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

December 31, 2002

Gabriel, Roeder, Smith & Company

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August 20, 2003

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, 2002** 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 and 4.

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

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BBM:dks:kmg

Valuations performed as of odd-numbered years (1999, 2001, 2003...) 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 the 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. This breakdown produces an amortization period of 32 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, 2002
SUMMARY

Experience during the year ended December 31 was unfavorable. Investment return was once again disappointing for HPRS, as it was for virtually every retirement system in the country. Retiree health costs increased approximately in line with intermediate assumptions. Details are shown in Section C.

The payroll growth assumption was reduced from 4.5% to 4.0%.

The funding value of assets is approximately $103 million higher than the market value of assets as of December 31, 2002. This is a result of unfavorable experience in the investment market in 1999, 2000, 2001, and 2002. This difference will be recognized over the next 3 years. As the difference is recognized, the amortization period for pensions will probably increase, and the solvency period for health will probably decrease. Please see page D-3.

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 reasonable and provides a margin for potential adverse experience. The resulting amortization period for pensions is 32 years. (This is based on an employer contribution rate of 21.00% for pensions and 3.50% for retiree health indefinitely.) It is, however, important for HPRS, as well as for most other retirement systems in the country, that the investment markets return to more normal levels, and that health care costs begin to moderate (cost containment measures can play a role in the retiree health plan in the future, as they have in the past). Unless these things happen in the near future, the amortization period could be at the 50+ year level within a short time, even next year. Such a result would lead to pressure for contribution rate increases.

Conclusion: Based upon the results of the December 31, 2002 regular annual actuarial valuation, it is our opinion that the Ohio State Highway Patrol Retirement System is in sound condition in accordance with actuarial principles of level-cost financing. However, both the investment program and the retiree health plan merit continued attention.

Comment on Post Retirement Health Care:

Liabilities are now greater than assets in the Post Retirement Health Care Program. The System experienced a short period of time where the opposite had been true – assets exceeded liabilities. However, for the last few years benefit costs have increased faster than assumed under valuation assumptions and investment return has been less favorable than assumed. This has caused liabilities to grow faster than assets and resulted in the unfunded status we see now. In viewing experience in the health and Medicare program, it is important to bear in mind a key underlying assumption:

> *It is assumed that benefits will be periodically adjusted so that per capita costs increase no faster than average salaries (4.0% a year).*

In recent years, per capita costs increased more than average pays and this assumption has not been met. The 3.5% contribution rate allocation to the health plan is unlikely to sustain the plan indefinitely even if the assumption is met in the future. Going forward, the Board will need to consider increasing the contribution rate for the health plan, and probably other types of cost saving/shifting measures.

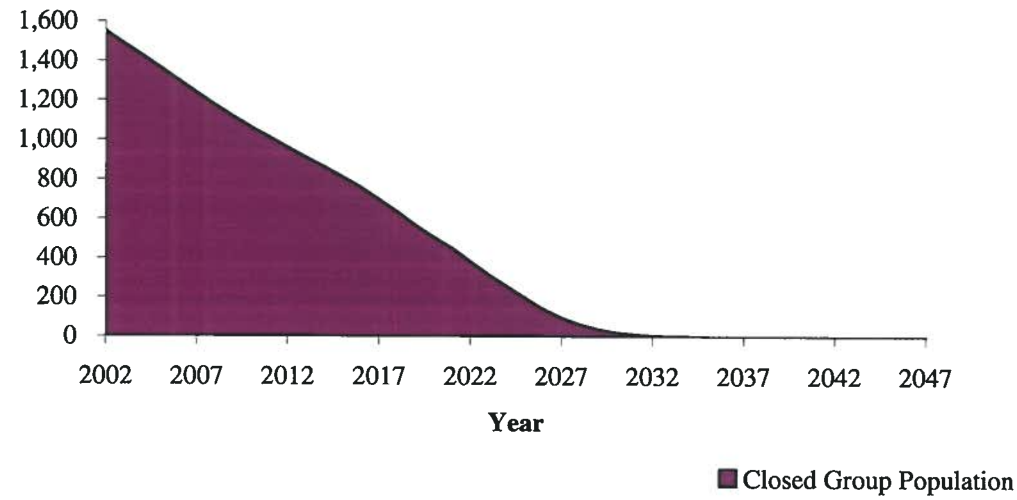
Recommendation: The following reserve transfers are recommended as of December 31, 2002:

Transfer To (From)	Total Amount
Pension Reserve Fund:	$42,035,464
Survivor Benefit Fund:	3,916,905
Total	$45,952,369

