Gabriel Roeder Smith & Company
Consultants & Actuaries

OHIO STATE HIGHWAY PATROL RETIREMENT SYSTEM

ANNUAL ACTUARIAL VALUATION REPORT

DECEMBER 31, 2012

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GRS
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August 29, 2013

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, 2012** 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 2012 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, 2012 actuarial valuation results, the Board at its August, 2013 meeting voted to (a) implement the following member contribution rate schedule: 10.0% in calendar year 2013, 11.5% for calendar year 2014 and 12.5% for calendar years 2015 and later, and (b) implement the following COLA schedule: 3.0% in calendar year 2013, 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 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, 2012 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	22.85%	3.65%	26.50%
Employee	10.00%	0.00 %	10.00%
Totals	**32.85%**	**3.65%**	**36.50%**

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, 2012 actuarial valuation include:

1. Senate Bill 345 was signed into law September 26, 2012. A brief summary of the plan changes resulting from Senate Bill 345 is presented below:

   a. **Final Average Salary**: A member's *final average salary is the average of salaries during the highest 5 years of service (effective for retirements on or after January 1, 2015).*

   b. **Member Contributions**: Members contribute a percentage (ranging from 10% to 14%) of salary as determined by the Board of Trustees to the employees' savings fund. A member who leaves the employ of the State Highway Patrol before a benefit is payable may withdraw the accumulated contributions, without interest, in lieu of any other system provided benefit. For DROP members, member contributions in excess of 10% of salary go to the retirement system rather than the DROP account.

   c. **Post-Retirement Increases**: The basic benefit for all retirants is increased by a percentage (ranging from 0% to 3%) each year after age 53 (age 60 for members that DROP or retire on or after January 7, 2013). The retirant must have also been receiving monthly benefits for at least twelve months. Benefit recipients receiving survivor benefits prior to January 7, 2013 are eligible for the increase after receiving benefits for twelve months. Benefit recipients receiving disability benefits prior to January 7, 2013 are eligible for the increase after receiving benefits for sixty months or age 53, whichever occurs first. Retirants aged 65 or older whose pension is not greater than 185% of the poverty level for a family of two receive a 3 % increase.

2. 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 2012 was approximately 10.7%. 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 2012 was approximately 9.6%. The funding value of assets currently exceeds the market value of assets by approximately $18 million.

3. Experience in the retiree health plan was slightly favorable this year. Along with the employer contribution rate reallocation and some recognized benefit provision changes (i.e., the assumption that the Medicare Part B reimbursement will not be increased in the future), the projected solvency period improved slightly from the last valuation.

This valuation indicates that a total employer contribution rate of 26.50% with changes that the Board adopted at its August 2013 Board meeting produces a 30-year amortization period for the pension program. The calculations reflect a 3.65% 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 2024. Beyond that date, higher contributions are required to extend the solvency of the fund. The benefit payout rate is approximately 11% of payroll, approximately three times the contribution income. This situation cannot continue indefinitely. **Changes to the retiree health plan and/or further increases in contribution rates will need to be a part of the future.**

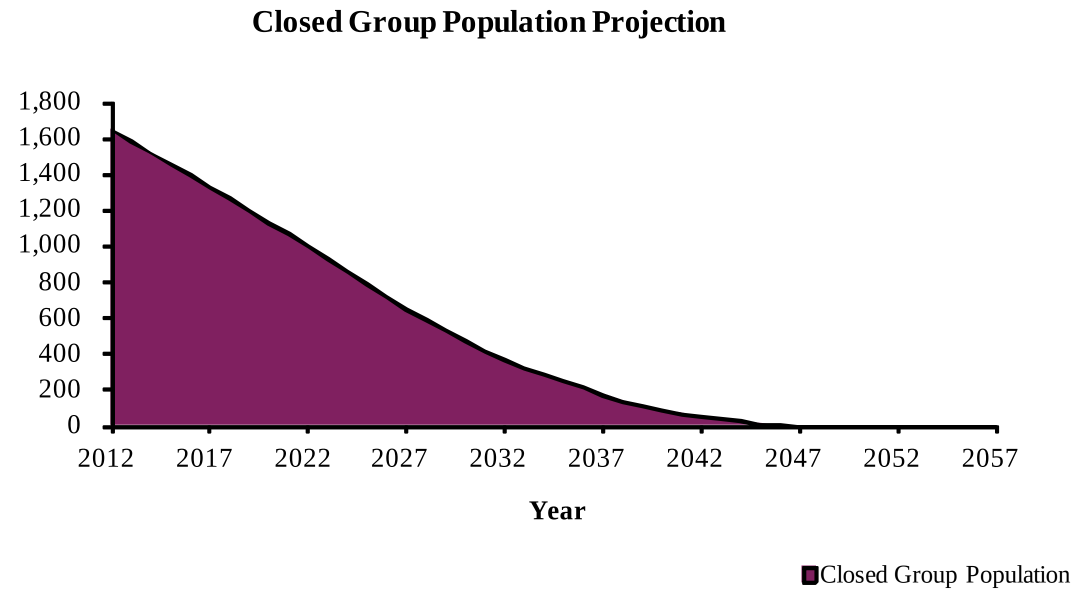
Recommendation: The following reserve transfers are recommended as of December 31, 2012:

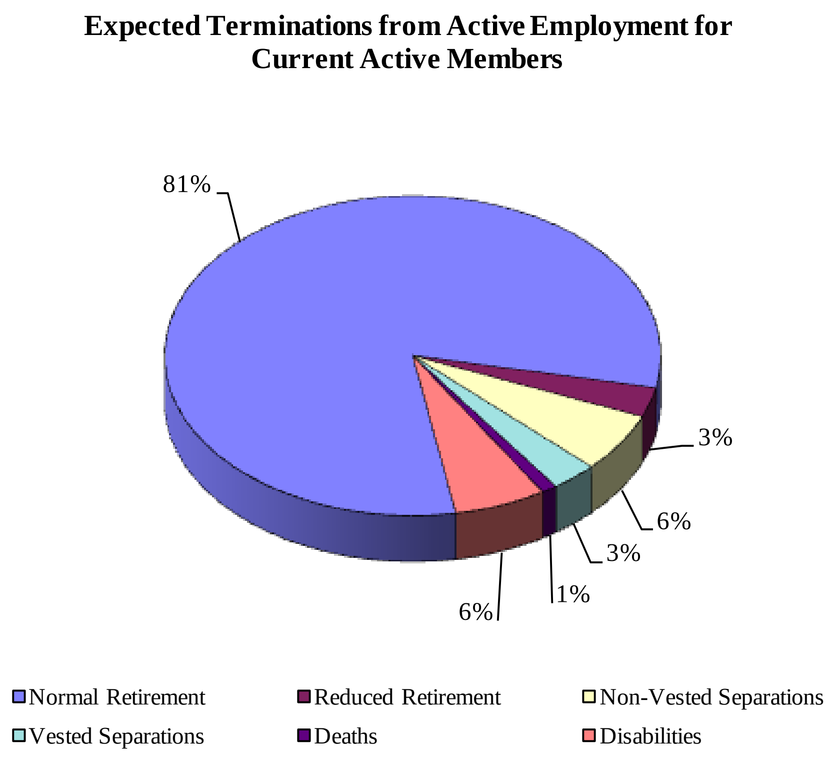
Transfer To (From)	Total Amount
Pension Reserve Fund:	$165,106,801
Survivor Benefit Fund:	(4,029,961)
Total	**$161,076,840**

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, 2013 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, 2012 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 2024 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 2024. 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, 2012





The charts above show the expected future development of the present population in simplified terms. The Retirement System presently covers 1,645 active members. Eventually, 6% of the population is expected to terminate covered employment prior to retirement and forfeit eligibility for an employer provided benefit. 87% 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, 2012

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 $154 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, 2012 valuation, the assumed member contribution rate is 10.0% for 2013, 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.

Post-Retirement Increases: As of December 31, 2012, the basic benefit for all retirants is increased by 3 percent in 2013, 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 1/1/2013). The retirant must have also been receiving monthly benefits for at least twelve months. Benefit recipients receiving survivor benefits are eligible for the increase after receiving benefits for twelve months. Disability members retired prior to 1/1/13 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 (assumed to be 3% for actuarial valuation purposes).

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 Ended December 31	Amount Payable*	
	COLA Beginning at Age 53	COLA Beginning at Age 60
2013	$39,150	$39,150
2014	39,150	39,150
2015	39,150	39,150
2016	39,639	39,150
2017	40,129	39,150
2018	40,618	39,150
2019	41,108	39,150
2020	41,597	39,150
2021	42,086	39,150
2022	42,576	39,150
2023	43,065	39,639

Benefits for years 2024 and later increase by $489.38 over the previous year's amount.

** Cost of Living Adjustment (COLA) is subject to change annually. As of December 31, 2012, the basic benefit for all retirants is increased by 3% in 2013, 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 1/1/2013).*

RETIREMENT SURVIVOR & DISABILITY ALLOWANCES
COMPUTED EMPLOYER CONTRIBUTIONS TO SUPPORT BENEFITS

Contributions for	Contributions Expressed as Percents of Payroll	
Valuation Date - December 31	**2012**	**2011**
Normal Cost:		
Age & Service Benefits	14.03%	17.00%
Disability Benefits	2.37%	2.98%
Survivor Benefits	0.15%	0.20%
Separation Benefits	0.93%	0.87%
Purchase of Military Service	0.75%	0.75%
Total Normal Cost	18.23%	21.80%
Less Member Contributions#	10.00%	10.00%
Employer Normal Cost	8.23%	11.80%
Unfunded Actuarial Accrued Liabilities	14.62%	12.95%
Amortization Period	30	N/A
PENSION EMPLOYER CONTRIBUTION RATE	22.85%	24.75%

 # 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.

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

Retirement, Survivor, & Disability Allowances
Method of Financing Future Benefits for Present Active Members
December 31, 2012

