
**THE REPORT OF THE
ANNUAL ACTUARIAL VALUATION
OF THE
OHIO STATE HIGHWAY PATROL RETIREMENT SYSTEM**

DECEMBER 31, 2003



GABRIEL, ROEDER, SMITH & COMPANY
ACTUARIES • CONSULTANTS

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August 20, 2004

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, 2003** of the Ohio State Highway Patrol Retirement System, as established by Chapter 5505 of the Revised Code, are presented in this report.

Your Executive Director furnished the member statistical data required for the valuation, together with pertinent data on financial operations. Data was reviewed for reasonableness, but was not audited by the actuary. The actuarial assumptions used in making the valuation are shown in Section F of this report.

Your attention is directed particularly to the summary of results on pages 2, 3, 4, and 5.

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 and upon actuarial assumptions that are internally consistent and reasonably based upon the actual experience of the System.

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

Respectfully submitted,

GABRIEL, ROEDER, SMITH & COMPANY

Brian B. Murphy, F.S.A.

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BBM:dks:kmg

SUMMARY

Valuations performed as of odd-numbered years (2001, 2003, 2005...) form the basis for employer contribution rates, which are effective over two-year periods. Valuations performed as of even-numbered years are intended to provide interim measures of the funding status of the Retirement System.

The employer contribution rate for the two-year period beginning July 1, 2003 was determined in accordance with the December 31, 2001 valuation. The employer contribution rate for the two-year period beginning July 1, 2005 is to be determined in accordance with this December 31, 2003 valuation.

The **total employer contribution rate** for the two-year period beginning July 1, 2003 is 24.50%, as established by the Board based upon the results of the December 31, 2001 actuarial valuation. At that time, the member rate was increased to 10.00%. Initially, the Board chose to allocate the 24.50% employer contribution rate as follows: 18.75% to pension and 5.75% to retiree health. The resulting amortization period for pensions was 31 years. In March, 2003, the Board decided to reallocate the employer contribution rate as follows: 19.00% to pension and 5.50% to retiree health. This resulted in an amortization period of 29 years for pension. In July, 2003, in order to produce a manageable amortization period, the Board decided to further reallocate the 24.50% employer contribution rate as follows: 21.00% to pension and 3.50% to retiree health. At the same time, the payroll growth assumption was lowered from 4.5% to 4.0% and the market value corridor for asset valuation purposes was relaxed from 12% to 20%. The breakdown between employer, employee, pension and health is shown below assuming that employer and employee rates remain unchanged. This breakdown produces an amortization period of 40 years for pensions.

	Employer Contribution Rates Expressed As % of Active Payroll		
	Retirement, Survivor & Disability Allowances	Post Retirement Health Care	Total
Employer	21.00%	3.50%	24.50%
Employee	10.00%	0.00 %	10.00%
Total	31.00%	3.50%	34.50%

DECEMBER 31, 2003 SUMMARY

Market value investment return exceeded the actuarial assumed investment return rate of 8.0%. (The market value rate of return for calendar year 2003 was approximately 24.3%.) This helped to offset a portion of the unrecognized investment losses from the previous few calendar years. However, the recognized rate of return for actuarial valuation purposes, based upon the funding value of assets, remained below the actuarial assumed rate. (The funding value rate of return for calendar year 2003 was approximately 5.4%.) The difference between the funding value of assets and the market value of assets as of December 31, 2003 decreased from the previous year. As of December 31, 2003, the funding value of assets were 102% of the market value of assets. As of December 31, 2002, the funding value of assets were 120% of the market value of assets. Please see page D-3 for details.

Favorable experience in the retiree health program during the calendar year has had a positive effect on the solvency period of the retiree health fund. Under all scenarios (valuation, intermediate, pessimistic), the solvency period has improved since the last actuarial valuation. Effective in 2003 for spouses and in 2004 for retired members, the HPRS Retiree Health Plan becomes a secondary payer for individuals with other available coverage, for example from employment. The effect of the change on spouses was partially reflected in this valuation. The remainder of the effect, and in particular, the effect related to retired members, cannot be known until after the 2004 valuation is complete. Based upon discussions with AETNA, and with MMO, we estimate that the combined effect of both changes might be an increase in the solvency period of the health care fund on the order of two or three years.

Non-investment net cash flow is declining (please see page D-3) and has been negative since 1998. This means that the Retirement System has reached the point wherein a portion of investment return is needed to pay benefits. Eventually, about 3.8% of assets are expected to be needed to pay benefits each year. This is a normal and expected condition.

This valuation indicates that an employer contribution rate of 24.50% with an employee rate of 10.00% is insufficient to produce an amortization period for the pension program of 30 years or less, based upon the current allocation between pensions and retiree health. GRS believes that an increase in the employer contribution rate and/or employee contribution rate should be considered at this time. The following are intended to aid the Board in understanding how some alternatives might work:

SUMMARY & RECOMMENDATIONS - DECEMBER 31, 2003
(CONTINUED)

(i) Pension Benefits

	Pension Contributions		
	Total Rate	Change From Present	Amortization Years
Present	31.00%	N/A	40
Alternate P1	32.00	+1.00%	32
Alternate P2	32.50	+1.50	29

(ii) Retiree Health Benefits

	Retiree Health Contributions		
	Total Rate	Change From Present	Intermediate Solvency
Present	3.50%	N/A	2019
Alternate H1	4.50	+1.00%	2021
Alternate H2	5.75	+2.25	2024

Based on experience to date, investment return may well be disappointing for 2004 and exert upward pressure on the computed pension amortization period in the 2004 valuation. If, however, experience in 2004 is reasonably in line with expectations, and given that the maximum retirement age is changed to 60 effective 9/16/2004, the pension amortization period in the 2004 valuation might be below 30 years with either of the above two alternatives.

Comment on Post Retirement Health Care:

With regard to the retiree health plan, higher contributions are required to extend the solvency of the fund. Historically, contributions have been higher than the 3.5% level. The benefit payout rate currently exceeds 8% of payroll, more than double the contribution income. We recommend that the Board consider increasing the contribution rate for the retiree health plan, and continue cost containment efforts, such as the recent shift to secondary payer status for individuals with other coverage.

In the near term, contribution increases potentially earmarked for the retiree health plan, could also be reassigned to the amortization of unfunded pension liabilities should 2004 or subsequent pension experience be unfavorable.

SUMMARY & RECOMMENDATIONS - DECEMBER 31, 2003
(CONCLUDED)

Recommendation: The following reserve transfers are recommended as of December 31, 2003:

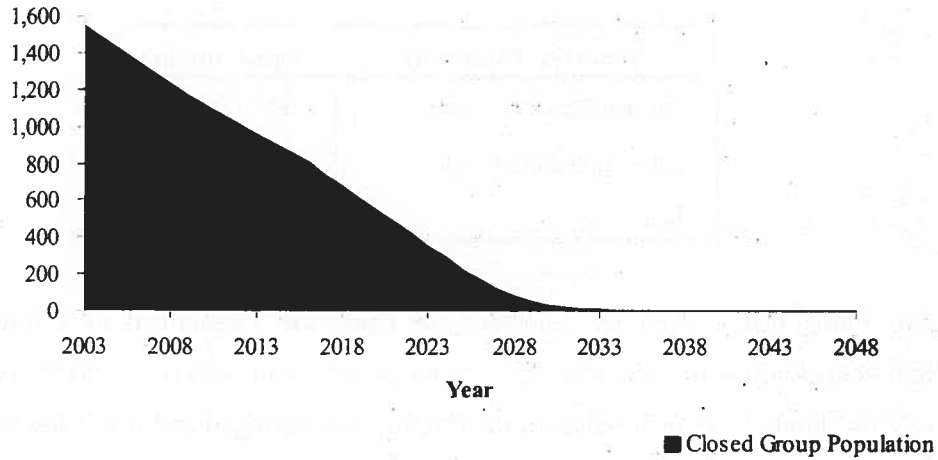
Transfer To (From)	Total Amount
Pension Reserve Fund:	\$57,423,451
Survivor Benefit Fund:	3,091,761
Total	\$60,515,212

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, 2004 should be transferred from the Employee's 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 that have come into pay status since January 1, 1966 are fully funded by the appropriate reserve funds. Benefits effective prior to January 1, 1966 represent a closed group and are paid from the Employer's Accumulation fund.

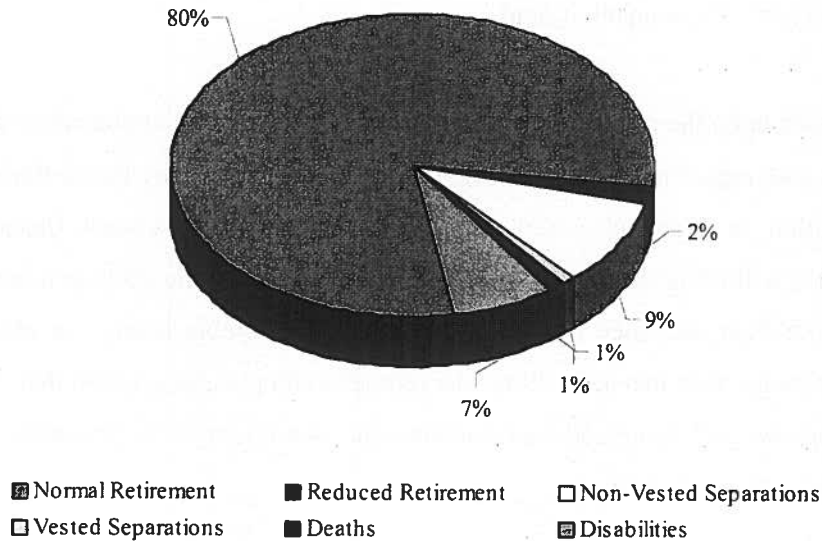
Conclusion: Based upon the results of the December 31, 2003 regular annual actuarial valuation, it is our opinion that with regard to pension benefits, the Ohio State Highway Patrol Retirement System is in sound condition in accordance with actuarial principles of level-cost financing. A small contribution increase will bring the amortization period very close to the 30 year target. With regard to the Retiree Health Plan, solvency to 2019 is a relatively favorable result, but most people near retirement will live longer than that and will need a retiree health plan longer than that. A combination of contribution increases and continued cost containment measures will be important for the retiree health plan to accomplish its objectives.

EXPECTED DEVELOPMENT OF PRESENT POPULATION DECEMBER 31, 2003

Closed Group Population Projection



**Expected Terminations from Active Employment for
Current Active Members**



The charts show the expected future development of the present population in simplified terms. The retirement system presently covers 1,542 active members. Eventually, 9% of the population is expected to terminate covered employment prior to retirement and forfeit eligibility for an employer provided benefit. 83% 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. 8% of the present population is expected to become eligible for death-in-service or disability benefits. Within 15 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, 2003**

Age & Service Pension: A member may retire at age 52 to age 55, 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 3 years) 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 55 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.

(Continued on Next Page)

RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES
BENEFITS AND CONDITIONS VALUED
DECEMBER 31, 2003
(CONTINUED)

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.

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RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES
BENEFITS AND CONDITIONS VALUED
DECEMBER 31, 2003
(CONCLUDED)

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 10.0% of salary 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.

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: The basic benefit for all retirants is increased by 3 percent each year after age 53. 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. Benefit recipients receiving disability benefits are eligible for the increase after receiving benefits for sixty months or age 53 whichever occurs first.

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.

SAMPLE BENEFIT COMPUTATION FOR MEMBERS

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

	Data	Description
A.	\$40,000	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:	$0.0250 \times 20 \times \$40,000 =$	\$20,000
	$0.0225 \times 5 \times \$40,000 =$	\$4,500
	$0.0200 \times 2 \times \$40,000 =$	\$1,600
		\$26,100

Benefit payable to:

F. Retirant while spouse is alive (E)	\$26,100
G. Spouse after retirant's death (D x E)	\$13,050
H. Retirant after spouse's death (E)	\$26,100

Projected Benefits to Member

Year Ended December 31	Amount Payable
2004	\$ 26,100
2005	26,100
2006	26,100
2007	26,883
2008	27,666
2009	28,449
2010	29,232
2011	30,015
2012	30,798

Benefits for years 2013 and later increase by \$783 over the previous year's amount.