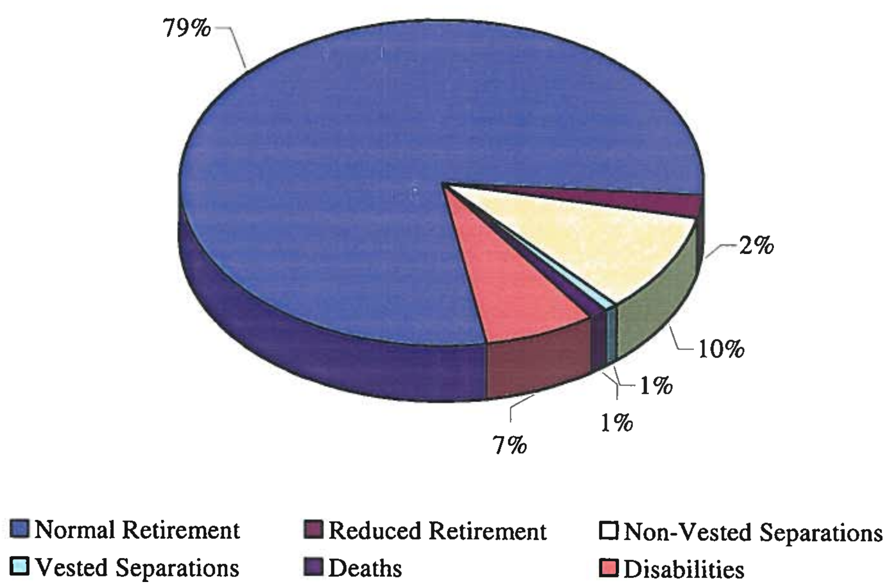
The reserve funds from which the transfers are made are determined as follows: First, the accumulated contributions of members who retired or died with survivor benefits payable prior to January 1, 2003 should be transferred from the Employee's Savings Fund if this has not already been done. The remainder 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.

Expected Development of Present Population
December 31, 2002

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 1,548 active members. Eventually, 10% of the population is expected to terminate covered employment prior to retirement and forfeit eligibility for an employer provided benefit. 82% 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, 2002

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)

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.

(Concluded on Next Page)

Retirement, Survivor, and Disability Allowances
Benefits and Conditions Valued
December 31, 2002
(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.

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 x 20 x $40,000 =	$20,000
	0.0225 x 5 x $40,000 =	$4,500
	0.0200 x 2 x $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
2003	$ 26,100
2004	26,100
2005	26,100
2006	26,883
2007	27,666
2008	28,449
2009	29,232
2010	30,015
2011	30,798

Benefits for years 2012 and later increase by $783 over the previous year's amount.

RETIREMENT SURVIVOR & DISABILITY ALLOWANCES
COMPUTED EMPLOYER CONTRIBUTIONS TO SUPPORT BENEFITS

Contributions for	Contributions Expressed as Percents of Payroll	
	2002	2001
Normal Cost:		
Age & service benefits	17.23%	18.48%
Disability benefits	2.96%	2.98%
Survivor benefits	0.26%	0.27%
Separation benefits	0.83%	0.81%
Purchase of Military Service	0.60%	0.60%
Total Normal Cost	21.88%	23.14%
Less Member Contributions	10.00%	10.00%
Employer Normal Cost	11.88%	13.14%
Unfunded Actuarial Accrued Liabilities	9.12%	5.61%
	32 years #	31 years #
EMPLOYER CONTRIBUTION RATE IN EFFECT	21.00%	18.75%

\# *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, 2002

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, $663,069,805, less pension assets of $527,604,456 resulted in unfunded actuarial accrued liabilities of $135,465,349, which were amortized as a level percent of payroll over a period of 32 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 32 Years ($ Thousands)

Year	Active Employee Payroll	Unfunded Actuarial Accrued Liability	Annual Contributions		UAAL as % of Payroll
			Dollars	% of Payroll	
1	$ 82,157	$ 135,465	$ 7,493	9.12%	164.9%
2	85,443	138,516	7,792	9.12%	162.1%
3	88,861	141,499	8,104	9.12%	159.2%
4	92,415	144,397	8,428	9.12%	156.2%
5	96,112	147,190	8,765	9.12%	153.1%
6	99,956	149,856	9,116	9.12%	149.9%
7	103,954	152,371	9,481	9.12%	146.6%
8	108,112	154,708	9,860	9.12%	143.1%
9	112,436	156,838	10,254	9.12%	139.5%
10	116,933	158,729	10,664	9.12%	135.7%
11	121,610	160,345	11,091	9.12%	131.9%
12	126,474	161,647	11,534	9.12%	127.8%
13	131,533	162,592	11,996	9.12%	123.6%
14	136,794	163,133	12,476	9.12%	119.3%
15	142,266	163,219	12,975	9.12%	114.7%
16	147,957	162,793	13,494	9.12%	110.0%
17	153,875	161,793	14,033	9.12%	105.1%
18	160,030	160,153	14,595	9.12%	100.1%
19	166,431	157,798	15,179	9.12%	94.8%
20	173,088	154,648	15,786	9.12%	89.3%
21	180,012	150,615	16,417	9.12%	83.7%
22	187,212	145,603	17,074	9.12%	77.8%
23	194,700	139,508	17,757	9.12%	71.7%
24	202,488	132,215	18,467	9.12%	65.3%
25	210,588	123,601	19,206	9.12%	58.7%
26	219,012	113,530	19,974	9.12%	51.8%
27	227,772	101,855	20,773	9.12%	44.7%
28	236,883	88,416	21,604	9.12%	37.3%
29	246,358	73,038	22,468	9.12%	29.6%
30	256,212	55,532	23,367	9.12%	21.7%
31	266,460	35,691	24,301	9.12%	13.4%
32	277,118	13,292	25,273	9.12%	4.8%

