. Based on our experience with other public employee retirement systems, both nationally and statewide, and published results of national surveys, the assumed investment return rate remains reasonable, but many systems have recently lowered their assumption. The economic assumptions were last reviewed as part of the 5-year experience study for the period January 1, 2005 through December 31, 2009. It is scheduled to be reviewed again following the December 31, 2014 actuarial valuation.

Pay increase assumptions for individual active members are shown for sample ages on page F-4. Part of the assumed increase at each age is for merit and/or seniority, and the other 4.0% recognizes changes in wage levels due to broad economic effects, including inflation and real wage growth. No specific price inflation assumption is required to perform the actuarial valuation.

The active member payroll is assumed to increase 4.0% 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 mortality tables, for post-retirement mortality, used in evaluating allowances to be paid were the RP-2000 Combined Healthy Male and Female Tables projected to 2020 using Projection Scale AA. This assumption was last reviewed and updated as part of the 5-year experience study for the period January 1, 2005 through December 31, 2009. As shown in that study, the current assumption allows for an approximate 2% margin for future mortality improvement. It is scheduled to be reviewed again following the December 31, 2014 actuarial valuation. Related values are shown on page F-3.

The probabilities of age and service retirement are shown on page F-4.

The probabilities of withdrawal from service, disability and death-in-service are shown for sample ages on page F-4. For disability retirement, impaired longevity was recognized by basing benefit values on the RP-2000 Combined Healthy Male and Female Tables projected to 2020 using Projection Scale AA set-forward 5 years. Fifty percent of disability retirements are assumed to be non-duty related and fifty percent are assumed to be duty related.

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

> Differences in the past between assumed experience and actual experience ("actuarial gains and losses") become part of actuarial accrued liabilities.
>
> Unfunded actuarial accrued liabilities are amortized to produce 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.

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. 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 report on page D-3. Assets may be used in the valuation prior to the final audit.

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
(8.00% INTEREST)

Sample Attained Ages	Present Value of $1 Monthly for Life		Future Life Expectancy (years)	
	Men	Women	Men	Women
50	$138.57	$140.09	32.77	34.63
55	131.86	133.89	28.04	29.88
60	123.09	125.97	23.47	25.31
65	112.30	116.30	19.17	21.02
70	99.65	105.04	15.22	17.06
75	84.62	92.13	11.58	13.47
80	68.15	77.48	8.42	10.23

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			
	Disability	Death: Men	Death: Women	Other	Service	Merit & Seniority	Base (Economic)	Increase Next Year
20	0.08%	0.02%	0.01%	2.57%	1-2	10.00%	4.00%	14.00%
25	0.08%	0.02%	0.01%	2.24%	3-5	3.00%	4.00%	7.00%
30	0.23%	0.02%	0.01%	1.91%	6-10	1.00%	4.00%	5.00%
35	0.42%	0.04%	0.02%	1.56%	11 & Up	0.30%	4.00%	4.30%
40	0.70%	0.05%	0.04%	0.84%				
45	0.85%	0.08%	0.06%	0.41%				
50	1.13%	0.11%	0.08%	0.15%				
55	1.32%	0.18%	0.14%	0.00%				

In the first year of employment, 6% of active members are assumed to terminate employment.

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	35%	3.5%
49	15%	3.5%
50	10%	3.5%
51	10%	3.5%
52	15%	
53	10%	
54	10%	
55	20%	
56	30%	
57	25%	
58	20%	
59	20%	
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		Retirement		Disability Retirement		Death-in-Service		Other Terminations		Active Members
	A	E	A	E	A	E	A	E	A	E	
2004	90	63.6	39	36.5	4	6.5	1	1.0	26	19.6	1,562
2005	76	60.7	23	33.2	8	6.7	0	1.0	34	19.8	1,573
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**
Total	**740**	**679.0**	**313**	**409.7**	**65**	**69.2**	**9**	**9.1**	**282**	**191.0**	

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 2013

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		1	3		4
49			2		2
50		1	4		5
51			2	1	3
52			1		1
53		1	3		4
54			2		2
55			4		4
56			1		1
57		2	2	1	5
58			1		1
59			2		2
60 & Over					
Totals		**5**	**27**	**2**	**34**

DISABILITY RETIREMENTS
DURING CALENDAR YEAR 2013

	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	1							1
30-34								
35-39	1							1
40-44			1	2				3
45-49					1	1		2
50 & Over								
Totals	**2**		**1**	**2**	**1**	**1**		**7**

DEATH-IN-SERVICE TERMINATIONS DURING CALENDAR YEAR 2013

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								**0**

WITHDREW AND ELIGIBLE FOR DEFERRED BENEFIT TERMINATIONS DURING CALENDAR YEAR 2013

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				1	1			2
45-49					2	1		3
50 & Over								
Totals				**1**	**3**	**1**		**5**

WITHDREW AND PENDING CONTRIBUTIONS TERMINATION DURING CALENDAR YEAR 2013

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								**0**

WITHDREW AND REFUNDED TERMINATIONS DURING CALENDAR YEAR 2013

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	13							13
25-29	11							11
30-34	8	2	1					11
35-39	1	1	1	1				4
40-44		1						1
45-49								
50 & Over								
Totals	**33**	**4**	**2**	**1**				**40**