**RETIREMENT SURVIVOR & DISABILITY ALLOWANCES
COMPUTED EMPLOYER CONTRIBUTIONS TO SUPPORT BENEFITS**

<u>Contributions for</u>	<u>Contributions Expressed as Percents of Payroll</u>	
	<u>2003</u>	<u>2002</u>
Normal Cost:		
Age & service benefits	17.24%	17.23%
Disability benefits	2.96%	2.96%
Survivor benefits	0.25%	0.26%
Separation benefits	0.86%	0.83%
Purchase of Military Service	0.60%	0.60%
Total Normal Cost	<u>21.91%</u>	<u>21.88%</u>
Less Member Contributions	<u>10.00%</u>	<u>10.00%</u>
Employer Normal Cost	11.91%	11.88%
Unfunded Actuarial Accrued Liabilities	9.09%	9.12%
	<u>40 years #</u>	<u>32 years #</u>
EMPLOYER CONTRIBUTION RATE IN EFFECT	21.00%	21.00%

This 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, 2003

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, \$702,799,017, less pension assets of \$545,981,513 resulted in unfunded actuarial accrued liabilities of \$156,817,504, which were amortized as a level percent of payroll over a period of 40 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 Completed in 40 Years
(\$ Thousands)**

Year	Active Employee Payroll	Unfunded Actuarial Accrued Liability	Annual Contributions		UAAL as % of Payroll
			Dollars	% of Payroll	
1	\$ 85,007	\$ 156,818	\$ 7,727	9.09%	184.5%
2	88,407	161,333	8,036	9.09%	182.5%
3	91,943	165,888	8,358	9.09%	180.4%
4	95,621	170,474	8,692	9.09%	178.3%
5	99,446	175,079	9,040	9.09%	176.1%
6	103,424	179,691	9,401	9.09%	173.7%
7	107,561	184,296	9,777	9.09%	171.3%
8	111,863	188,879	10,168	9.09%	168.8%
9	116,338	193,422	10,575	9.09%	166.3%
10	120,992	197,906	10,998	9.09%	163.6%
11	125,832	202,309	11,438	9.09%	160.8%
12	130,865	206,607	11,896	9.09%	157.9%
13	136,100	210,773	12,371	9.09%	154.9%
14	141,544	214,778	12,866	9.09%	151.7%
15	147,206	218,589	13,381	9.09%	148.5%
16	153,094	222,170	13,916	9.09%	145.1%
17	159,218	225,481	14,473	9.09%	141.6%
18	165,587	228,479	15,052	9.09%	138.0%
19	172,210	231,115	15,654	9.09%	134.2%
20	179,098	233,336	16,280	9.09%	130.3%
21	186,262	235,084	16,931	9.09%	126.2%
22	193,712	236,295	17,608	9.09%	122.0%
23	201,460	236,899	18,313	9.09%	117.6%
24	209,518	236,820	19,045	9.09%	113.0%
25	217,899	235,973	19,807	9.09%	108.3%
26	226,615	234,267	20,599	9.09%	103.4%
27	235,680	231,601	21,423	9.09%	98.3%
28	245,107	227,865	22,280	9.09%	93.0%
29	254,911	222,940	23,171	9.09%	87.5%
30	265,107	216,695	24,098	9.09%	81.7%
31	275,711	208,987	25,062	9.09%	75.8%
32	286,739	199,661	26,065	9.09%	69.6%
33	298,209	188,547	27,107	9.09%	63.2%
34	310,137	175,460	28,191	9.09%	56.6%
35	322,542	160,199	29,319	9.09%	49.7%
36	335,444	142,546	30,492	9.09%	42.5%
37	348,862	122,262	31,712	9.09%	35.0%
38	362,816	99,087	32,980	9.09%	27.3%
39	377,329	72,740	34,299	9.09%	19.3%
40	392,422	42,914	35,671	9.09%	10.9%

**RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES
 ACTUARIAL PRESENT VALUE OF FUTURE BENEFITS
 PRESENT RETIRED LIVES AND VESTED DEFERRED CASES
 DECEMBER 31, 2003**

Benefits Payable	Number	Monthly Amount	Actuarial Value
From Employer Accumulation Fund:			
Regular Retirements Effective Before 1/1/66	4	\$ 5,346	\$ 207,168
Disability Retirements Effective Before 1/1/66	0	0	0
Total Benefits Payable from Employer Accumulation Fund	4	5,346	207,168
From Pension Reserve Fund:			
Regular Retirements Effective After 1/1/66	913	2,358,083	357,623,652
Disability Retirements Effective After 1/1/66	79	167,130	26,305,216
Total Benefits Payable from Pension Reserve Fund	992	2,525,213	383,928,868
From Survivor Benefit Fund:			
Surviving Spouses, Dependent Children & Dependent Parents	257	239,590	27,420,816
Total Benefits Payable from Survivor Benefit Fund	257	239,590	27,420,816
Total Retirement Benefits Payable	1,253	2,770,149	411,556,852
Total Vested Deferred Benefits Payable	5	9,130	1,262,107
Grand Total	1,258	\$2,779,279	\$412,818,959

**RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES
DEVELOPMENT OF ACTUARIAL ACCRUED LIABILITIES
DECEMBER 31, 2003**

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	\$ 431,784,556	\$ 150,581,499	\$ 281,203,057
Disability allowances likely to be paid to present active members who become totally and permanently disabled	32,258,973	25,133,733	7,125,240
Survivor benefits likely to be paid to spouses and children of present active members who die before retiring	2,961,896	1,998,199	963,697
Separation benefits (refunds of contributions and deferred allowances likely to be paid on behalf of present active members)	7,745,176	7,057,112	688,064
Retirement benefits likely to be paid to current retirants and beneficiaries and to present inactive members	412,818,959	0	412,818,959
Total	\$ 887,569,560	\$ 184,770,543	\$ 702,799,017
Member portion	156,874,438	83,859,029	73,015,409
Employer portion	\$ 730,695,122	\$ 100,911,514	\$ 629,783,608

**RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES
SUMMARY STATEMENT OF SYSTEM RESOURCES AND OBLIGATIONS
DECEMBER 31, 2003**

PRESENT RESOURCES AND EXPECTED FUTURE RESOURCES

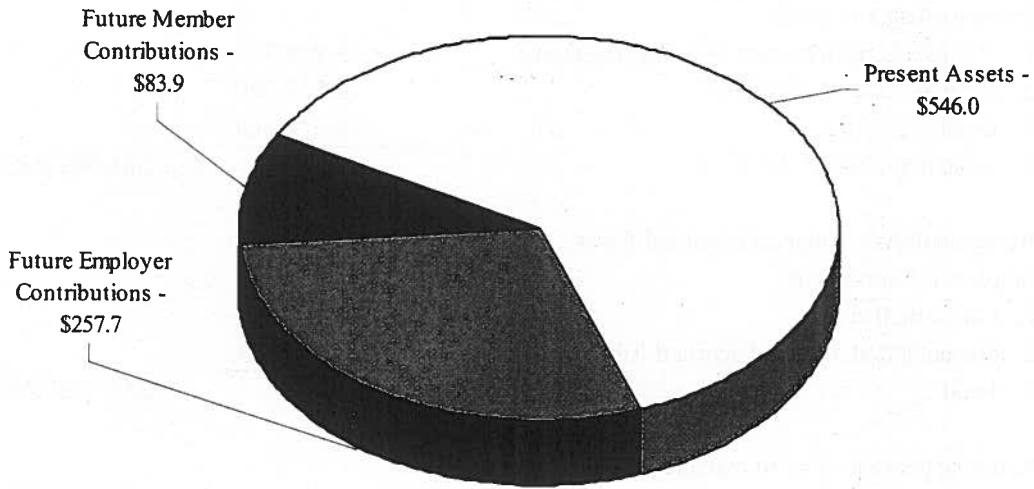
A. Present valuation assets	
1. Net assets from system financial statements	\$ 623,986,737
2. Market Value Adjustment	12,528,940
3. Health Assets	90,534,164
4. Valuation Assets: 1 + 2 - 3	<u>\$ 545,981,513</u>
B. Actuarial present value of expected future Employer contributions	
1. For normal costs	100,911,514
2. For unfunded actuarial accrued liability	156,817,504
3. Total	<u>257,729,018</u>
C. Actuarial present value of expected future member contributions	<u>83,859,029</u>
D. Total Present and Expected Future Resources	<u>\$ 887,569,560</u>

ACTUARIAL PRESENT VALUE OF EXPECTED FUTURE BENEFIT PAYMENTS

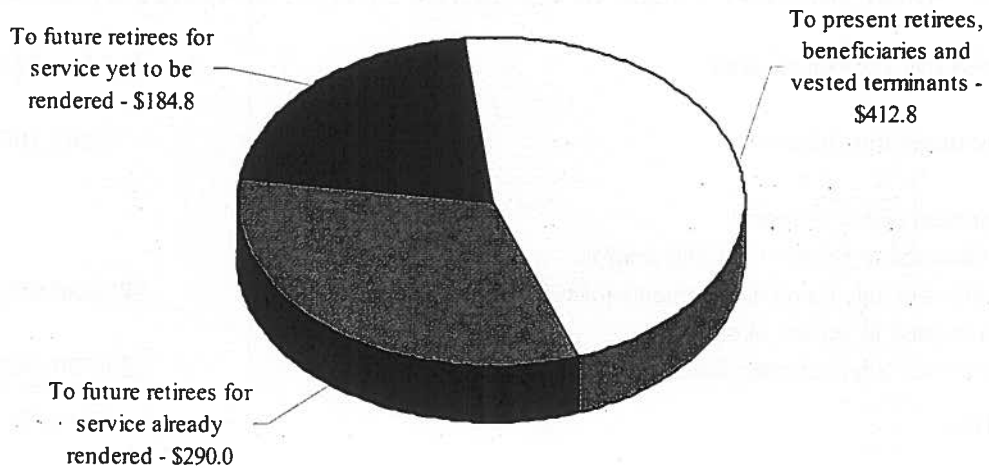
To retirants and beneficiaries	\$ 411,556,852
To terminated members	1,262,107
To present active members	
1. Allocated to service rendered prior to valuation date (actuarial accrued liability)	289,980,058
2. Allocated to service likely to be rendered after valuation date	184,770,543
3. Total	<u>474,750,601</u>
Total Actuarial Present Value of Expected Future Benefit Payments	<u>\$ 887,569,560</u>

**RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES
FINANCING \$887.6 MILLION OF BENEFIT PROMISES
DECEMBER 31, 2003**

Sources of Funds



Uses of Funds



**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			
1988	1,260	\$ 40,674,634	\$ 214,162,666	\$ 158,657,067	\$ 55,505,599	1.4	74.1%	30
1989	1,265	43,053,057	239,028,444	166,190,394	72,838,050	1.7	69.5%	30
1990 *#	1,301	45,679,355	261,623,337	188,239,168	73,384,169	1.6	72.0%	30
1991	1,326	48,488,406	289,223,978	222,109,351	67,114,627	1.4	76.8%	23
1992	1,371	50,235,996	309,272,482	258,609,387	50,663,095	1.0	83.6%	18
1993 *	1,467	55,781,585	351,456,425	297,050,305	54,406,120	1.0	84.5%	22
1994	1,465	58,116,787	378,058,385	330,787,044	47,271,341	0.8	87.5%	16
1994 #	1,465	58,116,787	374,006,767	330,787,044	43,219,723	0.7	88.4%	12
1995	1,455	59,825,356	402,450,332	370,425,462	32,024,870	0.5	92.0%	8
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	545,981,513	61,429,807	0.9	89.9%	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	79.6%	32
2003	1,542	81,737,962	702,799,017	545,981,513	156,817,504	1.9	77.7%	40

* 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
1989	1,265	\$43,053,057	\$34,034	5.4%	4.0%	4.6%
1990	1,301	45,679,355	35,111	3.2%	4.6%	6.2%
1991	1,326	48,488,406	36,567	4.1%	3.7%	3.0%
1992	1,371	50,235,996	36,642	0.2%	5.2%	3.0%
1993	1,467	55,781,585	38,024	3.8%	0.9%	2.7%
1994	1,465	58,116,787	39,670	4.3%	2.7%	2.7%
1995	1,455	59,825,356	41,117	3.6%	4.0%	2.6%
1996	1,375	59,239,349	43,083	4.8%	4.9%	3.3%
1997	1,445	62,233,299	43,068	(0.0)%	5.8%	1.7%
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%	4.4% *	1.9%
10 Year Average				3.4%	4.1%	2.6%

+ *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.