Retirement, Survivor, and Disability Allowances
Actuarial Present Value of Future Benefits
Present Retired Lives and Vested Deferred Cases
December 31, 2002

Benefits Payable	Number	Monthly Amount	Actuarial Value
From Employer Accumulation Fund:			
Regular Retirements Effective Before 1/1/66	5	$ 6,523	$ 282,231
Disability Retirements Effective Before 1/1/66	0	0	0
Total Benefits Payable from Employer Accumulation Fund	5	6,523	282,231
From Pension Reserve Fund:			
Regular Retirements Effective After 1/1/66	889	2,206,297	337,578,128
Disability Retirements Effective After 1/1/66	75	152,794	24,133,425
Total Benefits Payable from Pension Reserve Fund	964	2,359,091	361,711,553
From Survivor Benefit Fund:			
Surviving Spouses, Dependent Children & Dependent Parents	262	237,494	27,470,352
Total Benefits Payable from Survivor Benefit Fund	262	237,494	27,470,352
Total Retirement Benefits Payable	1,231	2,603,108	389,464,136
Total Vested Deferred Benefits Payable	6	11,840	1,634,652
Grand Total	**1,237**	**$2,614,948**	**$391,098,788**

Retirement, Survivor, and Disability Allowances
Development of Actuarial Accrued Liabilities
December 31, 2002

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	$ 411,516,586	$ 148,104,347	$ 263,412,239
Disability allowances likely to be paid to present active members who become totally and permanently disabled	31,470,418	24,682,732	6,787,686
Survivor benefits likely to be paid to spouses and children of present active members who die before retiring	2,892,390	1,984,572	907,818
Separation benefits (refunds of contributions and deferred allowances likely to be paid on behalf of present active members)	7,559,939	6,696,665	863,274
Retirement benefits likely to be paid to current retirants and beneficiaries and to present inactive members	391,098,788	0	391,098,788
Total	$ 844,538,121	$ 181,468,316	$ 663,069,805
Member portion	155,602,148	82,549,398	73,052,750
Employer portion	$ 688,935,973	$ 98,918,918	$ 590,017,055

Retirement, Survivor, and Disability Allowances
Summary Statement of System Resources and Obligations
December 31, 2002

Present Resources and Expected Future Resources

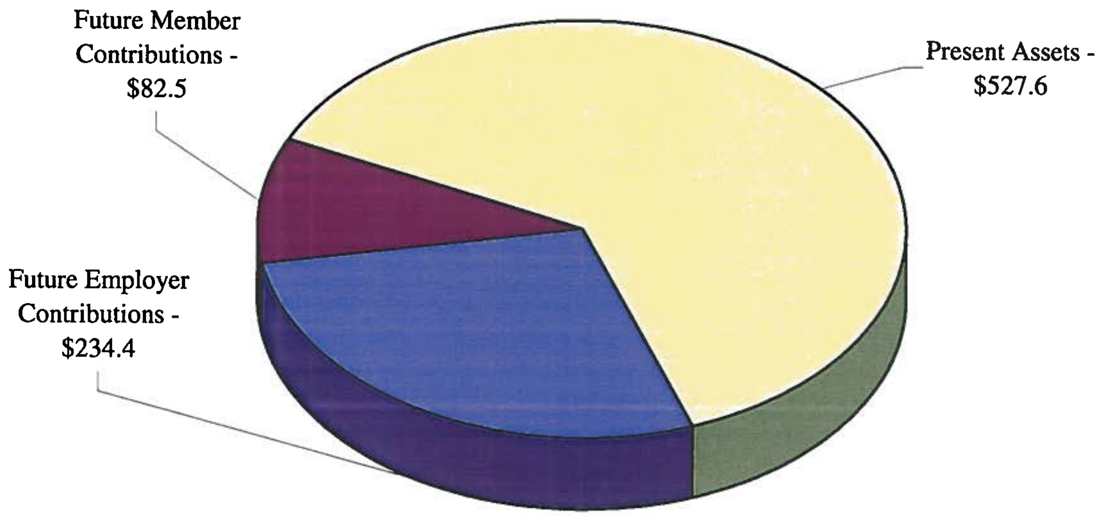
A. Present valuation assets		
1. Net assets from system financial statements	$ 513,415,930	
2. Market Value Adjustment	102,683,186	
3. Health Assets	88,494,660	
4. Valuation Assets: 1 + 2 - 3		$ 527,604,456
B. Actuarial present value of expected future Employer contributions		
1. For normal costs	98,918,918	
2. For unfunded actuarial accrued liability	135,465,349	
3. Total		234,384,267
C. Actuarial present value of expected future member contributions		82,549,398
D. Total Present and Expected Future Resources		$ 844,538,121