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, $966,310,485, less pension assets of $658,428,914 resulted in unfunded actuarial accrued liabilities of $307,881,571, 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 an Inflation 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		UAAL as % of Payroll
			Dollars	% of Payroll	
1	$ 102,042	$ 307,882	$ 17,470	17.12%	301.7%
2	106,124	314,358	18,168	17.12%	296.2%
3	110,369	320,625	18,895	17.12%	290.5%
4	114,784	326,639	19,651	17.12%	284.6%
5	119,375	332,348	20,437	17.12%	278.4%
6	124,150	337,697	21,254	17.12%	272.0%
7	129,116	342,624	22,105	17.12%	265.4%
8	134,281	347,062	22,989	17.12%	258.5%
9	139,652	350,936	23,908	17.12%	251.3%
10	145,238	354,165	24,865	17.12%	243.9%
11	151,048	356,658	25,859	17.12%	236.1%
12	157,090	358,317	26,894	17.12%	228.1%
13	163,374	359,033	27,970	17.12%	219.8%
14	169,909	358,689	29,088	17.12%	211.1%
15	176,705	357,155	30,252	17.12%	202.1%
16	183,773	354,289	31,462	17.12%	192.8%
17	191,124	349,936	32,720	17.12%	183.1%
18	198,769	343,927	34,029	17.12%	173.0%
19	206,720	336,077	35,390	17.12%	162.6%
20	214,989	326,184	36,806	17.12%	151.7%
21	223,589	314,029	38,278	17.12%	140.4%
22	232,533	299,371	39,810	17.12%	128.7%
23	241,834	281,949	41,402	17.12%	116.6%
24	251,507	261,479	43,058	17.12%	104.0%
25	261,567	237,650	44,780	17.12%	90.9%
26	272,030	210,125	46,572	17.12%	77.2%
27	282,911	178,536	48,434	17.12%	63.1%
28	294,227	142,484	50,372	17.12%	48.4%
29	305,996	101,535	52,387	17.12%	33.2%
30	318,236	55,216	54,482	17.12%	17.4%

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, 2012

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	1,106	3,805,277	502,844,911
Disability Retirements Effective After 1/1/66	128	337,174	48,512,457
Total Benefits Payable from Pension Reserve Fund	1,234	4,142,451	551,357,368
From Survivor Benefit Fund:			
Surviving Spouses, Dependent Children & Dependent Parents	263	328,091	31,405,751
Total Benefits Payable from Survivor Benefit Fund	263	328,091	31,405,751
Total Retirement Benefits Payable	1,497	4,470,542	582,763,119
Total Vested Deferred Benefits Payable	14	34,112	3,547,987
Grand Total	**1,511**	**$4,504,654**	**$586,311,106**

RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES
DEVELOPMENT OF ACTUARIAL ACCRUED LIABILITIES
DECEMBER 31, 2012

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	$ 519,504,574	$ 144,424,099	$ 375,080,475
Disability allowances likely to be paid to present active members who become totally and permanently disabled	28,855,779	23,257,956	5,597,823
Survivor benefits likely to be paid to spouses and children of present active members who die before retiring	2,501,814	1,442,567	1,059,247
Separation benefits (refunds of contributions and deferred allowances likely to be paid on behalf of present active members)	7,111,182	8,849,348	(1,738,166)
Retirement benefits likely to be paid to current retirants and beneficiaries and to present inactive members	586,311,106	0	586,311,106
Total	$ 1,144,284,455	$ 177,973,970	$ 966,310,485
Member portion	235,254,000	121,701,354	113,552,646
Employer portion	$ 909,030,455	$ 56,272,616	$ 852,757,839

RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES
SUMMARY STATEMENT OF SYSTEM RESOURCES AND OBLIGATIONS
DECEMBER 31, 2012

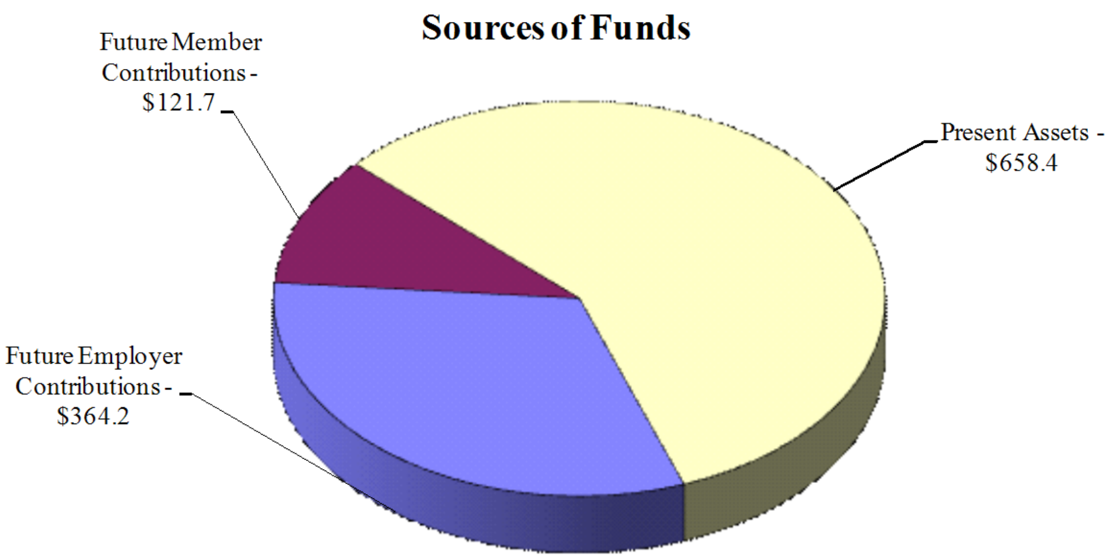
PRESENT RESOURCES AND EXPECTED FUTURE RESOURCES

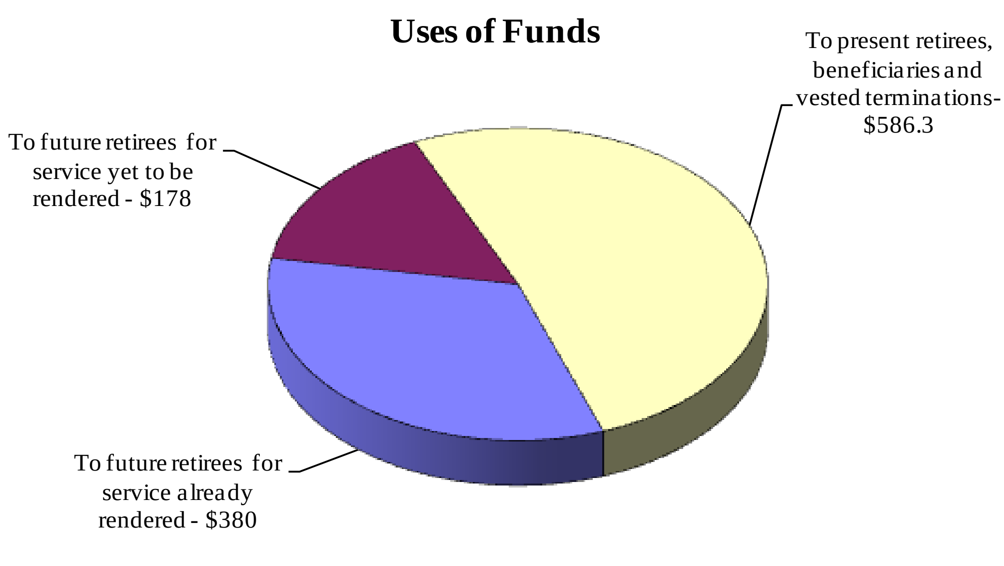
A. Present valuation assets		
1. Net assets from system financial statements	$ 740,068,595	
2. Market value adjustment	18,177,492	
3. Health assets	99,817,173	
4. Valuation assets: 1 + 2 - 3		$ 658,428,914
B. Actuarial present value of expected future employer contributions		
1. For normal costs	56,272,616	
2. For unfunded actuarial accrued liability	307,881,571	
3. Total		364,154,187
C. Actuarial present value of expected future member contributions		121,701,354
D. Total Present and Expected Future Resources		$ 1,144,284,455

ACTUARIAL PRESENT VALUE OF EXPECTED FUTURE BENEFIT PAYMENTS

A. To retirants and beneficiaries	$ 582,763,119
B. To terminated members	3,547,987
C. To present active members	
1. Allocated to service rendered prior to valuation date (actuarial accrued liability)	379,999,379
2. Allocated to service likely to be rendered after valuation date	177,973,970
3. Total	557,973,349
D. Total Actuarial Present Value of Expected Future Benefit Payments	$ 1,144,284,455

RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES
FINANCING $1,144.3 MILLION OF BENEFIT PROMISES
DECEMBER 31, 2012





RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES
COMPARATIVE STATEMENT

Valuation Date December 31	No.	Annual Payroll	Actuarial Accrued Liabilities			Unfunded/ Payroll	% Funded	Funding Years
			Total	Funded	Unfunded			
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**	**1,083,796,877**	**658,428,914**	**425,367,963**	**4.3**	**60.8%**	**N/A**
2012 *	**1,645**	**98,117,403**	**966,310,485**	**658,428,914**	**307,881,571**	**3.1**	**68.1%**	**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
1998	1,446	$65,153,864	$45,058	4.6%	5.2%	3.4%
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)%	3.9% *	1.7%
		10 Year Average		1.6%	3.0%	2.4%

+ *National Average Earnings published by the Social Security Administration.*
* *Estimated National Average Earnings published by the Social Security Administration.*

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.