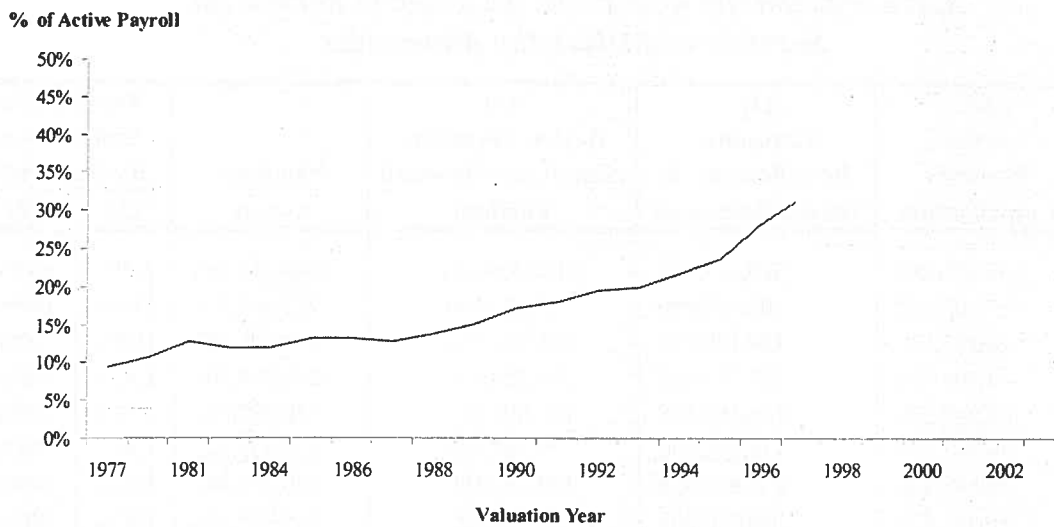
**RETIREMENT, SURVIVOR, AND DISABILITY BENEFITS IN PAY STATUS
COMPARATIVE STATEMENT**

Valuation Date December 31	Number of People	Monthly Pensions	Active Payroll	Average Amount	% of Active Member Pays
1970(6/30) #	193	\$ 54,607	\$ 10,223,188	\$ 283	6.4%
1974 **	288	96,045	16,942,378	333	6.8%
1977 *	346	148,133	18,995,363	428	9.4%
1979 #	402	191,356	21,558,774	476	10.7%
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	634	12.0%
1985 #	530	359,208	32,500,428	678	13.3%
1986	544	382,419	34,757,277	702	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%
1991	675	732,576	48,488,406	1,085	18.1%
1992	706	819,869	50,235,996	1,161	19.6%
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%

* Plan amended.

Revised actuarial assumptions or methods.

**RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES BEING PAID
EXPRESSED AS A % OF ACTIVE MEMBER PAYROLL
DECEMBER 31, 2003**



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 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

Val'n 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)
1990 *#	\$33,450,086	\$99,323,100	\$128,850,151	\$188,239,168	100%	100%	43%
1991	37,105,492	108,596,896	143,521,590	222,109,351	100%	100%	53%
1992	40,347,533	120,178,654	148,746,295	258,609,387	100%	100%	66%
1993 *	44,494,424	137,111,461	169,850,540	297,050,305	100%	100%	68%
1994 #	47,947,979	156,363,745	169,695,043	330,787,044	100%	100%	75%
1995	50,547,938	176,541,660	175,360,734	370,425,462	100%	100%	82%
1995 *	50,547,938	187,922,028	189,287,398	370,425,462	100%	100%	70%
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	256,268,302	177,859,490	460,667,112	100%	100%	85%
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	325,395,987	183,718,428	546,510,779	100%	100%	90%
1999 *	55,558,145	333,340,728	188,111,212	546,510,779	100%	100%	84%
2000	59,455,707	360,125,257	187,830,356	545,981,513	100%	100%	67%
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	208,712,240	492,430,826	100%	100%	16%
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%

* Plan amendment.

Assumption or method change.

SUMMARY OF UNFUNDED ACCRUED LIABILITIES

Each time a new benefit is added which applies to service already rendered, an "unfunded accrued liability" is created. Also, if actual financial experiences are less favorable than assumed financial experiences, the difference is added to unfunded 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 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 accrued liabilities can be misleading. Unfunded 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
1990 *#	\$261,623,337	\$188,239,168	\$73,384,169	72.0%	45,679,355	160.7%
1991	289,223,978	222,109,351	67,114,627	76.8%	48,488,406	138.4%
1992	309,272,482	258,609,387	50,663,095	83.6%	50,235,996	100.9%
1993 *	351,456,425	297,050,535	54,405,890	84.5%	55,781,585	97.5%
1994 #	374,006,767	330,787,044	43,219,723	88.4%	58,116,787	74.4%
1995	402,450,332	370,425,462	32,024,870	92.0%	59,825,356	53.5%
1995 *	427,757,364	370,425,462	57,331,902	86.6%	59,825,356	95.8%
1995 *#	424,351,694	370,425,462	53,926,232	87.3%	59,825,356	90.1%
1996	454,514,187	411,316,254	43,197,933	90.5%	59,239,349	72.9%
1997	487,392,406	460,667,112	26,725,294	94.5%	62,233,299	42.9%
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	564,672,560	546,510,779	18,161,781	96.8%	66,017,381	27.5%
1999 *	577,010,085	546,510,779	30,499,306	94.7%	66,017,381	46.2%
2000	607,411,320	570,039,631	37,371,689	93.8%	69,028,285	54.1%
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	668,605,932	492,430,826	176,175,106	73.7%	81,737,962	215.5%
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%

* Plan amendment.

Assumption or method change.

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

SCHEDULE OF EMPLOYER CONTRIBUTIONS

Year Ended December 31	Actual Contribution	Percent of Required Contributed
1992	\$12,312,378	100%
1993	13,405,126	100%
1994	14,329,203	100%
1995	13,889,107	100%
1996	14,706,925	100%
1997	14,779,887	100%
1998	15,788,189	100%
1999	16,353,264	100%
2000	16,556,770	100%
2001	17,422,978	100%
2002	18,704,608	100%
2003	19,757,088	100%

The Board adopted all contribution rates as recommended by the Actuary.

The amounts reported in this schedule include contributions for post-employment Health Care benefits.

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, 2003
Actuarial Cost Method	Entry Age
Amortization Method	Level Percent Closed
Remaining Amortization Period	40 years for retirement allowances
Asset Valuation Method	4 year smoothed marked 20 % Corridor
Actuarial Assumptions:	
Investment Rate of Return	8.0%
Projected Salary Increases	4.3% - 7.7%
* Includes Wage Inflation at	4.0%

OTHER GASB INFORMATION

As of December 31, 2003, 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	\$ 73,358,075
Employer - financed vested	104,568,349
Employer - financed non-vested	80,564,456

As of December 31, 2003, there were 292 vested active members and 1,250 non-vested active members.

**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 dependents 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. 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 2004 applicable to spouses under age 65 is \$70 per month. The dependent child premium is \$25 per family.

Basic Plan coverage provides for payment of 100% of all reasonable and customary hospital expenses. All hospital admissions must be pre-certified 14 days 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. Also designated outpatient procedures must be pre-certified. For in-network activity, the annual out-of-pocket maximum is \$750 per individual or \$1,500 per family (out of network amounts are \$5,000 and \$10,000, respectively). Each covered person under the age of 65 must meet a \$100 annual deductible. Each covered person over 65 must meet a \$25 annual deductible. The maximum lifetime benefit is \$2,000,000 per person. If the covered person is in a network area and uses non-network providers, the annual deductible for the individual is \$1,000.

A mail-order prescription drug plan is also available. Each prescription submitted via mail order requires a co-payment of \$5.00 for generic, \$10.00 for brand and \$25.00 for non formulary for up to a 90-day supply. Drugs purchased retail/over-the-counter have a co-payment of \$5.00 for generic, \$10.00 for brand and \$25.00 for non formulary for up to a 34 day supply.

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

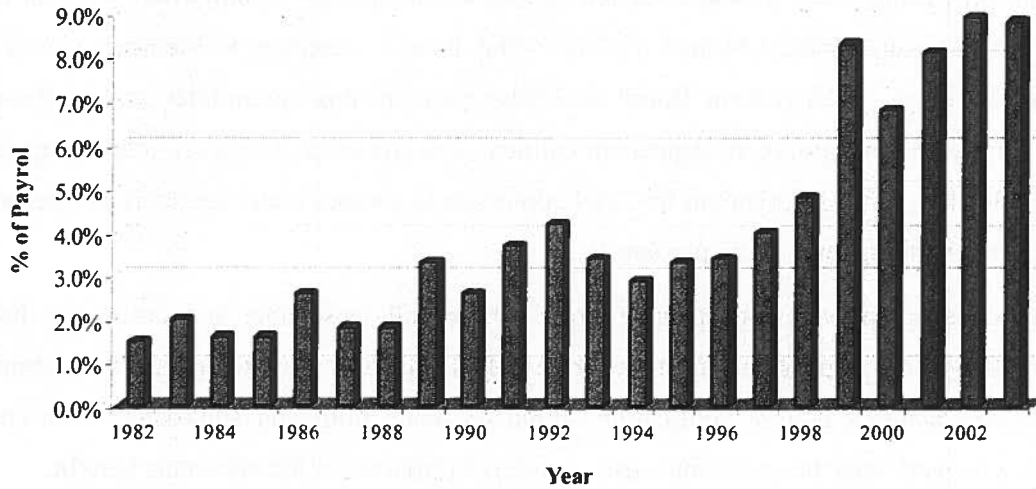
Stop Loss Coverage: The program is fully self-insured and stop loss coverage is maintained.

Medicare Premiums: The Medicare Part B (no cap) basic premium amount is reimbursed to eligible benefit recipients upon proof of coverage.

Dental/Vision: System pays premiums for all benefit recipients. The premium for dependents is deducted from pension benefit.

POST-RETIREMENT HEALTH CARE AND MEDICARE REIMBURSEMENT

Historical Trend of Employer Paid Amounts



Year	Covered Lives	Employer Paid Amount for					Total	Per Covered Life	Payroll	% of Payroll
		Med. B. Reimb.	Hosp. Med. Surg.	Presc. Drugs	Adjustment					
1985	697	\$ 28,272	\$ 427,361	\$ 60,015		\$ 515,648	\$ 740	\$ 32,500,428	1.6%	
1986	715	30,457	787,245	80,911		898,613	1,257	34,757,277	2.6%	
1987	731	38,037	559,832	115,544		713,413	976	39,938,912	1.8%	
1988	761	57,461	522,747	145,847		726,055	954	40,674,634	1.8%	
1989	810	77,869	1,043,650	186,795	\$ 97,864	1,406,178	1,736	43,053,057	3.3%	
1990	925	77,363	1,009,153	213,716	(94,251)	1,205,981	1,304	45,679,355	2.6%	
1991	976	86,740	1,267,327	251,004	180,583	1,785,654	1,830	48,488,406	3.7%	
1992	1,045	97,117	1,643,276	298,493	76,046	2,114,932	2,024	50,235,996	4.2%	
1993	1,081	118,109	1,553,628	299,410	(90,525)	1,880,622	1,740	55,781,585	3.4%	
1994	1,133	141,384	1,239,008	320,360	3,314	1,704,066	1,504	58,116,787	2.9%	
1995	1,225	149,440	1,512,523	364,096	(66,834)	1,959,225	1,599	59,825,356	3.3%	
1996	1,379	155,769	1,353,932	491,525	21,382	2,022,608	1,467	59,239,349	3.4%	
1997	1,499	166,743	1,623,640	849,321	(140,526)	2,499,178	1,667	62,233,299	4.0%	
1998	1,602	171,223	2,147,334	1,122,248	(311,917)	3,128,888	1,953	65,153,864	4.8%	
1999	1,772	197,606	3,315,914	1,364,990	619,894	5,498,404	3,103	66,017,381	8.3%	
2000	1,848	203,157	3,190,885	1,684,300	(358,082)	4,720,260	2,554	69,028,285	6.8%	
2001	1,900	231,045	3,730,167	1,960,825	257,059	6,179,096	3,252	76,344,002	8.1%	
2002	1,943	260,772	4,147,534	2,431,297	185,440	7,025,043	3,616	78,997,065	8.9%	
2003	1,912	290,506	4,256,046	2,681,414	(46,837)	7,181,129	3,756	81,737,962	8.8%	

**ASSUMPTIONS FOR HEALTH CARE COVERAGES
DECEMBER 31, 2003**

Development of Health Care Rates: Based on the 2003 retired life data, the HPRS portion of the total health care rates was developed as follows:

	HPRS Monthly Rates			
	Gross Rate	This Year		Prior Year
		Member Paid	Net Rate	Net Rate
A. One person without Medicare	324.03	\$0.00	\$324.03	\$330.59
B. One person with Medicare*	211.24	0.00	211.24	254.47
C. Two persons without Medicare	648.06	70.00	578.06	621.18
D. Two persons with Medicare*	422.48	0.00	422.48	508.94
E. Child	157.87	25.00	132.87	160.75
F. Medicare Part B Reimbursement	66.60	0.00	66.60	58.70

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.