Miscellaneous and Technical Assumptions

Administrative Expenses:	Assumed investment return is net of administrative and investment expenses.
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)

FINANCIAL PRINCIPLES AND OPERATIONAL TECHNIQUES OF THE RETIREMENT SYSTEM (CONCLUDED)

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

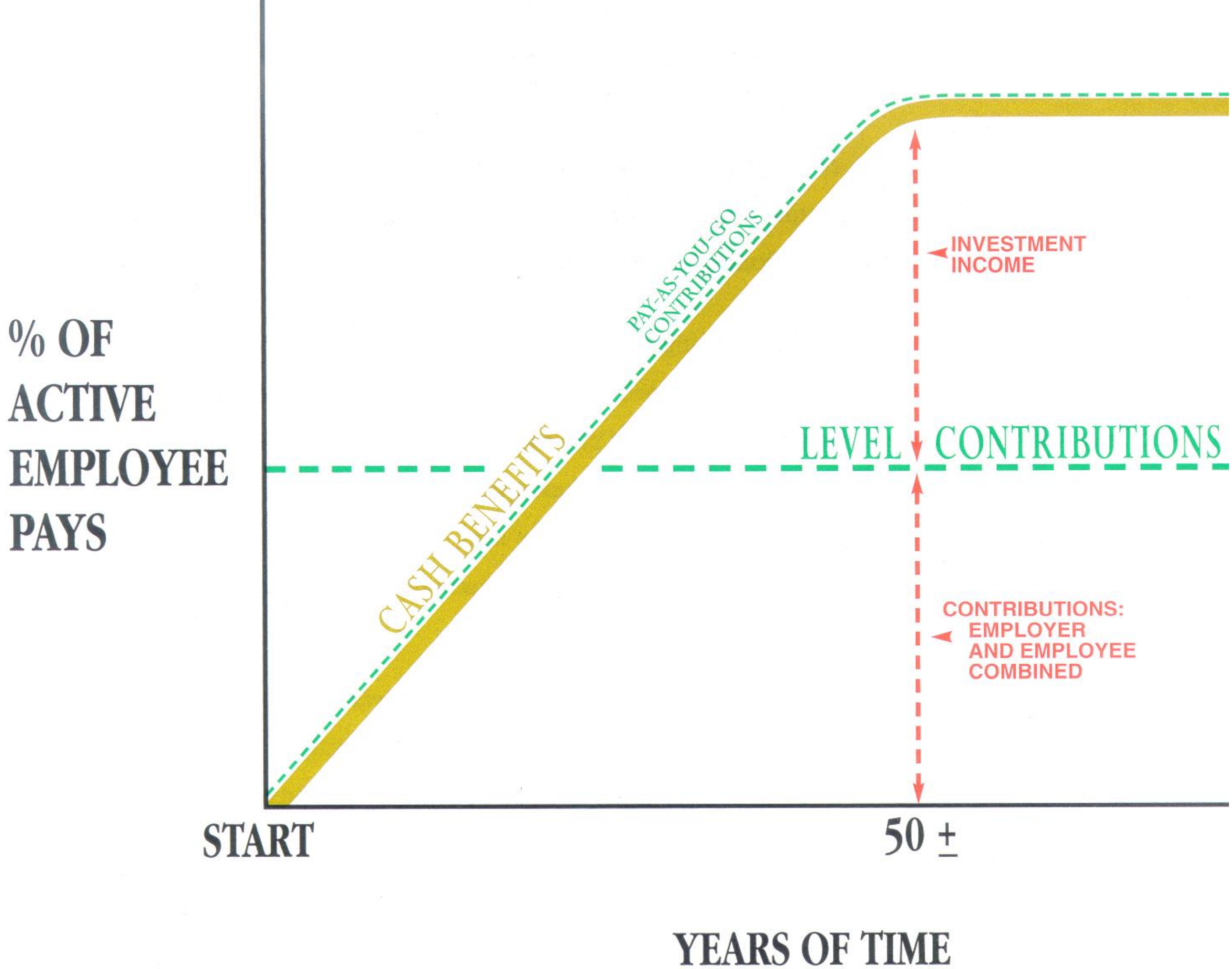
> ***Normal Cost*** (the value assigned to service being rendered this year)
>
> . . . plus . . .
>
> ***Interest on Unfunded Actuarial Accrued Liabilities*** (the difference between liabilities for service already rendered and the accrued assets of the Retirement System).

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.

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September 2, 2014

Mr. Mark Atkeson, Executive Director
Ohio State Highway Patrol Retirement System
6161 Busch Boulevard, Suite 119
Columbus, Ohio 43229

Dear Mark:

Enclosed are 2 bound copies of the December 31, 2013 actuarial valuation of the Ohio State Highway Patrol Retirement System.

Sincerely,

Mita Drazilov

Mita D. Drazilov, ASA, MAAA

MDD:dks:sac
Enclosures

cc: Kennedy, Cottrell, Richards, LLC
Attn: Mr. Brent Lewis, CPA (+1 report copy)