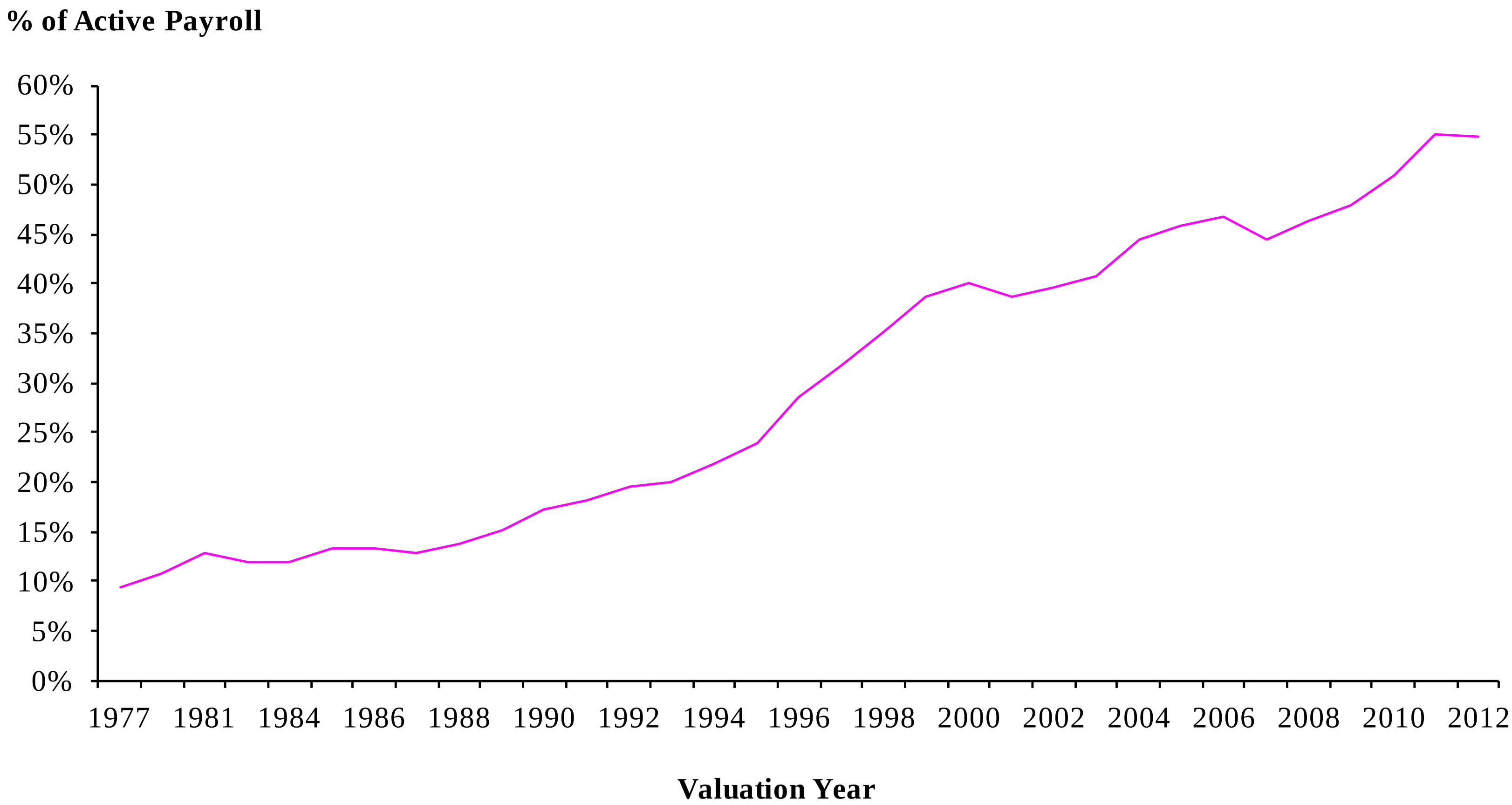
RETIREMENT, SURVIVOR, AND DISABILITY BENEFITS IN PAY STATUS
COMPARATIVE STATEMENT

Valuation Date December 31	Number of People	Monthly Pensions	Active Payroll	Average Amount	% of Active Member Pays
1981 *	445	$ 250,287	$ 23,539,234	$ 562	12.8%
1983	488	299,519	30,234,935	614	11.9%
1984	504	319,789	32,020,914	635	12.0%
1985 #	530	359,208	32,500,428	678	13.3%
1986	544	382,419	34,757,277	703	13.2%
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%**

* *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, 2012



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**	**643,447,822**	**332,037,118**	**658,428,914**	**100%**	**85%**	**0%**
2012 *	**108,311,937**	**586,311,106**	**271,687,442**	**658,428,914**	**100%**	**94%**	**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	**1,083,796,877**	**658,428,914**	**425,367,963**	**60.8%**	**98,117,403**	**433.5%**
2012 *	**966,310,485**	**658,428,914**	**307,881,571**	**68.1%**	**98,117,403**	**313.8%**

* *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%**

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 purposes of Governmental Accounting Standards Board (GASB) Statement No. 25, the System's Annual Required Contribution for the plan year December 31, 2013 will be ½ of the employer contribution for the period from July 1, 2012 to June 30, 2013 (34.0% of payroll, based upon an amortization period of 30 years) plus ½ of the employer contribution for the period from July 1, 2013 to June 30, 2014 (36.68% of payroll, based upon an amortization period of 30 years).

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, 2012
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, 2012, 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	$ 108,311,937
Employer - financed vested	178,758,416
Employer - financed non-vested	36,812,657

As of December 31, 2012, there were 679 vested active members and 966 non-vested active members.

SECTION B

POST-RETIREMENT HEALTH CARE AND MEDICARE REIMBURSEMENT

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

Benefits Provided

Since July 1, 1974, the Retirement System has made Health Care available for every benefit recipient and eligible dependent under a hospitalization and health care policy administered by Aetna 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 2013 applicable to retirees without Medicare A & B is $49 per month and $11 for retirees with Medicare A & B. The premium for 2013 applicable to spouses without Medicare A & B is $107 per month and $16 for spouses with Medicare A & B. The dependent child premium is $30 for each child. For retirements on or after January 1, 2015, member premium amounts will be based upon a percentage scale with percentages based on a points system.

Basic Plan coverage provides for payment of 100% 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 Premiums: 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. For calendar year 2013, the reimbursement amount is $96.40 monthly.

Dental/Vision: Premiums for benefit recipients are deducted from benefit payments.

POST-RETIREMENT HEALTH CARE AND MEDICARE REIMBURSEMENT

Year	Covered Lives	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
		Amounts Paid to Vendors (Including Medicare Part B)											
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%**

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


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

Development of Health Care Rates: Based on the 2012 retired life data, the HPRS portion of the total health care rates was developed as follows:

		Age/Gender Weighted HPRS Monthly Rates			
		This Year			Prior Year
		Gross Rate	**Member Paid**	**Net Rate**	**Net Rate**
A.	One person without Medicare	$531.01	$49.00	$482.01	$448.16
B.	One person with Medicare*	193.04	11.00	182.04	165.86
C.	Two persons without Medicare	1,062.02	156.00	906.02	838.32
D.	Two persons with Medicare*	386.08	27.00	359.08	326.72
E.	Child	126.99	30.00	96.99	82.14
F.	Medicare Part B Reimbursement	96.40	0.00	96.40	96.40

** Does not include Medicare Part B monthly premium of $96.40. 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-6 for age specific rates used for valuation purposes. Employment related primary coverage 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

	Gross Rate			Gross Rate			Gross Rate	
Age	**Male**	**Female**	**Age**	**Male**	**Female**	**Age**	**Male**	**Female**
16	$ 134.91	$ 210.48	51	$ 369.56	$ 408.59	86	$ 380.76	$ 334.03
17	136.26	212.58	52	394.37	426.69	87	382.49	334.68
18	137.63	214.71	53	419.92	445.92	88	382.49	334.68
19	139.00	216.86	54	446.41	465.99	89	382.49	334.68
20	140.39	219.02	55	473.79	486.89	90	382.49	334.68
21	141.80	221.21	56	502.01	508.57	91	382.49	334.68
22	143.21	223.43	57	531.01	531.01	92	382.49	334.68
23	144.65	225.66	58	558.75	550.82	93	382.49	334.68
24	146.09	227.92	59	586.89	571.04	94	382.49	334.68
25	147.55	230.20	60	615.37	591.62	95	382.49	334.68
26	149.03	232.50	61	644.10	612.49	96	382.49	334.68
27	150.52	234.82	62	672.99	633.60	97	382.49	334.68
28	152.03	237.17	63	701.58	655.25	98	382.49	334.68
29	153.55	239.54	64	730.15	677.03	99	382.49	334.68
30	155.08	241.94	65	265.41	244.41	100	382.49	334.68
31	156.63	244.36	66	273.98	250.82	101	382.49	334.68
32	158.20	246.80	67	282.36	257.14	102	382.49	334.68
33	159.78	249.27	68	290.53	263.34	103	382.49	334.68
34	161.38	251.76	69	298.47	269.39	104	382.49	334.68
35	162.99	254.28	70	306.15	275.29	105	382.49	334.68
36	164.62	256.82	71	313.54	281.00	106	382.49	334.68
37	166.27	259.39	72	320.63	286.51	107	382.49	334.68
38	167.93	261.99	73	327.39	291.80	108	382.49	334.68
39	169.61	264.61	74	333.81	296.84	109	382.49	334.68
40	171.31	267.25	75	339.88	301.63	110	382.49	334.68
41	183.49	275.89	76	345.57	306.15	111	382.49	334.68
42	196.83	285.30	77	350.88	310.38	112	382.49	334.68
43	211.34	295.52	78	355.79	314.31	113	382.49	334.68
44	227.03	306.58	79	360.31	317.92	114	382.49	334.68
45	243.90	318.50	80	364.42	321.22	115	382.49	334.68
46	261.96	331.29	81	368.12	324.19	116	382.49	334.68
47	281.20	344.97	82	371.43	326.83	117	382.49	334.68
48	301.60	359.54	83	374.34	329.13	118	382.49	334.68
49	323.14	375.00	84	376.85	331.10	119	382.49	334.68
50	345.81	391.35	85	378.99	332.73	120	382.49	334.68

ASSUMPTIONS FOR HEALTH CARE COVERAGES
DECEMBER 31, 2012
(CONCLUDED)

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-9.

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-9.

POST-RETIREMENT HEALTH PREMIUM AND MEDICARE REIMBURSEMENT SELECTION OF ASSUMPTIONS DECEMBER 31, 2012

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, 2012 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, 2012

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.