* Does not include Medicare Part B monthly premium of \$66.60.

Ohio HPRS First Year Projection of Health Care Claims Cost Based on 5 Year Averages

Year	Claims			Enrollees	Population Adjusted	Medical CPI	Price		Recognized
	Gross	Member	Net				Adjusted	Weight	
1999	\$5,715,039	216,635	\$5,498,404	1,772	\$5,932,815	250.6	\$7,033,677	0.00	-
2000	4,958,835	238,575	4,720,260	1,848	4,883,732	260.8	5,563,485	0.10	556,349
2001	6,428,951	249,855	6,179,096	1,900	6,218,122	272.8	6,772,009	0.20	1,354,402
2002	7,285,748	260,705	7,025,043	1,943	6,912,960	285.6	7,191,318	0.30	2,157,395
2003	7,515,824	334,695	7,181,129	1,912	7,181,129	297.1	7,181,129	0.40	2,872,452

(Base for coming year) Recognize: \$ 6,940,598

Growth Factors: Population 1.019

Price 1.040

First Year Projection: **\$ 7,355,368**

ASSUMPTIONS FOR HEALTH CARE COVERAGES
DECEMBER 31, 2003
(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 10 year horizon. Short-term assumptions are described on page B-6.

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 8 - 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 their 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, that is in the high teens for prescription drugs and low teens for medical. Trends are predicted to moderate in the near term but are still high in the 10% to 14% area. The trends used in this valuation are found on page B-6.

**POST-RETIREMENT HEALTH PREMIUM
AND MEDICARE REIMBURSEMENT
SELECTION OF ASSUMPTIONS
DECEMBER 31, 2003**

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, 2003 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.

The interest rate assumption (8.00%) was chosen by default to be the same rate used in the Pension Plan valuations. 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, 2003**

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 (Valuation): The Alternate A assumption (upon which the liability calculation is based) assumes that benefits will be periodically adjusted so that the employer share of per capita costs would increase no faster than 4.00% per year. This may lead to some curtailment of benefits as the population ages.

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.

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

Year	Health Trend Above Wage Inflation Assumption of 4.0%		
	Alt. A Valuation	Alt. B Intermediate	Alt. C Pessimistic
2004			
2005	0.00%	8.00%	10.00%
2006	0.00%	7.00%	9.00%
2007	0.00%	6.00%	8.00%
2008	0.00%	5.00%	7.00%
2009	0.00%	4.00%	6.00%
2010	0.00%	3.00%	5.00%
2011	0.00%	2.00%	4.00%
2012	0.00%	1.00%	3.00%
2013	0.00%	0.00%	2.00%
2014	0.00%	0.00%	1.00%
2015	0.00%	0.00%	0.00%
2016	0.00%	0.00%	0.00%
2017	0.00%	0.00%	0.00%
2018 & Later	0.00%	0.00%	0.00%

Amortization periods for unfunded accrued health liabilities have been historically developed according to Alternate A above.

**POST-RETIREMENT HEALTH CARE AND MEDICARE REIMBURSEMENT
PROJECTED BENEFITS
DECEMBER 31, 2003**

Year Ended 12/31	Projected Benefits as % of Payroll		
	Alt. A Valuation	Alt. B Intermediate	Alt. C Pessimistic
2004	8.6%	8.6%	8.6%
2005	8.8%	9.5%	9.7%
2006	9.0%	10.4%	10.7%
2007	9.2%	11.2%	11.8%
2008	9.4%	12.0%	12.8%
2009	9.6%	12.7%	13.8%
2010	9.7%	13.2%	14.7%
2011	9.8%	13.6%	15.5%
2012	9.9%	13.9%	16.0%
2013	10.0%	14.0%	16.5%
2018	10.8%	15.1%	18.0%
2023	12.1%	16.9%	20.1%
2028	12.8%	18.0%	21.4%
2033	12.6%	17.7%	21.0%
2038	12.4%	17.3%	20.6%
2043	12.3%	17.2%	20.5%
2048	12.5%	17.6%	20.9%
2053	12.9%	18.1%	21.5%
2058	12.9%	18.0%	21.5%
2063	12.6%	17.7%	21.1%
2073	12.5%	17.5%	20.8%
2083	12.8%	18.0%	21.4%
2093	12.6%	17.7%	21.1%
2102	12.6%	17.7%	21.1%

**POST-RETIREMENT HEALTH CARE AND MEDICARE REIMBURSEMENT
VALUATION RESULTS
ALTERNATIVE A: HEALTH INFLATION 4.00% PER YEAR**

Contributions for	Contributions Expressed as Percents of Payroll
Normal Cost	4.47%
Addition to Reserves	(0.97)%
Computed Employer Rate:	3.50%

Accrued Health and Medicare Reimbursement Liabilities, \$149,103,737 were more than applicable assets of \$90,534,164. The next two pages show the expected development of the Health Care fund under Alternate A assumptions. These pages show that contributions are expected to fall short of benefits for the foreseeable future, and that the retiree health fund is unlikely to remain solvent indefinitely under present conditions.

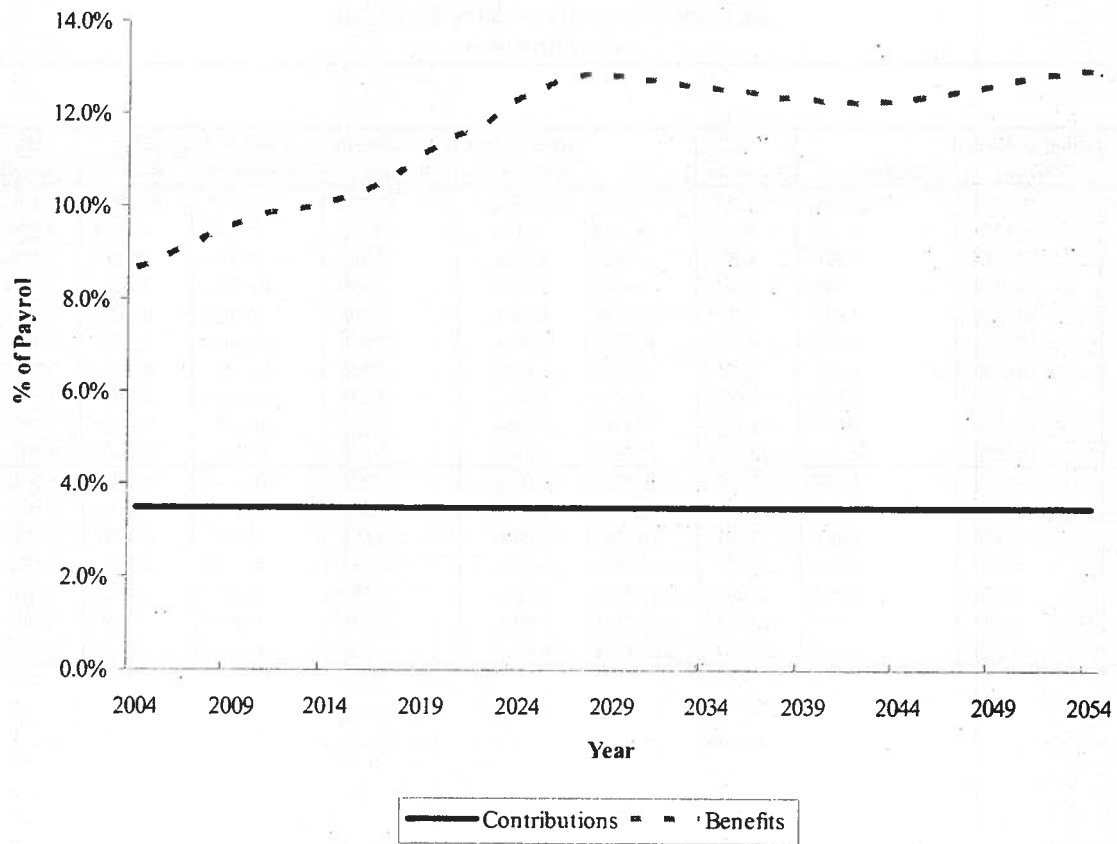
In understanding the results on the next pages, readers should keep in mind the key assumption upon which they are based – namely that the employer share of health costs will not grow faster than the stated rate. As the population ages, it may become increasingly difficult for this assumption to be met. The importance of health care cost containment cannot be overemphasized.

**POST-RETIREMENT HEALTH CARE & MEDICARE REIMBURSEMENT
CASH FLOW PROJECTION
HEALTH INFLATION: 4.00% PER YEAR
ALTERNATE A**

Fiscal Year	Fund Balance BOY	Contributions	Benefits	Net	Investment Return %	Investment Return \$	Fund Balance EOY		% of Payroll	
							Nominal \$	Real \$	Contrib.	Benefits
2004	\$90,534	\$2,979	\$7,355	\$(4,376)	8.00%	\$7,070	\$93,228	\$93,228	3.50%	8.64%
2005	93,228	3,102	7,818	(4,716)	8.00%	7,272	95,784	92,100	3.50%	8.82%
2006	95,784	3,224	8,296	(5,072)	8.00%	7,462	98,174	90,767	3.50%	9.01%
2007	98,174	3,348	8,802	(5,454)	8.00%	7,639	100,359	89,219	3.50%	9.20%
2008	100,359	3,477	9,325	(5,848)	8.00%	7,798	102,309	87,454	3.50%	9.39%
2009	102,309	3,613	9,872	(6,259)	8.00%	7,938	103,988	85,471	3.50%	9.56%
2010	103,988	3,757	10,425	(6,668)	8.00%	8,056	105,376	83,280	3.50%	9.71%
2011	105,376	3,912	10,991	(7,079)	8.00%	8,151	106,448	80,892	3.50%	9.83%
2012	106,448	4,073	11,513	(7,440)	8.00%	8,222	107,230	78,352	3.50%	9.89%
2013	107,230	4,238	12,070	(7,832)	8.00%	8,269	107,667	75,645	3.50%	9.97%
2018	104,320	5,129	15,809	(10,680)	8.00%	7,924	101,564	58,651	3.50%	10.79%
2023	78,585	6,186	21,322	(15,136)	8.00%	5,689	69,138	32,816	3.50%	12.06%
2024	69,138	6,427	22,591	(16,164)	8.00%	4,893	57,867	26,410	3.50%	12.30%
2025	57,867	6,683	23,872	(17,189)	8.00%	3,951	44,629	19,585	3.50%	12.50%
2026	44,629	6,950	25,202	(18,252)	8.00%	2,850	29,227	12,332	3.50%	12.69%
2027	29,227	7,240	26,495	(19,255)	8.00%	1,578	11,550	4,686	3.50%	12.81%
2028	11,550	7,559	27,704	(20,145)	8.00%	129	(8,466)	(3,303)	3.50%	12.83%

CONTRIBUTIONS VS. BENEFIT PAYOUTS
VALUATION RESULTS
ALTERNATIVE A: HEALTH INFLATION 4.00% PER YEAR

Contributions vs. Benefit Payouts



**POST-RETIREMENT HEALTH AND MEDICARE REIMBURSEMENT
RESULTS WITH ALTERNATE HEALTH INFLATION ASSUMPTIONS
DECEMBER 31, 2003**

Intermediate and Pessimistic assumption Alternates B and C were described on page B-6. 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.

Assumption Set	Funding Level 1 (Recommended Employer Rate)		Funding Level 2 (Lowest Employer Rate to Maintain Solvency of Fund Indefinitely)		
	%	Fund Solvent Until	%	Fund Solvent Until	Prior Valuation %
A (Valuation)	3.50%	2028	7.00%	Indefinitely	8.10%
B (Intermediate)	3.50%	2019	11.10%	Indefinitely	14.50%
C (Pessimistic)	3.50%	2017	13.60%	Indefinitely	16.20%

The above results show that

- Under the valuation assumptions, the employer rate will need to be raised prior to 2028 in order to maintain the solvency of the fund. The ultimate rate needed to support the plan would be 7.00% of payroll.
- Under the intermediate assumptions, the employer rate will need to be raised prior to 2019 in order to maintain the solvency of the fund. The ultimate rate needed to support the plan would be 11.10% of payroll if the increase were made today.
- Under the pessimistic assumptions, the employer rate will need to be raised prior to 2017 in order to maintain the solvency of the fund. The ultimate rate needed to support the plan would be 13.60% of payroll if the increase were made today.