Actuarial Present Value of Expected Future Benefit Payments

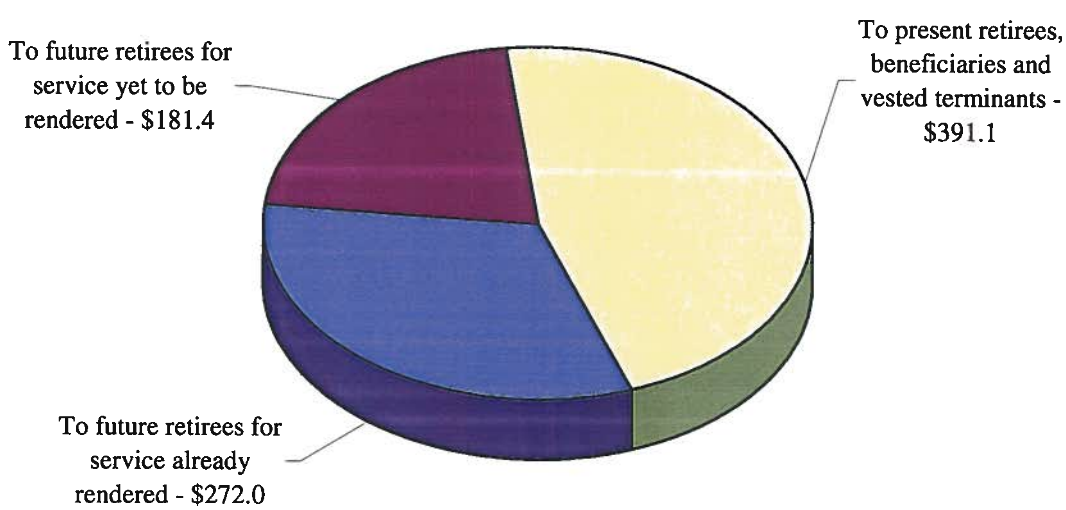
To retirants and beneficiaries	$ 389,464,136
To terminated members	1,634,652
To present active members	
1. Allocated to service rendered prior to valuation date (actuarial accrued liability)	271,971,017
2. Allocated to service likely to be rendered after valuation date	181,468,316
3. Total	453,439,333
Total Actuarial Present Value of Expected Future Benefit Payments	$ 844,538,121

RETIREMENT, SURVIVOR, AND DISABILITY ALLOWANCES FINANCING $844.4 MILLION OF BENEFIT PROMISES DECEMBER 31, 2002

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	527,604,456	79,806,864	1.2	86.9%	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	73.7%	100+
2002 #	1,548	78,997,065	663,069,805	527,604,456	135,465,349	1.7	79.6%	32

* *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
1988	1,260	$40,674,634	$32,281	1.4%	4.9%	4.4%
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%	6.1% *	2.4%
		10 Year Average		3.4%	4.3%	2.6%