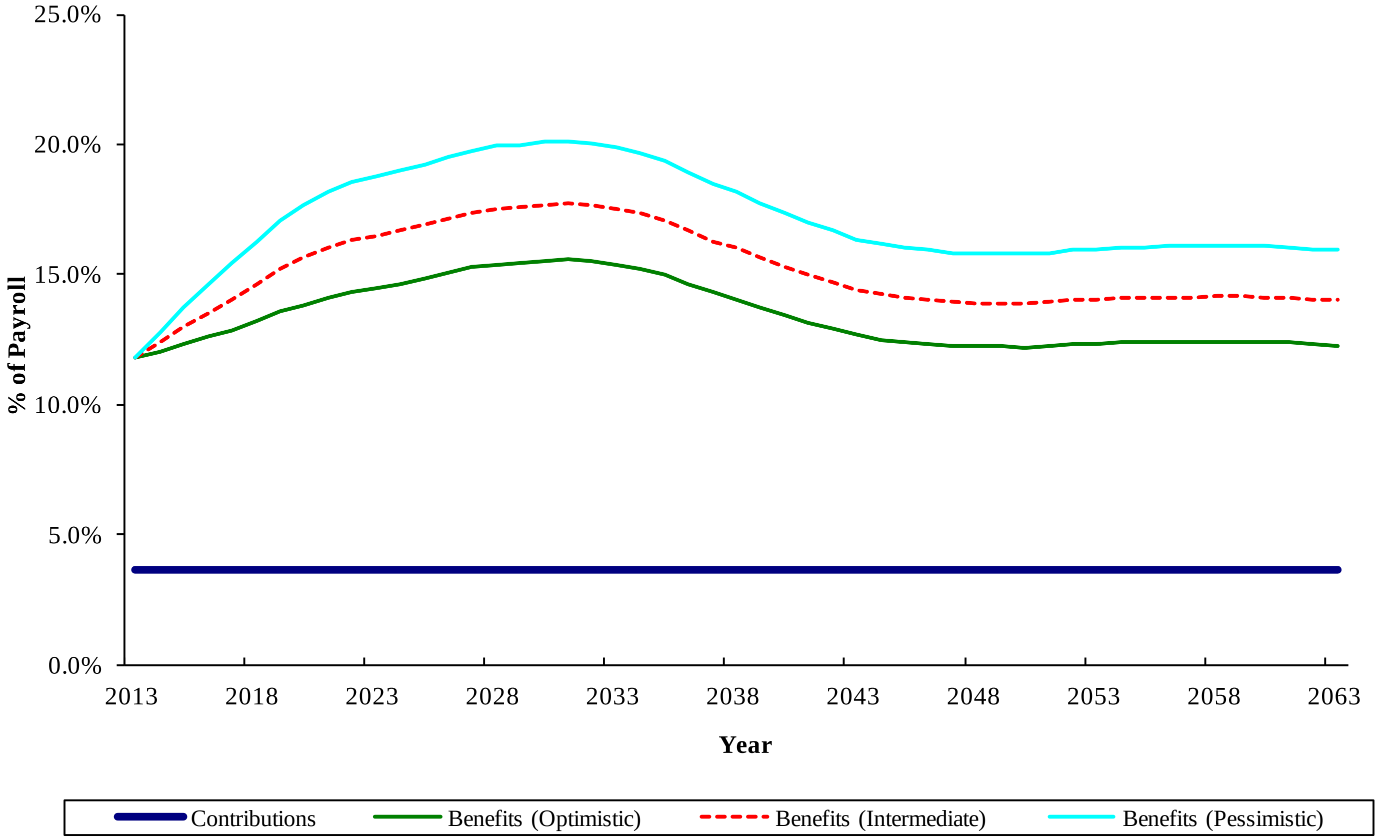
Alternate C (Pessimistic): This scenario envisions poorer experience than the other two.

	Health Trend Assumption			
	Medical and Prescription Drug			Medicare
Year	Alt. A Optimistic	Alt. B Intermediate	Alt. C Pessimistic	Part B
2013				
2014	6.00%	9.00%	12.00%	0.00%
2015	5.75%	8.25%	11.00%	0.00%
2016	5.50%	7.50%	10.00%	0.00%
2017	5.25%	7.00%	9.00%	0.00%
2018	5.00%	6.50%	8.00%	0.00%
2019	4.75%	6.00%	7.00%	0.00%
2020	4.50%	5.50%	6.25%	0.00%
2021	4.25%	5.00%	5.50%	0.00%
2022	4.00%	4.50%	4.75%	0.00%
2023	4.00%	4.00%	4.00%	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 & Later	4.00%	4.00%	4.00%	0.00%

POST-RETIREMENT HEALTH CARE AND MEDICARE REIMBURSEMENT
PROJECTED BENEFITS
DECEMBER 31, 2012

	Projected Benefits as a % of Payroll		
Year Ended 12/31	Alt. A Optimistic	Alt. B Intermediate	Alt. C Pessimistic
2013	11.8%	11.8%	11.8%
2014	12.0%	12.4%	12.7%
2015	12.3%	13.0%	13.7%
2016	12.6%	13.5%	14.6%
2017	12.8%	14.0%	15.4%
2018	13.2%	14.6%	16.3%
2019	13.6%	15.2%	17.1%
2020	13.8%	15.6%	17.7%
2021	14.1%	16.0%	18.2%
2022	14.3%	16.3%	18.6%
2027	15.3%	17.4%	19.8%
2032	15.5%	17.7%	20.1%
2037	14.3%	16.3%	18.5%
2042	12.9%	14.7%	16.7%
2047	12.2%	13.9%	15.8%
2052	12.3%	14.0%	15.9%
2057	12.4%	14.1%	16.1%
2062	12.3%	14.0%	16.0%

CONTRIBUTIONS VS. BENEFIT PAYOUTS



POST-RETIREMENT HEALTH CARE AND MEDICARE REIMBURSEMENT GASB 43/45 REPORTING ALTERNATIVE B: INTERMEDIATE HEALTH TREND

Determination of the Annual Required Contribution for the Period July 1, 2013 to June 30, 2014	Contributions Expressed as Percents of Payroll
Normal Cost	10.53%
UAL Payment (30 year amortization)	11.94%
Total (Annual Required Contribution)	**22.47%**
Current Employer Contribution Rate Allocation	3.65%

Accrued Health and Medicare Reimbursement Liabilities, $411,467,825 were more than applicable assets of $99,817,173.

The calculations above show the employer's annual required contribution (ARC) for the year ended June 30, 2014. The System's ARC for the year ended December 31, 2013 will be ½ of 26.00% and ½ of the 22.47% shown above.

GASB STATEMENTS 43/45 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, 2012
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, 2012

Optimistic, Intermediate and Pessimistic assumption sets were described on page B-9. For each assumption set, two 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 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 (Employer Rate Allocation)		**Funding Level 2 (Lowest Employer Rate to Maintain Solvency of Fund Indefinitely)**		
Assumption Set	**%**	**Fund Solvent Until**	**%**	**Fund Solvent Until**	**Prior Valuation %**
A (Optimistic)	3.65%	2025	9.60%	Indefinitely	11.00%
B (Intermediate)	3.65%	2024	11.20%	Indefinitely	12.80%
C (Pessimistic)	3.65%	2023	13.00%	Indefinitely	14.80%

The above results show that:

- Under the optimistic 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 9.60% of payroll if the increase were made today.

- Under the intermediate assumptions, the employer rate will need to be raised prior to 2024 in order to maintain the solvency of the fund. The ultimate rate needed to support the plan would be 11.20% of payroll if the increase were made today.

- Under the pessimistic assumptions, the employer rate will need to be raised prior to 2023 in order to maintain the solvency of the fund. The ultimate rate needed to support the plan would be 13.00% 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 and 2.

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		% of Payroll	
							Nominal $	Real $	Contrib.	Benefits
2013	$99,817	$3,726	$ 12,016	$ (8,290)	8.00%	$7,658	$99,185	$99,185	3.65%	11.77%
2014	99,185	3,875	12,784	(8,909)	8.00%	7,583	97,859	94,095	3.65%	12.04%
2015	97,859	4,027	13,614	(9,587)	8.00%	7,450	95,722	88,500	3.65%	12.34%
2016	95,722	4,183	14,415	(10,232)	8.00%	7,254	92,744	82,449	3.65%	12.58%
2017	92,744	4,342	15,259	(10,917)	8.00%	6,988	88,815	75,919	3.65%	12.83%
2018	88,815	4,503	16,260	(11,757)	8.00%	6,641	83,699	68,794	3.65%	13.18%
2019	83,699	4,669	17,361	(12,692)	8.00%	6,195	77,202	61,014	3.65%	13.57%
2020	77,202	4,843	18,348	(13,505)	8.00%	5,643	69,340	52,693	3.65%	13.83%
2021	69,340	5,027	19,380	(14,353)	8.00%	4,980	59,967	43,817	3.65%	14.07%
2022	59,967	5,216	20,429	(15,213)	8.00%	4,197	48,951	34,392	3.65%	14.30%
2023	48,951	5,409	21,433	(16,024)	8.00%	3,283	36,210	24,462	3.65%	14.46%
2024	36,210	5,611	22,475	(16,864)	8.00%	2,231	21,577	14,016	3.65%	14.62%
2025	21,577	5,822	23,628	(17,806)	8.00%	1,023	4,794	2,994	3.65%	14.81%

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
OPTIMISTIC ASSUMPTIONS: A
FUNDING LEVEL 2
($ In Thousands)