If the assumption is made that health care inflation exceeds wage inflation by 2% per year each and every year in the future, the employer rate would need to be raised prior to 2019 in order to maintain the solvency of the fund. The following pages show projected fund activity based upon Alternate Assumptions B and C, and Funding Levels 1 and 2.

**POST-RETIREMENT HEALTH CARE & MEDICARE REIMBURSEMENT
CASH FLOW PROJECTION
INTERMEDIATE ASSUMPTIONS: B
FUNDING LEVEL 1**

Fiscal Year	Fund Balance BOY	Contributions	Benefits	Net	Investment Return %	Investment Return \$	Fund Balance EOY		% of Payroll	
							Nominal \$	Real \$	Contrib.	Benefits
2004	\$90,534	\$2,979	\$7,355	\$(4,376)	8.00%	\$7,070	\$93,228	\$93,228	3.50%	8.64%
2005	93,228	3,102	8,419	(5,317)	8.00%	7,248	95,159	91,499	3.50%	9.50%
2006	95,159	3,224	9,535	(6,311)	8.00%	7,364	96,212	88,953	3.50%	10.35%
2007	96,212	3,348	10,700	(7,352)	8.00%	7,407	96,267	85,581	3.50%	11.19%
2008	96,267	3,477	11,882	(8,405)	8.00%	7,369	95,231	81,404	3.50%	11.96%
2009	95,231	3,613	13,063	(9,450)	8.00%	7,245	93,026	76,461	3.50%	12.66%
2010	93,026	3,757	14,193	(10,436)	8.00%	7,030	89,620	70,828	3.50%	13.22%
2011	89,620	3,912	15,250	(11,338)	8.00%	6,722	85,004	64,596	3.50%	13.64%
2012	85,004	4,073	16,128	(12,055)	8.00%	6,324	79,273	57,924	3.50%	13.86%
2013	79,273	4,238	16,908	(12,670)	8.00%	5,842	72,445	50,899	3.50%	13.96%
2014	72,445	4,409	17,754	(13,345)	8.00%	5,269	64,369	43,485	3.50%	14.09%
2015	64,369	4,585	18,680	(14,095)	8.00%	4,593	54,867	35,641	3.50%	14.26%
2016	54,867	4,765	19,676	(14,911)	8.00%	3,801	43,757	27,330	3.50%	14.45%
2017	43,757	4,946	20,823	(15,877)	8.00%	2,874	30,754	18,470	3.50%	14.73%
2018	30,754	5,129	22,147	(17,018)	8.00%	1,788	15,524	8,965	3.50%	15.11%
2019	15,524	5,316	23,622	(18,306)	8.00%	519	(2,263)	(1,257)	3.50%	15.55%

Funding Level 1 is the present contribution rate for post-retirement Health Care and Medicare reimbursement. The fund remains solvent until 2019 in this projection.

**POST-RETIREMENT HEALTH CARE & MEDICARE REIMBURSEMENT
CASH FLOW PROJECTION
INTERMEDIATE ASSUMPTIONS: B
FUNDING LEVEL 2**

Fiscal Year	Fund Balance BOY	Contributions	Benefits	Net	Investment Return %	Investment Return \$	Fund Balance EOY		% of Payroll	
							Nominal \$	Real \$	Contrib.	Benefits
2004	\$90,534	\$9,448	\$7,355	\$2,093	8.00%	\$7,325	\$99,952	\$99,952	11.10%	8.64%
2005	99,952	9,839	8,419	1,420	8.00%	8,052	109,424	105,215	11.10%	9.50%
2006	109,424	10,226	9,535	691	8.00%	8,781	118,896	109,926	11.10%	10.35%
2007	118,896	10,618	10,700	(82)	8.00%	9,508	128,322	114,078	11.10%	11.19%
2008	128,322	11,027	11,882	(855)	8.00%	10,232	137,699	117,706	11.10%	11.96%
2009	137,699	11,458	13,063	(1,605)	8.00%	10,953	147,047	120,862	11.10%	12.66%
2010	147,047	11,916	14,193	(2,277)	8.00%	11,674	156,444	123,640	11.10%	13.22%
2011	156,444	12,407	15,250	(2,843)	8.00%	12,403	166,004	126,149	11.10%	13.64%
2012	166,004	12,919	16,128	(3,209)	8.00%	13,154	175,949	128,564	11.10%	13.86%
2013	175,949	13,442	16,908	(3,466)	8.00%	13,939	186,422	130,978	11.10%	13.96%
2018	233,207	16,266	22,147	(5,881)	8.00%	18,424	245,750	141,915	11.10%	15.11%
2023	297,393	19,619	29,870	(10,251)	8.00%	23,387	310,529	147,390	11.10%	16.90%
2028	363,273	23,974	38,809	(14,835)	8.00%	28,476	376,914	147,042	11.10%	17.97%
2033	436,866	29,734	47,321	(17,587)	8.00%	34,255	453,534	145,426	11.10%	17.67%
2038	528,308	36,447	56,897	(20,450)	8.00%	41,457	549,315	144,773	11.10%	17.33%
2043	643,803	44,405	68,725	(24,320)	8.00%	50,544	670,027	145,142	11.10%	17.18%
2048	783,383	53,709	85,053	(31,344)	8.00%	61,433	813,472	144,836	11.10%	17.58%
2053	939,063	64,942	105,746	(40,804)	8.00%	73,514	971,773	142,210	11.10%	18.07%
2063	1,313,157	96,769	154,234	(57,465)	8.00%	102,783	1,358,475	134,303	11.10%	17.69%
2073	1,846,799	143,353	226,086	(82,733)	8.00%	144,477	1,908,543	127,468	11.10%	17.51%
2083	2,478,450	211,256	342,088	(130,832)	8.00%	193,110	2,540,728	114,637	11.10%	17.97%
2093	3,066,735	313,932	501,133	(187,201)	8.00%	237,947	3,117,481	95,025	11.10%	17.72%
2103	3,339,614	464,074	741,662	(277,588)	8.00%	256,208	3,318,234	68,329	11.10%	17.74%

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**

Fiscal Year	Fund Balance BOY	Contributions	Benefits	Net	Investment Return %	Investment Return \$	Fund Balance EOY		% of Payroll	
							Nominal \$	Real \$	Contrib.	Benefits
2004	\$90,534	\$2,979	\$7,355	\$(4,376)	8.00%	\$7,070	\$93,228	\$93,228	3.50%	8.64%
2005	93,228	3,102	8,570	(5,468)	8.00%	7,242	95,002	91,348	3.50%	9.67%
2006	95,002	3,224	9,880	(6,656)	8.00%	7,337	95,683	88,464	3.50%	10.72%
2007	95,683	3,348	11,289	(7,941)	8.00%	7,341	95,083	84,528	3.50%	11.80%
2008	95,083	3,477	12,766	(9,289)	8.00%	7,240	93,034	79,526	3.50%	12.85%
2009	93,034	3,613	14,295	(10,682)	8.00%	7,021	89,373	73,458	3.50%	13.85%
2010	89,373	3,757	15,821	(12,064)	8.00%	6,673	83,982	66,372	3.50%	14.74%
2011	83,982	3,912	17,320	(13,408)	8.00%	6,189	76,763	58,334	3.50%	15.50%
2012	76,763	4,073	18,667	(14,594)	8.00%	5,565	67,734	49,493	3.50%	16.04%
2013	67,734	4,238	19,946	(15,708)	8.00%	4,798	56,824	39,924	3.50%	16.47%
2014	56,824	4,409	21,145	(16,736)	8.00%	3,885	43,973	29,707	3.50%	16.79%
2015	43,973	4,585	22,248	(17,663)	8.00%	2,820	29,130	18,922	3.50%	16.98%
2016	29,130	4,765	23,434	(18,669)	8.00%	1,593	12,054	7,529	3.50%	17.21%
2017	12,054	4,946	24,800	(19,854)	8.00%	180	(7,620)	(4,576)	3.50%	17.55%

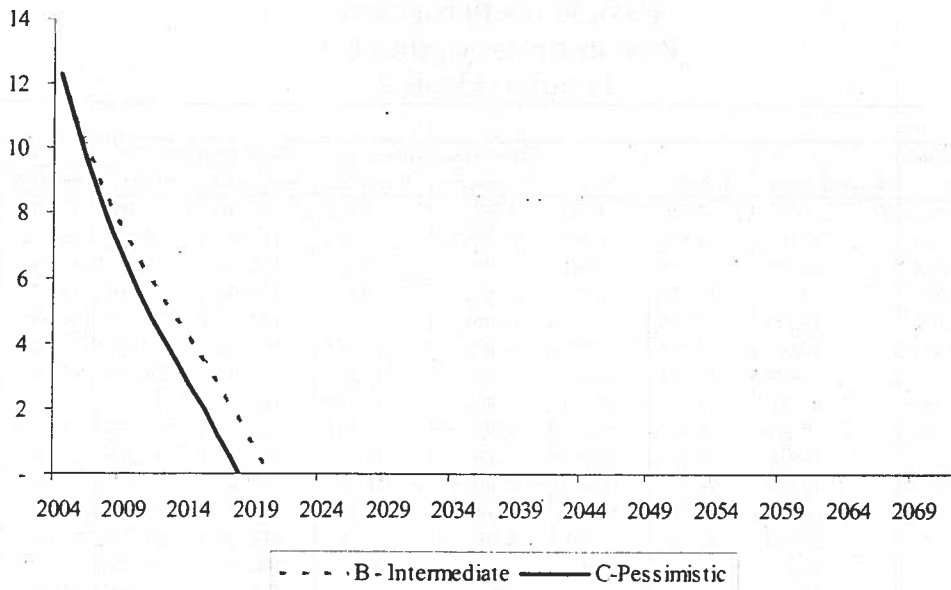
Funding Level 1 is the present contribution rate for post-retirement Health Care and Medicare reimbursement. The fund remains solvent until 2017 in this projection.

**POST-RETIREMENT HEALTH CARE & MEDICARE REIMBURSEMENT
CASH FLOW PROJECTION
Pessimistic Assumptions: C
FUNDING LEVEL 2**

Fiscal Year	Fund Balance BOY	Contributions	Benefits	Net	Investment Return %	Investment Return \$	Fund Balance EOY		% of Payroll	
							Nominal \$	Real \$	Contrib.	Benefits
2004	\$ 90,534	\$ 11,576	\$ 7,355	\$ 4,221	8.00%	\$ 7,409	\$ 102,164	\$ 102,164	13.60%	8.64%
2005	102,164	12,055	8,570	3,485	8.00%	8,311	113,960	109,577	13.60%	9.67%
2006	113,960	12,529	9,880	2,649	8.00%	9,221	125,830	116,337	13.60%	10.72%
2007	125,830	13,010	11,289	1,721	8.00%	10,134	137,685	122,401	13.60%	11.80%
2008	137,685	13,511	12,766	745	8.00%	11,044	149,474	127,771	13.60%	12.85%
2009	149,474	14,038	14,295	(257)	8.00%	11,948	161,165	132,466	13.60%	13.85%
2010	161,165	14,600	15,821	(1,221)	8.00%	12,845	172,789	136,558	13.60%	14.74%
2011	172,789	15,201	17,320	(2,119)	8.00%	13,739	184,409	140,136	13.60%	15.50%
2012	184,409	15,828	18,667	(2,839)	8.00%	14,641	196,211	143,369	13.60%	16.04%
2013	196,211	16,469	19,946	(3,477)	8.00%	15,560	208,294	146,345	13.60%	16.47%
2018	261,432	19,930	26,377	(6,447)	8.00%	20,660	275,645	159,178	13.60%	18.00%
2023	333,858	24,038	35,575	(11,537)	8.00%	26,253	348,574	165,448	13.60%	20.13%
2028	407,177	29,374	46,222	(16,848)	8.00%	31,909	422,238	164,724	13.60%	21.40%
2033	488,302	36,431	56,360	(19,929)	8.00%	38,277	506,650	162,458	13.60%	21.04%
2038	588,892	44,655	67,765	(23,110)	8.00%	46,199	611,981	161,289	13.60%	20.64%
2043	715,713	54,406	81,852	(27,446)	8.00%	56,173	744,440	161,261	13.60%	20.46%
2048	867,945	65,806	101,299	(35,493)	8.00%	68,034	900,486	160,328	13.60%	20.94%
2053	1,034,852	79,568	125,945	(46,377)	8.00%	80,957	1,069,432	156,502	13.60%	21.53%
2063	1,422,794	118,564	183,695	(65,131)	8.00%	111,252	1,468,915	145,221	13.60%	21.07%
2073	1,953,218	175,640	269,271	(93,631)	8.00%	152,560	2,012,147	134,388	13.60%	20.85%
2083	2,506,312	258,836	407,431	(148,595)	8.00%	194,637	2,552,354	115,161	13.60%	21.41%
2093	2,818,278	384,638	596,856	(212,218)	8.00%	217,082	2,823,142	86,053	13.60%	21.10%
2103	2,365,870	568,596	883,330	(314,734)	8.00%	176,842	2,227,978	45,879	13.60%	21.12%