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

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

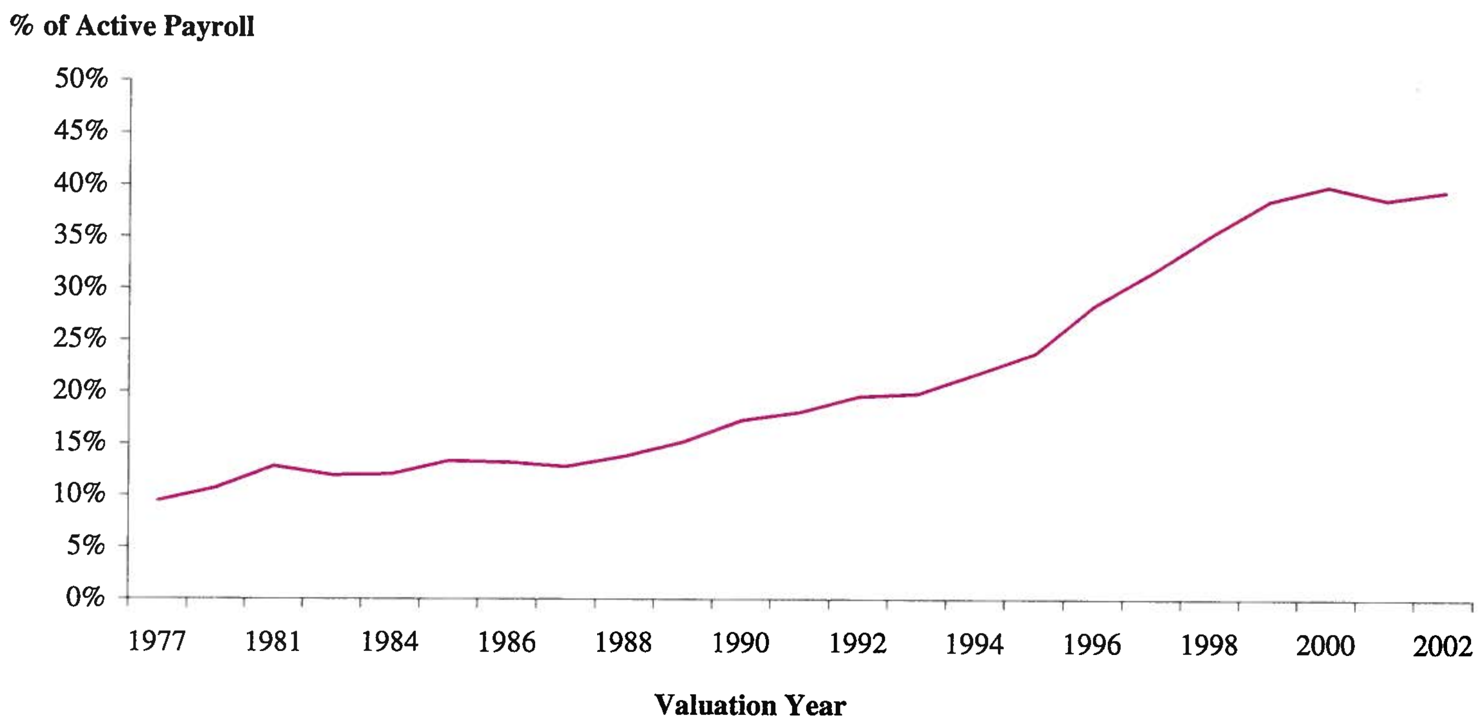
Over long periods of time, the change in average pay is an approximate measure of the impact of inflation and "Across the Board" pay increases on member pays. In years when the number of members decreases, the change in average pay may tend to be greater than actual pay increases experienced by members. 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
1965	141	$ 34,824	$ 6,103,740	$ 247	6.8%
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%

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

Retirement, Survivor, and Disability Allowances Being Paid Expressed as a % of Active Member Payroll December 31, 2002



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	527,604,456	100%	100%	58%
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%

* *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%	78,997,065	223.0%
2002 #	663,069,805	527,604,456	135,465,349	79.6%	78,997,065	171.5%

* *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%

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, 2002
Actuarial Cost Method	Entry Age
Amortization Method	Level Percent Closed
Remaining Amortization Period	32 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, 2002, 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	$ 68,794,904
Employer - financed vested	96,160,045
Employer - financed non-vested	77,205,585

As of December 31, 2002, there were 283 vested active members and 1,265 non-vested active members.

Section B

Post-Retirement Health Care and Medicare Reimbursement

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

Benefits Provided

Since July 1, 1974, the Retirement System has made Health Care available for every benefit recipient and eligible 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 2002 applicable to spouses under age 65 is $40 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 $3,000 and $6,000, 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 $1,000,000 per person. If the covered person is in a network area and uses non-network providers, the annual deductible for the individual is $400.

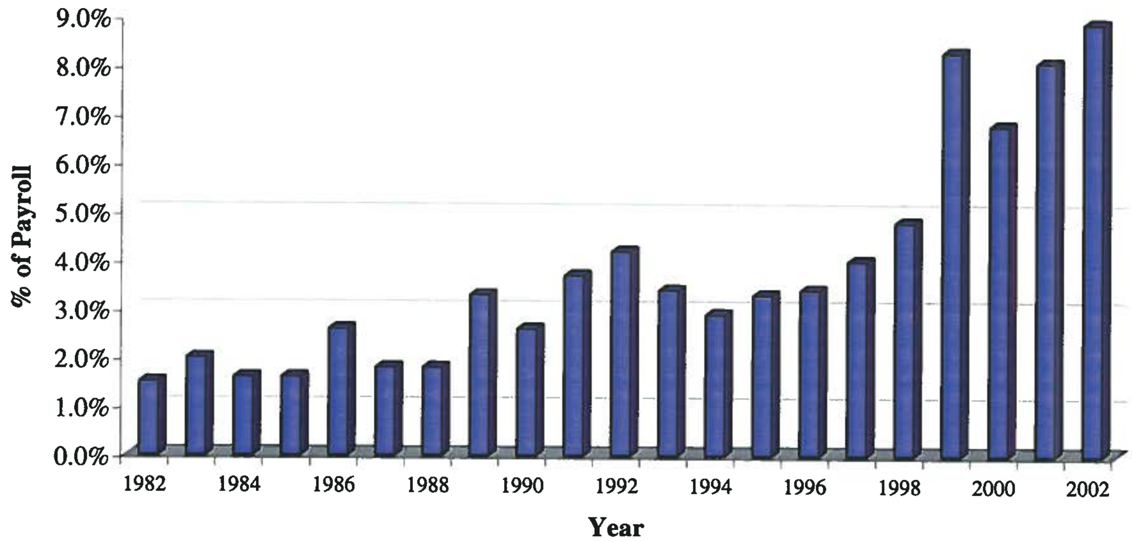
A mail-order prescription drug plan is also available. Each prescription submitted via mail order requires a co-payment of $5.00 for generic, $10.00 for brand and $25.00 for non formulary for up to a 90-day supply. Drugs purchased retail/over-the-counter have a co-payment of $5.00 for generic, $10.00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