Fiscal Year	Fund Balance BOY	Contributions	Benefits	Net	Investment Return %	Investment Return $	Fund Balance EOY		% of Payroll	
							Nominal $	Real $	Contrib.	Benefits
2013	$ 99,817	$ 9,799	$ 12,016	$ (2,217)	8.00%	$ 7,898	$ 105,498	$105,498	9.60%	11.77%
2014	105,498	10,193	12,784	(2,591)	8.00%	8,338	111,245	106,966	9.60%	12.04%
2015	111,245	10,593	13,614	(3,021)	8.00%	8,780	117,004	108,177	9.60%	12.34%
2016	117,004	11,002	14,415	(3,413)	8.00%	9,226	122,817	109,184	9.60%	12.58%
2017	122,817	11,420	15,259	(3,839)	8.00%	9,674	128,652	109,972	9.60%	12.83%
2018	128,652	11,844	16,260	(4,416)	8.00%	10,118	134,354	110,429	9.60%	13.18%
2019	134,354	12,281	17,361	(5,080)	8.00%	10,548	139,822	110,503	9.60%	13.57%
2020	139,822	12,738	18,348	(5,610)	8.00%	10,964	145,176	110,322	9.60%	13.83%
2021	145,176	13,221	19,380	(6,159)	8.00%	11,371	150,388	109,887	9.60%	14.07%
2022	150,388	13,718	20,429	(6,711)	8.00%	11,766	155,443	109,212	9.60%	14.30%
2027	173,999	16,517	26,238	(9,721)	8.00%	13,536	177,814	102,683	9.60%	15.25%
2032	189,769	20,252	32,712	(12,460)	8.00%	14,690	191,999	91,131	9.60%	15.51%
2037	201,235	25,152	37,473	(12,321)	8.00%	15,612	204,526	79,790	9.60%	14.30%
2042	223,720	31,147	41,817	(10,670)	8.00%	17,476	230,526	73,918	9.60%	12.89%
2047	265,403	38,139	48,581	(10,442)	8.00%	20,820	275,781	72,683	9.60%	12.23%
2052	321,836	46,355	59,339	(12,984)	8.00%	25,234	334,086	72,370	9.60%	12.29%
2057	385,975	56,284	72,662	(16,378)	8.00%	30,231	399,828	71,188	9.60%	12.39%
2062	459,856	68,516	87,877	(19,361)	8.00%	36,024	476,519	69,734	9.60%	12.31%
2072	687,753	101,699	123,080	(21,381)	8.00%	54,176	720,548	71,235	9.60%	11.62%
2082	1,109,876	150,319	184,222	(33,903)	8.00%	87,451	1,163,424	77,703	9.60%	11.77%
2092	1,766,914	222,427	276,233	(53,806)	8.00%	139,228	1,852,336	83,577	9.60%	11.92%
2102	2,906,561	329,627	401,109	(71,482)	8.00%	229,702	3,064,781	93,418	9.60%	11.68%
2112	5,013,812	487,575	596,592	(109,017)	8.00%	396,800	5,301,595	109,171	9.60%	11.75%

Funding Level 2 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
2013	$99,817	$3,726	$ 12,016	$ (8,292)	8.00%	$7,658	$99,183	$99,183	3.65%	11.77%
2014	99,183	3,875	13,159	(9,284)	8.00%	7,568	97,467	93,718	3.65%	12.39%
2015	97,467	4,027	14,350	(10,323)	8.00%	7,390	94,534	87,402	3.65%	13.01%
2016	94,534	4,183	15,485	(11,302)	8.00%	7,116	90,348	80,319	3.65%	13.51%
2017	90,348	4,342	16,663	(12,321)	8.00%	6,741	84,768	72,460	3.65%	14.01%
2018	84,768	4,503	18,000	(13,497)	8.00%	6,248	77,519	63,715	3.65%	14.59%
2019	77,519	4,669	19,438	(14,769)	8.00%	5,618	68,368	54,032	3.65%	15.19%
2020	68,368	4,843	20,723	(15,880)	8.00%	4,842	57,330	43,566	3.65%	15.62%
2021	57,330	5,027	22,031	(17,004)	8.00%	3,915	44,241	32,326	3.65%	16.00%
2022	44,241	5,216	23,316	(18,100)	8.00%	2,825	28,966	20,351	3.65%	16.32%
2023	28,966	5,409	24,454	(19,045)	8.00%	1,565	11,486	7,760	3.65%	16.50%
2024	11,486	5,611	25,629	(20,018)	8.00%	128	(8,404)	(5,459)	3.65%	16.67%

Funding Level 1 is the present contribution rate for post-retirement Health Care and Medicare reimbursement. The fund remains solvent until 2024 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
2013	$ 99,817	$ 11,432	$ 12,016	$(586)	8.00%	$ 7,962	$ 107,193	$107,193	11.20%	11.77%
2014	107,193	11,892	13,159	(1,267)	8.00%	8,525	114,451	110,049	11.20%	12.39%
2015	114,451	12,358	14,350	(1,992)	8.00%	9,077	121,536	112,367	11.20%	13.01%
2016	121,536	12,835	15,485	(2,650)	8.00%	9,618	128,504	114,240	11.20%	13.51%
2017	128,504	13,323	16,663	(3,340)	8.00%	10,148	135,312	115,665	11.20%	14.01%
2018	135,312	13,818	18,000	(4,182)	8.00%	10,660	141,790	116,541	11.20%	14.59%
2019	141,790	14,328	19,438	(5,110)	8.00%	11,141	147,821	116,825	11.20%	15.19%
2020	147,821	14,861	20,723	(5,862)	8.00%	11,594	153,553	116,688	11.20%	15.62%
2021	153,553	15,424	22,031	(6,607)	8.00%	12,023	158,969	116,157	11.20%	16.00%
2022	158,969	16,004	23,316	(7,312)	8.00%	12,429	164,086	115,285	11.20%	16.32%
2027	182,365	19,270	29,894	(10,624)	8.00%	14,170	185,911	107,359	11.20%	17.38%
2032	195,906	23,627	37,251	(13,624)	8.00%	15,135	197,417	93,702	11.20%	17.66%
2037	203,266	29,345	42,651	(13,306)	8.00%	15,736	205,696	80,246	11.20%	16.28%
2042	221,516	36,338	47,592	(11,254)	8.00%	17,277	227,539	72,961	11.20%	14.67%
2047	259,248	44,496	55,313	(10,817)	8.00%	20,313	268,744	70,828	11.20%	13.92%
2052	310,269	54,081	67,618	(13,537)	8.00%	24,287	321,019	69,539	11.20%	14.00%
2057	364,993	65,664	82,853	(17,189)	8.00%	28,521	376,325	67,003	11.20%	14.13%
2062	423,633	79,935	100,252	(20,317)	8.00%	33,088	436,404	63,864	11.20%	14.05%
2072	597,375	118,649	140,501	(21,852)	8.00%	46,927	622,450	61,537	11.20%	13.26%
2082	906,150	175,372	210,412	(35,040)	8.00%	71,108	942,218	62,929	11.20%	13.44%
2092	1,301,903	259,498	315,623	(56,125)	8.00%	101,936	1,347,714	60,808	11.20%	13.62%
2102	1,867,057	384,565	458,412	(73,847)	8.00%	146,449	1,939,659	59,123	11.20%	13.35%
2112	2,727,169	568,838	681,938	(113,100)	8.00%	213,708	2,827,777	58,230	11.20%	13.43%

Funding Level 2 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
2013	$99,817	$3,726	$ 12,016	$ (8,294)	8.00%	$7,658	$99,181	$99,181	3.65%	11.78%
2014	99,181	3,875	13,534	(9,659)	8.00%	7,553	97,075	93,341	3.65%	12.75%
2015	97,075	4,027	15,141	(11,114)	8.00%	7,327	93,288	86,250	3.65%	13.72%
2016	93,288	4,183	16,721	(12,538)	8.00%	6,968	87,718	77,981	3.65%	14.59%
2017	87,718	4,342	18,328	(13,986)	8.00%	6,465	80,197	68,553	3.65%	15.41%
2018	80,197	4,503	20,064	(15,561)	8.00%	5,801	70,437	57,894	3.65%	16.26%
2019	70,437	4,669	21,860	(17,191)	8.00%	4,956	58,202	45,998	3.65%	17.09%
2020	58,202	4,843	23,455	(18,612)	8.00%	3,921	43,511	33,065	3.65%	17.68%
2021	43,511	5,027	25,039	(20,012)	8.00%	2,691	26,190	19,137	3.65%	18.18%
2022	26,190	5,216	26,548	(21,332)	8.00%	1,253	6,111	4,294	3.65%	18.58%
2023	6,111	5,409	27,833	(22,424)	8.00%	(397)	(16,710)	(11,289)	3.65%	18.78%

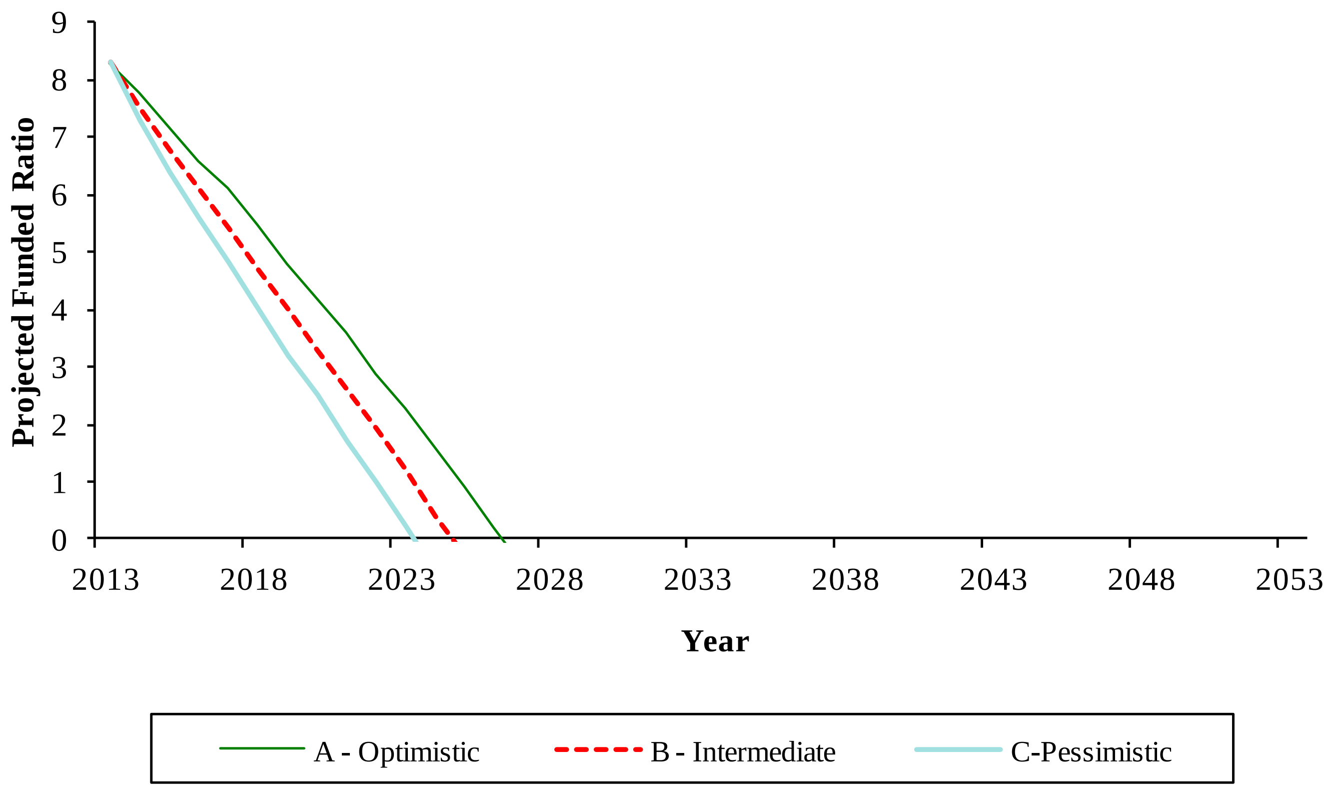
Funding Level 1 is the present contribution rate for post-retirement Health Care and Medicare reimbursement. The fund remains solvent until 2023 in this projection.