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
3.50% EMPLOYER CONTRIBUTION RATE
DECEMBER 31, 2003**



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 Plans 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) EANC %	(3) Pension PUCNC %	(4) PUCNC \$	(5) Health Contribution	(6) (4) + (5)	(7) Sum of (5)	(8) Sum of (6)	(9) IRC Ratio (7) / (8)
1985	\$32,550	22.16%	23.05%	\$ 7,502.8	\$1,114.8	\$8,617.6	\$ 1,114.8	\$ 8,617.6	12.9%
1986	34,735	22.16%	23.05%	8,006.4	1,229.0	9,235.4	2,343.8	17,853.0	13.1%
1987	39,894	21.59%	22.45%	8,956.2	1,351.4	10,307.6	3,695.2	28,160.6	13.1%
1988	40,725	21.59%	22.45%	9,142.8	1,478.2	10,621.0	5,173.4	38,781.6	13.3%
1989	43,048	22.75%	23.66%	10,185.2	1,752.8	11,938.0	6,926.2	50,719.6	13.7%
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	84,073	21.88%	22.72%	19,101.4	3,395.7	22,497.1	47,568.5	304,240.1	15.6%

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.

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, 2003 TO DECEMBER 31, 2003**

Unfunded Accrued Liabilities (UAL), January 1	\$135,465,349
Normal Cost	17,858,363
Contributions	24,472,345
Interest	10,572,669
Expected UAL Before Any Changes	139,424,036
Effect of Changes in Assumptions	0
Expected UAL After all Changes	139,424,036
Actual UAL	156,817,504
Gain/(Loss) for Year From Financial Experience	\$(17,393,468)

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, 2003 AND 2002**

***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	
	2003	2002
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.	\$ 360,013	\$ 231,811
Disability Retirements. If disability claims are less than assumed, there is a gain. If more claims, a loss.	922,921	886,041
Death-in-Service Benefits. If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	(61,743)	(61,175)
Withdrawal From Employment. If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	16,440	(135,024)
Pay Increases. If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	544,991	2,461,513
Contribution Income. If more contributions are received than expected, there is a gain. If less, there is a loss.	0	0
Investment Income. If there is greater investment return on pension assets than assumed, there is a gain. If less return, a loss.	(14,482,283)	(58,251,719)
Other. Miscellaneous gains and losses resulting from data adjustments, timing of financial transactions, valuation methods, etc.	(4,693,807)	1,946,039
Gain (or Loss) During Year From Financial Experience	\$ (17,393,468)	\$ (52,922,514)
Non-Recurring Items (Effect of Benefit/Assumption Changes)	0	5,536,127
Composite Gain (or Loss) During Year	\$ (17,393,468)	\$ (47,386,387)

INVESTMENT GAIN LOSS
DEVELOPMENT OF PORTION ATTRIBUTABLE TO RETIREMENT,
SURVIVOR AND DISABILITY ALLOWANCES
JANUARY 1, 2003 TO DECEMBER 31, 2003

Assets, Beginning of Year	\$527,604,456
Net Cash Flow	(8,989,439)
Assumed Investment Return	41,848,779
Expected Assets End of Year	\$560,463,796
Actual Assets End of Year	545,981,513
Gain/(Loss) for Year	\$(14,482,283)

The total investment gain (loss) was \$(15,585,557). This amount includes health assets.

**ACTIVE MEMBER POPULATION RECONCILIATION
JANUARY 1, 2003 TO DECEMBER 31, 2003**

	Actual	Expected
Active Members Beginning of Year	1,548	
Plus New Hires	59	
Minus Retirements	32	33.5
Minus Deaths	0	1.0
Minus Disabilities	6	6.3
Minus Other Terminations*	32	20.2
Returned to Active Status	5	
Plus or Minus Data Correction	0	
Active Members End of Year	1,542	

** Includes 10 members who took a leave of absence.*

STATE OF TEXAS
COMPTROLLER GENERAL

Item	Amount	Description
100	100	...
200	200	...
300	300	...
400	400	...
500	500	...

SECTION D

FINANCIAL INFORMATION

**CURRENT ASSET INFORMATION
FURNISHED FOR THE VALUATION
DECEMBER 31, 2003**

Balance Sheet

<u>Current Assets (Market Value)</u>		<u>Fund Balance</u>	
Cash & short-term investments	\$ 12,856,108	Employees' Savings Fund	\$ 73,015,409
Fixed Income	129,097,676	Employers Accumulation Fund	63,864,294
Stocks	416,006,594	Pension Reserve Fund	326,505,417
Real Estate	63,900,915	Survivors Benefit Fund	24,329,055
Other short-term	108,928	Health Care Fund	73,745,550
Accruals & Receivables	<u>2,016,516</u>	Income Fund	<u>62,527,012</u>
Total Current Assets	<u>\$ 623,986,737</u>	Total Fund Balance	<u>\$ 623,986,737</u>

Revenues and Expenditures

	<u>2003</u>	<u>2002</u>
Balance - January 1	\$513,415,930	\$575,955,680
Revenues*		
Employee contributions	8,432,565	7,824,450
Employer contributions (net)	19,435,529	18,388,243
Investment income (net)	123,998,447	(49,595,339)
Miscellaneous	<u>0</u>	<u>0</u>
Total	151,866,541	(23,382,646)
Expenditures		
Benefit payments	32,994,853	31,240,089
Health insurance	7,181,129	7,025,043
Refund of member contributions	386,931	266,137
Administrative expenses	652,821	540,835
Death benefit	<u>80,000</u>	<u>85,000</u>
Total	41,295,734	39,157,104
Net Addition to Assets	<u>110,570,807</u>	<u>(62,539,750)</u>
Balance - December 31	<u>\$623,986,737</u>	<u>\$513,415,930</u>

* Revenues include transfers to and from systems.

**CAFR ASSET INFORMATION FURNISHED FOR THE VALUATION
DECEMBER 31, 2003**

ADDITIONS BY SOURCE

Year	Pension Benefits					Other Postemployment Benefits		
	Contributions		Net Investment Income	Transfers from Other Systems	Total	Employer Contributions	Net Investment Income	Total
	Member*	Employer						
1995	\$7,303,832	\$10,774,957	\$69,700,220	\$356,435	\$ 88,135,444	\$3,114,150	\$ 12,251,272	\$ 15,365,422
1996	6,223,468	12,176,108	54,183,754	494,651	73,077,981	2,530,817	9,444,391	11,975,208
1997	6,146,774	12,236,515	66,159,004	330,119	84,872,412	2,543,372	11,536,686	14,080,058
1998	6,573,762	13,101,039	13,029,413	503,509	33,207,723	2,687,150	1,396,472	4,083,622
1999	6,708,497	13,569,730	33,612,434	444,135	54,334,796	2,783,534	6,878,890	9,662,424
2000	6,954,301	13,210,189	(14,120,288)	925,998	6,970,200	3,346,581	(3,114,980)	231,601
2001	7,042,044	13,901,313	(17,920,157)	999,380	4,022,580	3,521,665	(2,900,183)	621,482
2002	7,563,173	14,923,893	(42,921,956)	999,176	(19,435,714)	3,780,715	(6,673,383)	(2,892,668)
2003	8,136,974	16,361,339	105,112,725	763,419	130,374,457	3,395,749	18,885,722	22,281,471

* Does not include service purchases.

DEDUCTIONS BY TYPE

Year	Pension Benefits					Other Postemployment Benefits		
	Benefits#	Refunds	Transfers to Other Systems	Administrative	Total	Health Care		Total
						Administrative	Administrative	
1995	\$13,606,017	\$207,795	\$127,478	\$1,657,047	\$15,598,337	\$1,959,225	\$ 291,261	\$2,250,486
1996	15,920,148	67,323	140,376	2,134,192	18,262,039	2,022,608	371,996	2,394,604
1997	18,683,246	231,705	98,810	704,542	19,718,303	2,499,178	122,856	2,622,034
1998	21,539,636	164,054	281,606	648,144	22,633,440	3,128,888	114,378	3,243,266
1999	24,324,038	529,654	196,414	449,167	25,499,273	5,498,402	78,854	5,577,256
2000	27,042,946	363,067	904,972	549,168	28,860,153	4,720,260	95,423	4,815,683
2001	29,457,281	306,452	448,381	524,922	30,737,036	6,179,096	90,422	6,269,518
2002	31,325,089	266,137	1,054,264	462,200	33,107,690	7,025,043	78,635	7,103,678
2003	33,074,853	386,931	789,387	559,052	34,810,223	7,181,129	93,769	7,274,898

Includes death benefits.

**DEVELOPMENT OF FUNDING VALUE OF RETIREMENT SYSTEM ASSETS
DECEMBER 31, 2003**

	2001	2002	2003	2004	2005	2006
A. Funding Value From Prior Year	\$ 668,233,948	\$ 645,070,362	\$ 616,099,116			
B. Market Value End of Year	575,955,680	513,415,930	623,986,737			
C. Market Value Beginning of Year	608,318,172	575,955,680	513,415,930			
D. Non-Investment Net Cash Flow	(10,926,808)	(12,403,576)	(12,774,819)			
E. Investment Return:						
E1. Market Total: B - C - D	(21,435,684)	(50,136,174)	123,345,626			
E2. For Immediate Recognition (8.0%)	53,021,644	51,109,486	48,776,937			
E3. Amount for Phased-In Recognition E1-E2	(74,457,328)	(101,245,660)	74,568,689			
F. Phased-In Recognition of Investment Return:						
F1. Current Year: 25% x E3	(18,614,332)	(25,311,415)	18,642,172			
F2. First Prior Year	(16,837,338)	(23,038,227)	(34,227,729)	\$ 18,642,172		
F3. Second Prior Year	(1,155,598)	0	0	(34,227,729)	\$ 18,642,172	
F4. Third Prior Year	(7,092,567)	0	0	0	(34,227,728)	\$ 18,642,173
F5. Total Recognized Phase-ins	\$ (43,699,835)	\$ (48,349,642)	\$ (15,585,557)	\$ (15,585,557)	\$ (15,585,556)	\$ 18,642,173
G. Funding Value End of Year:						
G1. Preliminary Funding Value End of Year: A + D + E2 + F5	\$ 666,628,949	\$ 635,426,630	\$ 636,515,677			
G2. Corridor Percent	12%	20%	20%			
G3. Upper Corridor Limit: (100% + G2) x B	\$ 645,070,362	\$ 616,099,116	\$ 748,784,084			
G4. Lower Corridor Limit: (100% - G2) x B	\$ 506,840,998	\$ 410,732,744	\$ 499,189,390			
G5. Funding Value End of Year	\$ 645,070,362	\$ 616,099,116	\$ 636,515,677			
H. Difference between Market Value and Funding Value	\$ (69,114,682)	\$ (102,683,186)	\$ (12,528,940)			
I. Funding Value Rate of Return	(1.8)%	(2.6)%	5.4 %			
J. Market Value Rate of Return	(3.6)%	(8.8)%	24.3 %			
K. Ratio of Funding Value to Market Value	112%	120%	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 PENSIONS AND HEALTH
DECEMBER 31, 2003

	Pension	Health	Total
A. Market Value Beginning of Year	\$439,670,380	\$73,745,550	\$513,415,930
B. Member Contributions	8,432,565	0	8,432,565
C. Employer Contributions	16,039,780	3,395,749	19,435,529
D. Benefits Paid	32,994,853	7,181,129	40,175,982
E. Refunds of Member Contributions	386,931	0	386,931
F. Death Benefits	80,000	0	80,000
G. Net External Cash Flow (B + C - D - E - F)	(8,989,439)	(3,785,380)	(12,774,819)
H. Other Changes in Market Value	104,553,673	18,791,953	123,345,626
I. Market Value End of Year (A + G + H)	535,234,614	88,752,123	623,986,737
J. Funding Value Adjustment	10,746,899	1,782,041	12,528,940
K. Funding Value End of Year (I + J)	\$545,981,513	\$90,534,164	\$636,515,677

Line J is allocated in proportion to Line I.