Historical Trend of Employer Paid Amounts



Year	Covered Lives	Employer Paid Amount for: Med. B. Reimb.	Hosp. Med. Surg.	Presc. Drugs	Adjustment	Total	Per Covered Life	Payroll	% of Payroll
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%
					10 Year Rate of Increase:		**6.0%**		

ASSUMPTIONS FOR HEALTH CARE COVERAGES
DECEMBER 31, 2002

Development of Health Care Rates: Based on the 2002 retired life data, the HPRS portion of the total health care rates was developed as follows:

	HPRS Monthly Rates			
	This Year			Prior Year
	Gross Rate	Member Paid	Net Rate	Net Rate
A. One person without Medicare	330.59	$0.00	$330.59	$316.86
B. One person with Medicare*	254.47	0.00	254.47	188.19
C. Two persons without Medicare	661.18	40.00	621.18	593.72
D. Two persons with Medicare*	508.94	0.00	508.94	376.38
E. Child	185.75	25.00	160.75	163.19
F. Medicare Part B Reimbursement	58.70	0.00	58.70	54.00

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 $58.70.*

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

	Claims				Population	Medical	Price		
Year	Gross	Member	Net	Enrollees	Adjusted	CPI	Adjusted	Weight	Recognized
1998	$ 3,364,513	$ 235,625	$ 3,128,888	1,602	$ 3,794,900	242.1	$ 4,476,759	0.00	$ -
1999	5,715,039	216,635	5,498,404	1,772	6,029,006	250.6	6,871,046	0.10	687,105
2000	4,958,835	238,575	4,720,260	1,848	4,962,914	260.8	5,434,848	0.20	1,086,970
2001	6,428,951	249,855	6,179,096	1,900	6,318,939	272.8	6,615,429	0.30	1,984,629
2002	7,285,748	260,705	7,025,043	1,943	7,025,043	285.6	7,025,043	0.40	2,810,017

(Base for coming year) Recognized: **$ 6,568,721**

Growth Factors:	Population	1.049
	Price	1.147
First Year Projection:		**$ 7,903,505**

ASSUMPTIONS FOR HEALTH CARE COVERAGES
DECEMBER 31, 2002
(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.

Post-Retirement Health Premium and Medicare Reimbursement Selection of Assumptions December 31, 2002

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, 2002 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, 2002

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.

	Health Trend Above Wage Inflation Assumption of 4.0%		
Year	Alt. A Valuation	Alt. B Intermediate	Alt. C Pessimistic
2003			
2004	0.00%	7.50%	10.50%
2005	0.00%	7.00%	9.50%
2006	0.00%	6.50%	8.50%
2007	0.00%	6.00%	7.50%
2008	0.00%	5.50%	6.50%
2009	0.00%	5.00%	5.50%
2010	0.00%	4.50%	4.50%
2011	0.00%	4.00%	4.00%
2012	0.00%	3.00%	3.00%
2013	0.00%	2.00%	2.00%
2014	0.00%	0.00%	0.00%
2015	0.00%	0.00%	0.00%
2016	0.00%	0.00%	0.00%
2017 & 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, 2002

Year Ended 12/31	Projected Benefits as % of Payroll		
	Alt. A Valuation	Alt. B Intermediate	Alt. C Pessimistic
2003	9.6%	9.6%	9.6%
2004	9.7%	10.4%	10.7%
2005	9.9%	11.3%	11.9%
2006	10.1%	12.3%	13.1%
2007	10.3%	13.2%	14.3%
2008	10.5%	14.2%	15.5%
2009	10.7%	15.1%	16.6%
2010	10.8%	16.0%	17.6%
2011	10.9%	16.8%	18.4%
2012	11.0%	17.4%	19.1%
2017	11.6%	18.7%	20.5%
2022	12.7%	20.5%	22.6%
2027	13.6%	21.9%	24.1%
2032	13.5%	21.7%	23.8%
2037	13.3%	21.4%	23.5%
2042	13.2%	21.2%	23.3%
2047	13.4%	21.6%	23.7%
2052	13.7%	22.2%	24.3%
2057	13.8%	22.2%	24.4%
2062	13.6%	21.9%	24.1%
2072	13.4%	21.6%	23.7%
2082	13.7%	22.2%	24.3%
2092	13.6%	21.9%	24.1%
2102	13.6%	21.9%	24.0%