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
2013	$ 99,817	$ 13,269	$ 12,016	$ 1,249	8.00%	$ 8,035	$ 109,101	$ 109,101	13.00%	11.78%
2014	109,101	13,803	13,534	269	8.00%	8,739	118,109	113,566	13.00%	12.75%
2015	118,109	14,344	15,141	(797)	8.00%	9,417	126,729	117,168	13.00%	13.72%
2016	126,729	14,898	16,721	(1,823)	8.00%	10,066	134,972	119,990	13.00%	14.59%
2017	134,972	15,464	18,328	(2,864)	8.00%	10,685	142,793	122,060	13.00%	15.41%
2018	142,793	16,039	20,064	(4,025)	8.00%	11,265	150,033	123,316	13.00%	16.26%
2019	150,033	16,631	21,860	(5,229)	8.00%	11,796	156,600	123,763	13.00%	17.09%
2020	156,600	17,250	23,455	(6,205)	8.00%	12,283	162,678	123,622	13.00%	17.68%
2021	162,678	17,903	25,039	(7,136)	8.00%	12,732	168,274	122,956	13.00%	18.18%
2022	168,274	18,577	26,548	(7,971)	8.00%	13,147	173,450	121,864	13.00%	18.58%
2027	191,384	22,367	33,985	(11,618)	8.00%	14,852	194,618	112,387	13.00%	19.75%
2032	202,382	27,424	42,328	(14,904)	8.00%	15,602	203,080	96,390	13.00%	20.06%
2037	205,109	34,061	48,443	(14,382)	8.00%	15,841	206,568	80,587	13.00%	18.49%
2042	218,592	42,178	54,052	(11,874)	8.00%	17,018	223,736	71,741	13.00%	16.66%
2047	251,903	51,647	62,843	(11,196)	8.00%	19,710	260,417	68,633	13.00%	15.82%
2052	296,929	62,772	76,879	(14,107)	8.00%	23,197	306,019	66,290	13.00%	15.92%
2057	341,253	76,218	94,252	(18,034)	8.00%	26,588	349,807	62,282	13.00%	16.08%
2062	383,112	92,782	114,095	(21,313)	8.00%	29,807	391,606	57,308	13.00%	15.99%
2072	497,558	137,717	159,988	(22,271)	8.00%	38,925	514,212	50,836	13.00%	15.10%
2082	682,925	203,557	239,710	(36,153)	8.00%	53,206	699,978	46,750	13.00%	15.31%
2092	794,614	301,203	359,686	(58,483)	8.00%	61,260	797,391	35,978	13.00%	15.52%
2102	736,223	446,370	522,513	(76,143)	8.00%	55,891	715,971	21,824	13.00%	15.22%
2112	244,486	660,258	777,410	(117,152)	8.00%	14,933	142,267	2,930	13.00%	15.31%

Funding Level 2 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
3.65% EMPLOYER CONTRIBUTION RATE
DECEMBER 31, 2012



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%**

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, 2012 TO DECEMBER 31, 2012

Unfunded Accrued Liabilities (UAL), January 1	$424,339,565
Normal Cost	20,817,169
Contributions	33,587,455
Interest	33,436,354
Expected UAL Before Any Changes	445,005,633
Effect of Changes in Assumptions and Benefits	(117,486,392)
Expected UAL After All Changes	327,519,241
Actual UAL	307,881,571
Gain/(Loss) for Year from Financial Experience	**$19,637,669**

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, 2012 AND 2011

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 2012	2011
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.	**$ (173,926)**	$ (209,554)
Disability Retirements. If disability claims are less than assumed, there is a gain. If more claims, a loss.	**142,398**	806,119
Death-in-Service Benefits. If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	**67,718**	61,822
Withdrawal From Employment. If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	**722,990**	2,302,510
Pay Increases. If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	**9,912,757**	10,098,393
Investment Income. If there is greater investment return on pension assets than assumed, there is a gain. If less return, a loss.	**9,850,905**	(30,337,072)
Other. Miscellaneous gains and losses resulting from data adjustments, timing of financial transactions, valuation methods, etc.	**(885,173)**	357,554
Gain (or Loss) During Year From Experience	**$ 19,637,669**	$ (16,920,228)
Non-Recurring Items (Effect of Benefit/Assumption Changes)	**117,486,392**	0
Composite Gain (or Loss) During Year	**$ 137,124,061**	$ (16,920,228)

INVESTMENT GAIN (LOSS)
DEVELOPMENT OF PORTION ATTRIBUTABLE TO RETIREMENT, SURVIVOR AND DISABILITY ALLOWANCES
JANUARY 1, 2012 TO DECEMBER 31, 2012

Assets, Beginning of Year	$623,360,121
Net Cash Flow	(23,702,809)
Assumed Investment Return	48,920,697
Expected Assets End of Year	$648,578,009
Actual Assets End of Year	658,428,914
Gain/(Loss) for Year	**$9,850,905**

The total investment gain (loss) was $11,557,609, including the gain (loss) on health assets.

ACTIVE MEMBER POPULATION RECONCILIATION
JANUARY 1, 2012 TO DECEMBER 31, 2012

	Actual	Expected
Active Members Beginning of Year	1,520	
Plus New Hires	203	
Minus Retirements	37	38.8
Minus Deaths	1	1.0
Minus Disabilities	10	7.2
Minus Other Terminations*	31	16.9
Returned to Active Status	1	
Plus or Minus Data Correction	0	
Active Members End of Year	**1,645**	

** Includes 2 members who took a leave of absence and 0 members who transferred out of the System.*

SECTION D

FINANCIAL INFORMATION

CURRENT ASSET INFORMATION FURNISHED FOR THE VALUATION DECEMBER 31, 2012

Balance Sheet

Current Assets (Market Value)		Fund Balance	
Cash & Short-Term Investments	$ 12,422,651	Employees' Savings Fund	$ 113,552,646
Fixed Income	162,135,937	Employer Accumulation Fund	182,628,754
Stocks	395,084,250	Pension Reserve Fund	386,250,566
Real Estate	30,911,227	Survivors Benefit Fund	35,435,712
Alternatives	138,530,832	Health Care Fund	97,424,712
Other Short-Term	69,736	Income Fund	(97,424,712)
Accruals & Receivables	(21,286,955)		
Total Current Assets	**$ 717,867,678**	**Total Fund Balance**	**$ 717,867,678**

Revenues and Expenditures

	Year Ended December 31,	
	2012	**2011**
Net Assets Held in Trust for Pension and Postemployment Health Care Benefits	$679,404,486	$734,282,707
DROP Liabilities	19,853,482	20,226,941
Total	699,257,968	754,509,648
Revenues*		
Employee contributions		
For non-DROP members	8,755,937	8,348,577
For DROP members	885,835	929,956
Employer contributions (net)	25,625,105	23,399,608
Investment income (net)		
Non-DROP investment income	73,702,001	(19,137,754)
DROP investment income	281,382	352,408
Miscellaneous	0	0
Total	109,250,260	13,892,795
Expenditures		
Benefit payments		
Retirees and Beneficiaries	52,503,455	49,899,253
From DROP account	4,457,195	7,328,957
Health insurance	10,151,949	10,296,993
Refund of member contributions	179,614	451,682
Administrative expenses	997,420	1,107,590
Death benefit	150,000	60,000
Total	68,439,633	69,144,475
Net Addition to Assets	40,810,627	(55,251,680)
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 include transfers to and from systems.*

CAFR ASSET INFORMATION FURNISHED FOR THE VALUATION
DECEMBER 31, 2012

ADDITIONS BY SOURCE

	Pension Benefits					Other Postemployment Benefits		
	Contributions							
Year	Member*	Employer	Net Investment Income	Transfers from Other Systems	Total	Employer Contributions	Net Investment Income	Total
2003	$8,136,974	$16,361,339	$ 105,112,725	$ 763,419	$ 130,374,457	$3,395,749	$ 18,885,722	$ 22,281,471
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**

** Does not include service purchases.*

DEDUCTIONS BY TYPE

	Pension Benefits					Other Postemployment Benefits		
Year	Benefits#	Refunds	Transfers to Other Systems	Administrative	Total	Benefits	Administrative	Total
2003	$33,074,853	$ 386,931	$ 789,387	$559,052	$34,810,223	$7,181,129	$ 93,769	$7,274,898
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**

 # Includes death benefits.

DEVELOPMENT OF FUNDING VALUE OF RETIREMENT SYSTEM ASSETS
DECEMBER 31, 2012

		2011	2012	2013	2014	2015
A.	Funding Value From Prior Year	$ 735,709,837	$ 722,361,877			
B.	Market Value End of Year	699,257,968	740,068,595			
C.	Market Value Beginning of Year	754,509,648	699,257,968			
D.	Non-Investment Net Cash Flow	(35,358,745)	(32,175,336)			
E.	Investment Return:					
	E1. Market Total: B - C - D	(19,892,935)	72,985,963			
	E2. For Immediate Recognition (8.0%)	57,442,437	56,501,937			
	E3. Amount for Phased-In Recognition E1-E2	(77,335,372)	16,484,026			
F.	Phased-In Recognition of Investment Return:					
	F1. Current Year: 25% x E3	(19,333,843)	4,121,007			
	F2. First Prior Year	8,127,176	(19,333,843)	$ 4,121,007		
	F3. Second Prior Year	18,643,268	8,127,176	(19,333,843)	$ 4,121,007	
	F4. Third Prior Year	(42,868,253)	18,643,269	8,127,175	(19,333,843)	$ 4,121,005
	F5. Total Recognized Phase-ins	$ (35,431,652)	$ 11,557,609	$ (7,085,661)	$ (15,212,836)	$ 4,121,005
G.	Funding Value End of Year:					
	G1. Preliminary Funding Value End of Year: A + D + E2 + F5	$ 722,361,877	$ 758,246,087			
	G2. Corridor Percent	20%	20%			
	G3. Upper Corridor Limit: (100% + G2) x B	839,109,562	888,082,314			
	G4. Lower Corridor Limit: (100% - G2) x B	559,406,374	592,054,876			
	G5. Funding Value End of Year	$ 722,361,877	$ 758,246,087			
H.	Difference between Market Value and Funding Value	$ (23,103,909)	$ (18,177,492)	$ (11,091,831)	$ 4,121,005	$ -
I.	Funding Value Rate of Return	3.1 %	9.6 %			
J.	Market Value Rate of Return	(2.7)%	10.7 %			
K.	Ratio of Funding Value to Market Value	103%	102%			