SECTION E

SUMMARY of MEMBER DATA

Member No.	MEMBER DATA						Status
	Age	Sex	Religion	Marital	Profession	Income	
1	35	M	C	M	Teacher	1000	Active
2	42	F	C	M	Homemaker	500	Active
3	28	M	C	S	Engineer	1500	Active
4	55	F	C	M	Retired	750	Active
5	30	M	C	M	Business	1200	Active
6	48	F	C	M	Teacher	900	Active
7	25	M	C	S	Student	300	Active
8	60	F	C	M	Retired	600	Active
9	38	M	C	M	Engineer	1100	Active
10	45	F	C	M	Homemaker	450	Active
11	22	M	C	S	Student	250	Active
12	52	F	C	M	Retired	550	Active
13	33	M	C	M	Teacher	850	Active
14	40	F	C	M	Homemaker	400	Active
15	27	M	C	S	Student	280	Active
16	58	F	C	M	Retired	650	Active
17	36	M	C	M	Business	1050	Active
18	43	F	C	M	Homemaker	480	Active
19	24	M	C	S	Student	220	Active
20	62	F	C	M	Retired	700	Active
21	31	M	C	M	Engineer	950	Active
22	47	F	C	M	Homemaker	420	Active
23	29	M	C	S	Student	260	Active
24	56	F	C	M	Retired	580	Active
25	34	M	C	M	Teacher	880	Active
26	41	F	C	M	Homemaker	410	Active
27	26	M	C	S	Student	240	Active
28	61	F	C	M	Retired	680	Active
29	37	M	C	M	Business	1000	Active
30	44	F	C	M	Homemaker	460	Active
31	23	M	C	S	Student	230	Active
32	59	F	C	M	Retired	620	Active
33	32	M	C	M	Teacher	920	Active
34	46	F	C	M	Homemaker	440	Active
35	21	M	C	S	Student	210	Active
36	63	F	C	M	Retired	720	Active
37	39	M	C	M	Business	1150	Active
38	49	F	C	M	Homemaker	490	Active
39	28	M	C	S	Student	270	Active
40	57	F	C	M	Retired	600	Active
41	35	M	C	M	Teacher	900	Active
42	42	F	C	M	Homemaker	430	Active
43	25	M	C	S	Student	250	Active
44	60	F	C	M	Retired	640	Active
45	33	M	C	M	Business	1080	Active
46	48	F	C	M	Homemaker	470	Active
47	27	M	C	S	Student	290	Active
48	58	F	C	M	Retired	560	Active
49	36	M	C	M	Teacher	870	Active
50	43	F	C	M	Homemaker	450	Active
51	24	M	C	S	Student	220	Active
52	61	F	C	M	Retired	690	Active
53	38	M	C	M	Business	1100	Active
54	47	F	C	M	Homemaker	480	Active
55	29	M	C	S	Student	280	Active
56	56	F	C	M	Retired	590	Active
57	34	M	C	M	Teacher	930	Active
58	41	F	C	M	Homemaker	410	Active
59	26	M	C	S	Student	240	Active
60	62	F	C	M	Retired	710	Active
61	37	M	C	M	Business	1050	Active
62	46	F	C	M	Homemaker	460	Active
63	28	M	C	S	Student	270	Active
64	57	F	C	M	Retired	570	Active
65	35	M	C	M	Teacher	890	Active
66	44	F	C	M	Homemaker	440	Active
67	25	M	C	S	Student	260	Active
68	60	F	C	M	Retired	660	Active
69	39	M	C	M	Business	1120	Active
70	49	F	C	M	Homemaker	490	Active
71	30	M	C	S	Student	300	Active
72	59	F	C	M	Retired	550	Active
73	36	M	C	M	Teacher	860	Active
74	43	F	C	M	Homemaker	430	Active
75	27	M	C	S	Student	250	Active
76	58	F	C	M	Retired	580	Active
77	38	M	C	M	Business	1020	Active
78	45	F	C	M	Homemaker	450	Active
79	29	M	C	S	Student	290	Active
80	56	F	C	M	Retired	560	Active
81	34	M	C	M	Teacher	910	Active
82	42	F	C	M	Homemaker	420	Active
83	26	M	C	S	Student	230	Active
84	61	F	C	M	Retired	670	Active
85	40	M	C	M	Business	1000	Active
86	48	F	C	M	Homemaker	480	Active
87	31	M	C	S	Student	280	Active
88	57	F	C	M	Retired	590	Active
89	37	M	C	M	Teacher	940	Active
90	46	F	C	M	Homemaker	460	Active
91	28	M	C	S	Student	260	Active
92	58	F	C	M	Retired	570	Active
93	39	M	C	M	Business	1080	Active
94	47	F	C	M	Homemaker	470	Active
95	30	M	C	S	Student	290	Active
96	56	F	C	M	Retired	580	Active
97	35	M	C	M	Teacher	920	Active
98	44	F	C	M	Homemaker	440	Active
99	25	M	C	S	Student	240	Active
100	60	F	C	M	Retired	680	Active

**ACTIVE MEMBERS AS OF DECEMBER 31, 2003
BY ATTAINED AGE AND YEARS OF SERVICE**

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Up	No.	Payroll
20-24	56							56	\$ 2,102,169
25-29	184	97	2					283	12,538,179
30-34	104	163	119					386	18,954,674
35-39	39	61	172	44				316	17,144,605
40		6	19	20				45	2,579,797
41	2	1	17	28	3			51	2,886,948
42		2	17	20	10			49	2,997,734
43			6	10	24			40	2,419,733
44			8	11	32	1		52	3,202,137
45			5	10	34	8		57	3,554,368
46				9	31	3		43	2,754,290
47			1	6	20	12		39	2,394,288
48				3	12	17		32	1,934,412
49				2	12	12		26	1,677,518
50				2	11	10		23	1,634,614
51				3	7	7	2	19	1,150,472
52					2	7	1	10	766,785
53				1	1	3	1	6	412,609
54					3	2	3	8	592,596
60						1		1	40,034
Totals	385	330	366	169	202	83	7	1,542	\$ 81,737,962

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

Age: 36.1 years.

Service: 11.5 years.

Annual Pay: \$53,008

**ACTIVE MEMBERS
BY AGES OF ENTRY INTO SERVICE
DECEMBER 31, 2003**

Entry Age Nearest Birthday	Number	Cumulative Number	Percent	Cumulative Percent
Less than 18	0	0	0.00%	0.00%
18	6	6	0.39%	0.39%
19	34	40	2.20%	2.59%
20	50	90	3.25%	5.84%
21	187	277	12.12%	17.96%
22	240	517	15.57%	33.53%
23	180	697	11.67%	45.20%
24	184	881	11.93%	57.13%
25	140	1,021	9.08%	66.21%
26	130	1,151	8.43%	74.64%
27	99	1,250	6.42%	81.06%
28	69	1,319	4.48%	85.54%
29	39	1,358	2.53%	88.07%
30	61	1,419	3.95%	92.02%
31	37	1,456	2.40%	94.42%
32	25	1,481	1.62%	96.04%
33	28	1,509	1.82%	97.86%
34	21	1,530	1.36%	99.22%
35	10	1,540	0.65%	99.87%
36	0	1,540	0.00%	99.87%
37	0	1,540	0.00%	99.87%
38	1	1,541	0.07%	99.94%
39	1	1,542	0.06%	100.00%
40 & Up	0	1,542	0.00%	100.00%
Total	1,542			

**AGE AND SERVICE PENSIONS BEING PAID DECEMBER 31, 2003
BY ATTAINED AGES**

Attained Ages	Number	Monthly Pensions	Number Married	Average Age of Spouse
48	14	\$ 42,633	12	46
49	10	31,892	9	48
50	8	22,028	8	50
51	20	62,459	19	48
52	35	90,471	32	49
53	42	118,555	40	50
54	38	114,063	35	51
55	54	154,576	50	53
56	74	214,028	67	54
57	46	139,980	44	56
58	42	124,408	37	56
59	54	157,408	52	56
60	41	111,681	40	57
61	54	146,802	50	57
62	40	107,097	39	58
63	29	82,805	28	59
64	28	80,803	28	61
65	27	63,337	27	62
66	28	72,340	27	63
67	20	46,357	19	64
68	16	38,258	16	66
69	15	32,382	13	65
70	10	19,239	9	66
71	15	31,769	14	68
72	14	29,264	14	70
73	16	36,159	16	69
74	17	29,211	14	73
75	17	28,115	16	73
76	16	25,050	15	73
77	10	14,520	9	74
78	12	17,556	10	75
79	9	13,868	8	77
80	6	8,204	3	73
81	8	10,854	6	78
82	6	8,593	6	80
83	7	11,019	5	79
84	3	4,311	3	80
85 & Over	16	21,334	10	79
Totals	917	\$ 2,363,429	850	

**DISABILITY PENSIONS BEING PAID DECEMBER 31, 2003
BY ATTAINED AGE**

Attained Ages	Number	Monthly Pensions	Number Married	Average Age of Spouse
32	1	\$2,228	1	28
35	1	2,038	1	37
36	1	2,027	1	25
37	3	5,604	1	37
38	1	1,821	1	47
39	2	4,479	1	42
40	5	10,657	4	37
41	1	2,482	1	36
42	2	5,280	2	43
43	5	11,160	5	41
44	3	7,239	3	40
45	4	8,402	3	45
46	7	17,577	3	46
47	4	10,040	3	46
48	2	5,249	2	50
50	3	7,153	3	48
51	2	3,952	1	47
52	3	7,403	3	46
53	1	1,522	1	48
54	3	7,153	3	52
55	6	10,781	5	52
56	1	2,068	1	56
57	3	6,321	2	51
59	2	4,560	1	61
60	2	3,397	2	59
61	1	2,117	0	N/A
62	2	2,612	2	53
66	1	2,623	1	63
68	1	1,306	1	64
73	1	1,284	1	68
74	2	2,634	1	70
76	1	1,317	1	74
77	1	1,318	1	77
81	1	1,326	1	81
Totals	79	\$167,130	63	

DEPENDENTS BEING PAID AS OF DECEMBER 31, 2003
TABULATED BY ATTAINED AGE

Attained Ages	Number	Monthly Pensions
12 & Under	14	\$2,326
15	1	186
16	1	162
17	5	862
18	1	186
19	1	186
20	3	525
21	1	182
22	2	349
26	1	954
30	1	931
31	1	1,000
33	1	931
35	1	1,092
37	1	1,000
38	1	975
39	1	975
41	2	2,027
44	2	372
46	2	2,141
48	2	2,012
49	2	2,046
51	1	1,046
52	4	4,255
53	3	3,082
54	1	1,313
55	3	3,431
56	5	5,077
57	3	3,355
58	3	3,133
59	3	3,441
60	3	3,108
61	6	7,294
62	1	1,046
63	3	3,078
64	4	4,249
65	3	4,180
66	4	5,095
67	4	4,010
68	4	3,874
69	4	4,096
70	2	2,008
70-79	90	91,096
80-89	50	50,678
90 & Over	6	6,225
Totals	257	\$239,590

ACTIVE MEMBER VALUATION DATA, 1994 TO 2003

Actuarial Valuation as of December 31	Number of Active Members	Annual Payroll	Average Annual Salary	% Increase in Average Pay
1994	1,465	\$58,116,787	\$39,670	4.3 %
1995	1,455	59,825,356	41,117	3.6
1996	1,375	59,239,349	43,083	4.8
1997	1,445	62,233,299	43,068	(0.0)
1998	1,446	65,153,864	45,058	4.6
1999	1,445	66,017,381	45,687	1.4
2000	1,489	69,028,285	46,359	1.5
2001	1,520	76,344,002	50,226	8.3
2002	1,548	78,997,065	51,032	1.6
2003	1,542	81,737,962	53,008	3.9

RETIRANTS AND BENEFICIARIES VALUATION DATA, 1994 TO 2003

Actuarial Valuation as of December 31	Added to Rolls		Removed from Rolls		Number of People	Monthly Amounts Pensions	Average Amount
	No.	Monthly Benefits	No.	Monthly Benefits			
1994	48		7		764	\$1,057,577	\$1,384
1995	68		6		826	1,184,405	1,434
1996	113		28		911	1,402,909	1,540
1997	96		23		984	1,645,613	1,672
1998	96		20		1,060	1,914,091	1,806
1999	82		19		1,123	2,123,471	1,891
2000	78		27		1,174	2,300,464	1,960
2001	53	\$181,427	20	\$21,583	1,207	2,460,308	2,038
2002	55	184,301	31	41,501	1,231	2,603,108	2,115
2003	48	196,385	26	29,344	1,253	2,770,149	2,211

Of the 1,253 retirants and beneficiaries as of December 31, 2003, 917 are service retirees, 79 are disability retirees and 257 are survivor beneficiaries. The average monthly benefits are \$2,577 for service retirees, \$2,116 for disability retirees and \$932 for survivor beneficiaries.