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	5.03%
Addition to Reserves	-1.53%
Computed Employer Rate:	3.50%

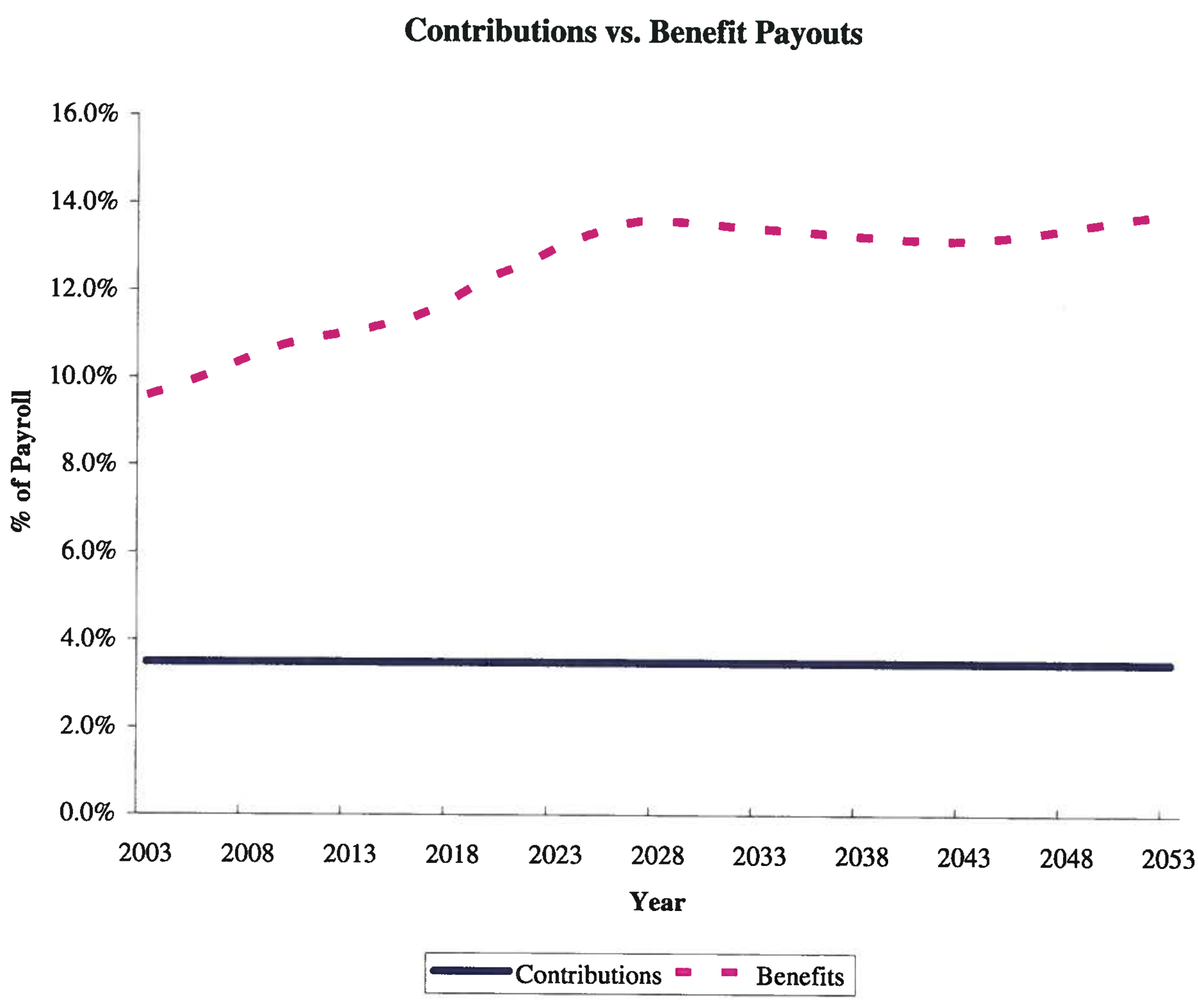
Accrued Health and Medicare Reimbursement Liabilities, $162,099,739 were more than applicable assets of $88,494,660. The next two pages show the expected development of the Health Care fund under Alternate A assumptions. These pages show that contributions are expected to fall short of benefits for the 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
2003	$88,495	$2,881	$7,884	$(5,003)	8.00%	$6,882	$90,374	$90,374	3.50%	9.58%
2004	90,374	3,006	8,355	(5,349)	8.00%	7,019	92,044	88,504	3.50%	9.73%
2005	92,044	3,135	8,863	(5,728)	8.00%	7,137	93,453	86,403	3.50%	9.89%
2006	93,453	3,267	9,405	(6,138)	8.00%	7,234	94,549	84,054	3.50%	10.08%
2007	94,549	3,402	9,994	(6,592)	8.00%	7,304	95,261	81,430	3.50%	10.28%
2008	95,261	3,544	10,605	(7,061)	8.00%	7,342	95,542	78,529	3.50%	10.47%
2009	95,542	3,692	11,235	(7,543)	8.00%	7,346	95,345	75,353	3.50%	10.65%
2010	95,345	3,849	11,868	(8,019)	8.00%	7,311	94,637	71,916	3.50%	10.79%
2011	94,637	4,016	12,515	(8,499)	8.00%	7,235	93,373	68,227	3.50%	10.91%
2012	93,373	4,190	13,142	(8,952)	8.00%	7,116	91,537	64,313	3.50%	10.98%
2017	76,686	5,144	17,015	(11,871)	8.00%	5,666	70,481	40,701	3.50%	11.58%
2022	30,011	6,281	22,874	(16,593)	8.00%	1,746	15,164	7,197	3.50%	12.75%
2023	15,164	6,540	24,287	(17,747)	8.00%	512	(2,071)	(945)	3.50%	13.00%
2024	(2,071)	6,815	25,697	(18,882)	8.00%	(911)	(21,864)	(9,595)	3.50%	13.20%
2025	(21,864)	7,107	27,132	(20,025)	8.00%	(2,540)	(44,429)	(18,747)	3.50%	13.36%
2027	(70,038)	7,743	30,091	(22,348)	8.00%	(6,485)	(98,871)	(38,572)	3.50%	13.60%
2032	(250,646)	9,635	37,051	(27,416)	8.00%	(21,134)	(299,196)	(95,938)	3.50%	13.46%
2037	(547,858)	11,822	44,895	(33,073)	8.00%	(45,135)	(626,066)	(165,001)	3.50%	13.29%
2042	(1,021,088)	14,425	54,240	(39,815)	8.00%	(83,259)	(1,144,162)	(247,849)	3.50%	13.16%
2047	(1,762,812)	17,469	66,723	(49,254)	8.00%	(142,970)	(1,955,036)	(348,087)	3.50%	13.37%
2048	(1,955,036)	18,141	69,686	(51,545)	8.00%	(158,438)	(2,165,019)	(370,648)	3.50%	13.44%
2053	(3,215,174)	21,944	86,455	(64,511)	8.00%	(259,761)	(3,539,446)	(498,045)	3.50%	13.79%
2058	(5,148,588)	26,749	105,154	(78,405)	8.00%	(414,983)	(5,641,976)	(652,526)	3.50%	13.76%
2068	(12,479,615)	39,857	152,454	(112,597)	8.00%	(1,002,815)	(13,595,027)	(1,062,216)	3.50%	13.39%
2078	(28,936,316)	58,717	228,781	(170,064)	8.00%	(2,321,621)	(31,428,001)	(1,658,885)	3.50%	13.64%
2088	(65,492,188)	86,995	340,282	(253,287)	8.00%	(5,249,377)	(70,994,852)	(2,531,588)	3.50%	13.69%
2098	(145,827,876)	129,036	498,855	(369,819)	8.00%	(11,680,833)	(157,878,528)	(3,803,258)	3.50%	13.53%
2108	(200,230,575)	150,793	584,749	(433,956)	8.00%	(16,035,582)	(216,700,113)	(4,462,298)	3.50%	13.57%