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, 2012

	Pension	Health	Total
A. Market Value Beginning of Year	$603,422,669	$95,835,299	$699,257,968
B. Member Contributions			
B1. Pension Contributions	8,755,937		8,755,937
B2. DROP Contributions	885,835		885,835
B3. Retiree Health Contributions		1,277,430	1,277,430
C. Employer Contributions			
C1. System Contributions	23,766,361	1,679,422	25,445,783
C2. Transfers	179,322		179,322
C3. Medicare Part D Reimbursement		873,601	873,601
D. Benefits Paid			
D1. Pension Benefits	52,503,455		52,503,455
D2. Benefit Payments from DROP Account	4,457,195		4,457,195
D3. HPRS Paid Retiree Health Benefits		10,186,099	10,186,099
D4. HPRS Paid Medicare Part B Benefits		839,451	839,451
D5. Member Paid Retiree Health Benefits		1,277,430	1,277,430
E. Refunds of Member Contributions	179,614	0	179,614
F. Death Benefits	150,000	0	150,000
G. Net External Cash Flow (B + C - D - E - F)	(23,702,809)	(8,472,527)	(32,175,336)
H. Other Changes in Market Value	62,924,487	10,061,476	72,985,963
I. Market Value End of Year (A + G + H)	642,644,347	97,424,248	740,068,595
J. Funding Value Adjustment	15,784,567	2,392,925	18,177,492
K. Funding Value End of Year (I + J)	$ 658,428,914	$ 99,817,173	$ 758,246,087

Line J is allocated in proportion to Line I.

SECTION E

SUMMARY OF MEMBER DATA

ACTIVE MEMBERS AS OF DECEMBER 31, 2012
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#
15-19	1							1	$ 34,883
20-24	107							107	3,944,102
25-29	150	29						179	7,739,121
30-34	59	141	66	1				267	14,442,137
35-39	18	65	182	76	1			342	20,982,266
40	1	9	21	29	8			68	4,325,043
41		7	17	31	15			70	4,593,895
42		3	27	30	20			80	5,135,860
43		5	21	23	32			81	5,355,934
44		2	10	27	27	2		68	4,493,884
45			8	13	36	1		58	4,095,365
46	1		7	9	31	6		54	3,723,345
47			1	6	21	12		40	2,912,948
48			6	8	22	15		51	3,643,635
49			1	5	13	14	2	35	2,542,883
50			1	2	11	14	2	30	2,084,276
51				2	13	15	2	32	2,316,718
52				1	3	8	4	16	1,073,416
53					5	8	7	20	1,372,333
54					2	5	5	12	863,250
55					1	4	8	13	902,605
56					1	2	6	9	603,247
57						1	4	5	356,093
58						1	4	5	373,567
59							2	2	206,597
Totals	**337**	**261**	**368**	**263**	**262**	**108**	**46**	**1,645**	**$ 98,117,403**

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

Age: 38.1 years.

Service: 13.2 years.

Annual Pay: $59,646

**** Includes 129 DROP members.***

 # For the December 31, 2012 valuation, reported payroll was adjusted by 26/27 to reflect 27 pay periods during the valuation year.

ACTIVE MEMBERS
BY AGES OF ENTRY INTO SERVICE
DECEMBER 31, 2012

Entry Age Nearest Birthday	Number	Cumulative Number	Percent	Cumulative Percent
Less than 18	0	0	0.00%	0.00%
18	21	21	1.28%	1.28%
19	52	73	3.16%	4.44%
20	86	159	5.23%	9.67%
21	184	343	11.18%	20.85%
22	217	560	13.19%	34.04%
23	217	777	13.19%	47.23%
24	197	974	11.98%	59.21%
25	159	1,133	9.67%	68.88%
26	113	1,246	6.86%	75.74%
27	100	1,346	6.08%	81.82%
28	65	1,411	3.96%	85.78%
29	53	1,464	3.22%	89.00%
30	47	1,511	2.85%	91.85%
31	40	1,551	2.44%	94.29%
32	39	1,590	2.37%	96.66%
33	29	1,619	1.76%	98.42%
34	20	1,639	1.22%	99.64%
35	1	1,640	0.06%	99.70%
36	0	1,640	0.00%	99.70%
37	4	1,644	0.24%	99.94%
38	0	1,644	0.00%	99.94%
39	0	1,644	0.00%	99.94%
40 & Up	1	1,645	0.06%	100.00%
Total	**1,645**			

ACTIVE DROP MEMBERS AS OF DECEMBER 31, 2012
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Ages	DROP No.	Annual Benefit	Annual Pay	DROP Account Balance
48	13	$ 576,152	$ 955,270	$ 254,184
49	17	783,510	1,252,911	849,313
50	14	635,579	1,001,004	1,193,176
51	15	664,084	1,082,400	1,959,226
52	17	733,989	1,179,290	1,680,277
53	13	610,508	979,462	2,426,849
54	14	586,603	926,132	2,767,960
55	7	342,606	540,107	1,773,024
56	9	398,295	602,427	2,146,737
57	6	294,182	440,879	1,841,362
58	4	222,173	334,138	1,434,302
Totals	**129**	**$ 5,847,682**	**$ 9,294,018**	**$ 18,326,411**

Average Age at DROP: 49.8 yrs.

Average Service: 28.9 yrs.
Average Service at DROP: 25.1 yrs.

Average Annual Pay: $72,047

AGE AND SERVICE PENSIONS BEING PAID DECEMBER 31, 2012
BY ATTAINED AGES

Attained Ages	Number	Monthly Pensions	Number Married	Average Age of Spouse
48 & Under	13	$ 32,044	5	46
49	12	43,176	8	47
50	9	29,341	2	46
51	20	74,082	14	49
52	26	89,303	20	52
53	39	144,226	32	50
54	36	124,471	25	52
55	32	112,849	24	52
56	27	104,014	25	55
57	43	159,963	38	54
58	30	115,352	28	58
59	24	99,208	22	57
60	40	152,188	33	56
61	48	169,076	38	58
62	46	171,993	41	59
63	40	156,145	36	60
64	53	185,836	45	63
65	71	254,375	58	63
66	46	173,753	43	65
67	39	146,008	35	65
68	53	190,100	53	65
69	37	123,994	33	67
70	48	159,962	46	66
71	37	123,779	33	67
72	28	98,357	25	69
73	25	90,148	23	70
74	26	74,441	26	71
75	25	77,467	24	71
76	16	45,707	15	72
77	12	37,023	12	75
78	11	29,170	10	73
79	8	19,906	8	75
80	11	28,936	10	75
81	10	24,878	9	78
82	14	39,540	12	77
83	11	24,746	8	79
84	9	18,992	8	80
85 & Over	31	60,728	20	82
Totals	**1,106**	**$ 3,805,277**	**947**	

DISABILITY PENSIONS BEING PAID DECEMBER 31, 2012
BY ATTAINED AGE

Attained Ages	Number	Monthly Pensions	Number Married	Average Age of Spouse
34	3	$ 8,362	2	67
35	1	2,303	1	40
37	1	2,345		N/A
38	2	3,651	1	38
40	4	10,924	3	41
41	5	12,143	4	32
42	3	7,892	3	38
43	4	10,316	3	38
44	6	14,505	4	42
45	5	12,606	2	35
46	6	13,890	3	46
47	3	6,284	2	51
48	6	18,123	3	48
49	6	14,599	5	46
50	5	16,752	3	44
51	3	11,850	3	52
52	6	17,068	6	51
53	5	14,662	4	48
54	7	17,564	4	53
55	7	20,153	5	56
56	4	12,211	3	55
57	2	6,706	2	59
59	3	8,815	3	57
60	3	8,005	2	59
61	3	9,347	3	59
62	1	1,838	1	57
63	4	9,412	2	61
64	6	13,417	5	61
65	1	2,571	1	65
66	2	5,501	1	55
68	2	5,642	1	70
69	2	4,165	2	68
71	1	1,640	1	65
75	1	3,209	1	72
77	1	1,640	1	73
82	1	1,746	1	77
83	1	1,765	1	79
85	1	1,770		N/A
86	1	1,782		N/A
Totals	**128**	**$337,174**	**92**	

DEPENDENTS BEING PAID AS OF DECEMBER 31, 2012
TABULATED BY ATTAINED AGE

Attained Ages	Number	Monthly Pensions
14 & Under	8	$ 1,380
15	2	377
16	2	350
17	1	203
18	1	155
19	1	150
20	2	390
21	2	327
22	1	205
25	1	1,749
26	1	1,035
33	1	1,062
35	1	1,197
39	1	1,210
40	1	1,279
42	2	2,482
44	1	1,365
46	2	2,973
47	1	1,254
48	3	2,475
50	4	6,476
53	2	453
55	2	2,737
56	1	1,013
57	3	5,100
58	3	3,667
59	1	1,035
60	2	3,274
61	6	8,271
62	3	4,416
63	3	4,494
64	5	7,276
65	8	11,735
66	8	14,246
67	5	7,606
68	4	6,707
69	6	9,086
70-79	58	79,927
80-89	85	104,489
90 & Over	19	24,464
Totals	**263**	**$328,091**

ACTIVE MEMBER VALUATION DATA, 2003 TO 2012

Actuarial Valuation as of December 31	Number of Active Members	Annual Payroll	Average Annual Salary	% Increase in Average Pay
2003	1,542	$81,737,962	$53,008	3.9 %
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)**

RETIRANTS AND BENEFICIARIES VALUATION DATA, 2003 TO 2012

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			
2003	48	$ 196,385	26	$29,344	1,253	$ 2,770,149	$2,211
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**

Of the 1,497 retirants and beneficiaries as of December 31, 2012, 1,106 are service retirees, 128 are disability retirees and 263 are survivor beneficiaries. The average monthly benefits are $3,441 for service retirees, $2,634 for disability retirees and $1,247 for survivor beneficiaries.