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

	Census Date									
	12/03	12/02	12/01	12/00	12/99	12/98	12/97	12/96	12/95	12/94
Recipients:										
w/o Medicare A	791	773	771	761	724	656	589	534	460	425
Medicare A	394	386	368	346	339	337	333	322	298	274
Spouses:										
w/o Medicare A	403	483	471	447	429	373	354	324	277	253
w Medicare A	165	158	155	151	146	139	130	117	111	99
Dependent Children	129	111	105	110	107	75	70	59	54	56
Orphans	30	32	30	33	27	22	23	23	25	26
Total	1,912	1,943	1,900	1,848	1,772	1,602	1,499	1,379	1,225	1,133

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

	AETNA		Medical Mutual		Total
	Network	Non-Network	Network	Non-Network	
2001	899	493	468	40	1,900
2002	880	491	516	56	1,943
2003	815	486	546	65	1,912

DEFERRED PENSIONS AS OF DECEMBER 31, 2003
TABULATED BY ATTAINED AGE

Attained Ages	Number	Monthly Pensions
45	2	\$3,673
47	1	2,654
48	2	2,803
Totals	5	\$9,130

A *deferred retiree* 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.

Item	Value	Percentage

SECTION F

ASSUMPTIONS USED IN THE VALUATION

APPENDIX

SUMMARY OF VALUATION METHOD AND ASSUMPTIONS DECEMBER 31, 2003

The actuarial assumptions used in the valuation are shown in this Appendix of the report. The assumptions were established for the December 31, 2000 actuarial valuation, following a 5 year experience study. They were adopted by the Board after obtaining the advice of the Actuary and other professionals. The payroll growth assumption was established for the December 31, 2002 actuarial valuation.

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 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 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. The current assumed rate probably would be close to the average for retirement systems with asset allocations similar to HPRS. The economic assumptions were last reviewed as part of the 5 year Experience Study for the period January 1, 1995 through December 31, 1999. It is scheduled to be reviewed again following the December 31, 2004 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 1983 Group Annuity Mortality Male and Female Tables. This assumption was last reviewed and updated as part of the 5 year Experience Study for the period January 1, 1995 through December 31, 1999. As shown in that study, the current assumption allows some margin for future mortality improvement. It is scheduled to be reviewed again following the December 31, 2004 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 an adjusted age that is the actual age plus 10 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 (M.A.A.A.) 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	\$132.10	\$140.42	29.18	34.92
55	124.57	134.74	24.82	30.24
60	115.04	127.24	20.64	25.67
65	103.26	117.61	16.69	21.29
70	90.18	105.53	13.18	17.13
75	76.40	91.57	10.15	13.37
80	62.65	77.16	7.64	10.20

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

SEPARATIONS FROM ACTIVE EMPLOYMENT & SALARY SCALE

Sample Ages	Percent of Active Members Separating Within Next Year				Salary Increase Assumptions for an Individual Member			
	Disability	Death		Other	Service	Merit & Seniority	Base (Economic)	Increase Next Year
		Men	Women					
20	0.08%	0.02%	0.01%	2.57%	0-4	3.70%	4.00%	7.70%
25	0.08%	0.02%	0.01%	2.24%	5-9	2.00%	4.00%	6.00%
30	0.23%	0.03%	0.02%	1.91%	10-14	1.50%	4.00%	5.50%
35	0.42%	0.04%	0.02%	1.56%	15 & Up	0.30%	4.00%	4.30%
40	0.70%	0.06%	0.03%	0.84%				
45	0.85%	0.11%	0.05%	0.41%				
50	1.13%	0.20%	0.08%	0.15%				
55	1.32%	0.31%	0.13%	0.00%				

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	40%	2%
49	35%	2%
50	25%	2%
51	30%	2%
52	25%	
53	25%	
54	40%	
55 & Over	100%	

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.

**ADDITIONS TO AND REMOVALS FROM ACTIVE MEMBERSHIP
ACTUAL AND EXPECTED NUMBERS**

Year Ended December 31	Number Added		Retirement		Disability Retirement		Died-in Service		Other Terminations		Active Members
	During Year		A	E	A	E	A	E	A	E	
	A	E	A	E	A	E	A	E	A	E	
1994	55	85.9	49	41.9	1	1.7	0	3.2	7	39.1	1,465
1995	62	100.2	50	57.9	4	1.7	0	3.6	18	37.0	1,455
1996	5	87.3	64	64.1	6	3.5	3	1.8	12	17.9	1,375
1997	161	81.9	73	60.7	3	3.4	1	1.7	14	16.1	1,445
1998	109	72.7	74	49.1	7	3.5	0	1.6	27	18.5	1,446
1999	86	61.8	53	37.5	14	3.5	2	1.6	18	19.2	1,445
2000	120	55.7	42	31.2	8	3.5	1	1.5	25	19.5	1,489
2001	113	51.4	28	24.8	10	6.0	1	0.9	43	19.7	1,520
2002	92	53.8	35	26.7	3	6.2	0	0.9	26	20.0	1,548
2003	64	61.0	32	33.5	6	6.3	0	1.0	32	20.2	1,542
Total	867	711.7	500	427.4	62	39.3	8	17.8	222	227.2	

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 2003**

Age Group	Years of Accrued Service				Total
	15-19	20-24	25-29	30 Plus	
Under 20					
20-24					
25-29					
30-34					
35-39					
40-44					
45					
46					
47		1	1		2
48		13			13
49		3	2		5
50					
51		2			2
52		3			3
53				2	2
54		1	1	1	3
55				2	2
56					
57					
58					
59					
60 & Over					
Totals		23	4	5	32

**DISABILITY RETIREMENTS
DURING CALENDAR YEAR 2003**

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

**DEATH-IN-SERVICE TERMINATIONS
DURING CALENDAR YEAR 2003**

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

**WITHDREW AND ELIGIBLE FOR DEFERRED BENEFIT TERMINATIONS
DURING CALENDAR YEAR 2003**

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

**WITHDREW AND PENDING CONTRIBUTIONS TERMINATION
DURING CALENDAR YEAR 2003**

Age Group	Years of Accrued Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	
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 2003**

Age Group	Years of Accrued Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	
Under 20								
20-24	3							3
25-29	4	6						10
30-34	2		2					4
35-39	2	1						3
40-44								
45-49					1			1
50 & Over					1			1
Totals	11	7	2		2			22

* In addition to the 22 terminations above, there were also 10 members who took a leave of absence.

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

Administrative Expenses:	Assumed investment return is net of administrative and investment expenses.
Marriage Assumption:	100% of participants are assumed to be married for purposes of death-in-service benefits.
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 0.6% of payroll is used to measure the effect of military service purchases.

SECTION G

FINANCIAL PRINCIPLES AND OPERATIONAL TECHNIQUES

FINANCIAL PRINCIPLES AND OPERATIONAL TECHNIQUES OF THE RETIREMENT SYSTEM

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

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

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

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

An inevitable by-product of the level-cost design is the accumulation of reserve assets, for decades, and the income produced when the assets are invested. ***Invested assets are a by-product and not the objective.*** Investment income becomes the 3rd contributor for benefits to employees, and is interlocked with the contribution amounts required from employees and employer.

(Concluded on Next Page)

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

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

Normal Cost (the value assigned to service being rendered this year)

. . . plus . . .

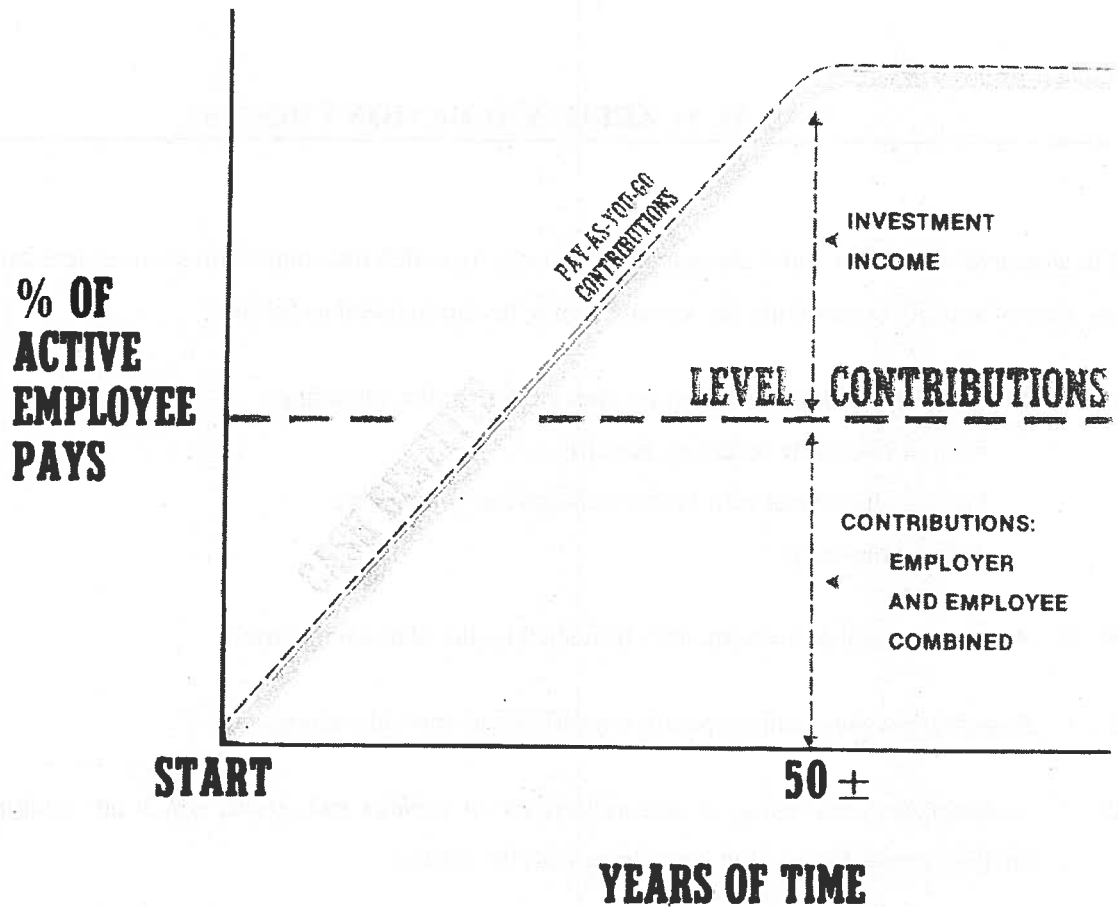
Interest on Unfunded Actuarial Accrued Liabilities (the difference between liabilities for service already rendered and the accrued assets of the Retirement System).

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

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

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

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



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 20-50 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.

August 20, 2004

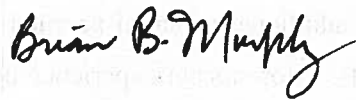
Mr. Richard Curtis, Director
Ohio State Highway Patrol Retirement System
6161 Busch Boulevard, Suite 119
Columbus, Ohio 43229

Dear Richard:

Enclosed are 20 bound copies of the December 31, 2003 actuarial valuation of the Ohio State Highway Patrol Retirement System.

An additional 10 unbound, 3-hole punched copies are enclosed for your convenience.

Sincerely,



Brian B. Murphy

BBM:dks:kmg
Enclosures

CC: Clark, Schaefer, Hackett & Co. (+1 report copy).