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

	Census Date									
	12/12	**12/11**	**12/10**	**12/09**	**12/08**	**12/07**	**12/06**	**12/05**	**12/04**	**12/03**
Recipients:										
w/o Medicare A	**702**	**NA**	732	692	762	751	779	806	808	791
Medicare A	**669**	**NA**	596	580	398	503	522	437	411	394
Spouses:										
w/o Medicare A	**355**	**NA**	365	368	518	372	420	375	373	403
w Medicare A	**305**	**NA**	257	267	232	242	156	187	176	165
Dependent Children	**279**	**NA**	216	165	167	154	168	127	130	129
Orphans	**0**	**NA**	0	23	26	63	33	26	30	30
Totals	**2,310**	**2,269**	2,166	2,095	2,103	2,085	2,078	1,958	1,928	1,912

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**

DEFERRED PENSIONS AS OF DECEMBER 31, 2012
TABULATED BY ATTAINED AGE

Attained Ages	Number	Annual Pensions
41	1	$26,856
42	1	19,752
43	1	32,014
44	2	59,692
46	4	117,932
49	2	56,784
50	1	31,745
51	1	51,468
54	1	13,106
Totals	**14**	**$409,349**

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, 2012

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.

Sample Ages	Percent of Active Members Separating Within Next Year: Disability	Death: Men	Death: Women	Other	Salary Increase Assumptions for an Individual Member: 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 A	Number Added During Year E	Retirement A	Retirement E	Disability Retirement A	Disability Retirement E	Death-in-Service A	Death-in-Service E	Other Terminations A	Other Terminations E	Active Members
2003	64	61.0	32	33.5	6	6.3	0	1.0	32	20.2	1,542
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**
Total	**750**	**672.9**	**311**	**406.7**	**64**	**68.3**	**9**	**9.2**	**269**	**188.7**	

A: Actual

E: Expected

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

AGE AND SERVICE RETIREMENTS DURING CALENDAR YEAR 2012

Age Group					
	15-19	20-24	25-29	30 Plus	Total
Under 20					
20-24					
25-29					
30-34					
35-39					
40-44					
45					
46					
47					
48			6		6
49			3		3
50					
51			4		4
52			5		5
53			7		7
54		2	1		3
55		1	1	1	3
56		1	1		2
57			1		1
58		1			1
59				1	1
60 & Over			1		1
Totals		**5**	**30**	**2**	**37**

DISABILITY RETIREMENTS DURING CALENDAR YEAR 2012

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			1					1
35-39								
40-44			2	2	1			5
45-49			1	1	1			3
50 & Over					1			1
Totals			**4**	**3**	**3**			**10**

DEATH-IN-SERVICE TERMINATIONS
DURING CALENDAR YEAR 2012

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					1			1
Totals					**1**			**1**

WITHDREW AND ELIGIBLE FOR DEFERRED BENEFIT TERMINATIONS
DURING CALENDAR YEAR 2012

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				**3**	**2**			**5**

WITHDREW AND PENDING CONTRIBUTIONS TERMINATION DURING CALENDAR YEAR 2012

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 2012

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	2							2
25-29	4	1						5
30-34	5	3	1					9
35-39	3	1	2					6
40-44	1		1					2
45-49								
50 & Over								
Totals	**15**	**5**	**4**					**24**

Miscellaneous and Technical Assumptions

Administrative Expenses:	Assumed investment return is net of administrative and investment expenses.
Marriage Assumption:	100% 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. For the December 31, 2012 valuation, reported payroll was adjusted by 26/27 to reflect 27 pay periods during the valuation year.

SECTION G

FINANCIAL PRINCIPLES AND OPERATIONAL TECHNIQUES

FINANCIAL PRINCIPLES AND OPERATIONAL TECHNIQUES OF THE RETIREMENT SYSTEM

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

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

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

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

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

(Concluded on Next Page)

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

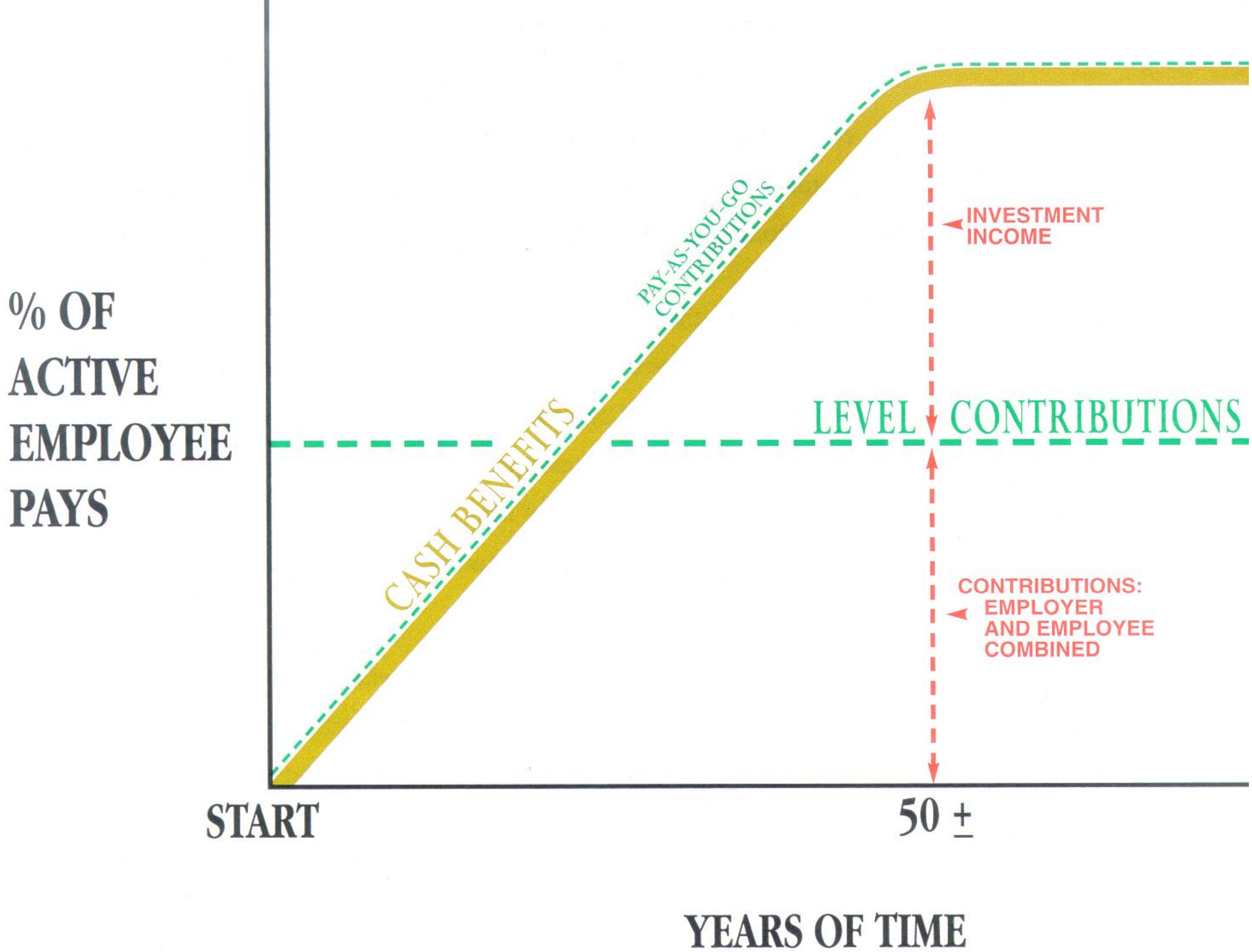
> ***Normal Cost*** (the value assigned to service being rendered this year)
>
> . . . plus . . .
>
> ***Interest on Unfunded Actuarial Accrued Liabilities*** (the difference between liabilities for service already rendered and the accrued assets of the Retirement System).

Computing Contributions To Support System Benefits From a given schedule of benefits and from the employee data and asset data furnished by the system, the actuary determines the contribution rates to support the benefits, by means of ***an actuarial valuation***.

An actuarial valuation has a number of ingredients such as: the rate of investment return which plan assets will earn; the rates of withdrawal of active members who leave covered employment; the rates of mortality; the rates of disability; the rates of pay increases and the assumed age or ages at actual retirement.

In an actuarial valuation the actuary must assume what the above rates will be, for the next year and for decades in the future. Only the subsequent actual experience of the plan can indicate the degree of accuracy of the assumptions.

Reconciling Differences Between Assumed Experience and Actual Experience Once actual experience has occurred and has been observed, it will not coincide exactly with assumed experience, regardless of the skill of the actuary and the many calculations made. Most retirement systems cope with such differences by having annual actuarial valuations. Each actuarial valuation is a complete recalculation of assumed future experience, taking into account all past differences between assumed and actual experience. The result is ***continuing adjustments to the financial position***.



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

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

- Economic Risk Areas
  - Rates of investment return
  - Rates of pay increase
  - Changes in active member group size
- Non-Economic Risk Areas
  - Ages at actual retirement
  - Rates of mortality
  - Rates of withdrawal of active members (turnover)
  - Rates of disability

THE ACTUARIAL VALUATION PROCESS

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

A. ***Covered people data*** furnished by plan administrator, including:

Retired lives now receiving benefits

Former employees with vested benefits not yet payable

Active employees

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

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

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

E. + ***The funding method*** for employer contributions (the long-term, planned pattern for employer contributions)

F. + ***Mathematically combining the assumptions, the funding method, and the data***

G. = Determination of:

Plan Financial Position and/or

New Employer Contribution Rate

MEANING OF "UNFUNDED ACTUARIAL ACCRUED LIABILITIES"

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

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

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

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

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

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

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August 29, 2013

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, 2012 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)