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



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.

	Funding Level 1 (Recommended Employer Rate)		Funding Level 2 (Lowest Employer Rate to Maintain Solvency of Fund Indefinitely)		
Assumption Set	**%**	**Fund Solvent Until**	**%**	**Fund Solvent Until**	**Prior Valuation %**
A (Valuation)	3.50%	2023	8.10%	Indefinitely	6.80%
B (Intermediate)	3.50%	2015	14.50%	Indefinitely	12.80%
C (Pessimistic)	3.50%	2014	16.20%	Indefinitely	14.80%

The above results show that

- Under the valuation assumptions, the employer rate will need to be raised prior to 2023 in order to maintain the solvency of the fund. The ultimate rate needed to support the plan would be 8.10% of payroll.
- Under the intermediate assumptions, the employer rate will need to be raised prior to 2015 in order to maintain the solvency of the fund. The ultimate rate needed to support the plan would be 14.50% of payroll if the increase were made today.
- Under the pessimistic assumptions, the employer rate will need to be raised prior to 2014 in order to maintain the solvency of the fund. The ultimate rate needed to support the plan would be 16.20% 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
2003	$88,495	$2,881	$7,884	$(5,003)	8.00%	$6,882	$90,374	$90,374	3.50%	9.58%
2004	90,374	3,006	8,958	(5,952)	8.00%	6,995	91,417	87,901	3.50%	10.43%
2005	91,417	3,135	10,142	(7,007)	8.00%	7,037	91,447	84,548	3.50%	11.32%
2006	91,447	3,267	11,435	(8,168)	8.00%	6,993	90,272	80,251	3.50%	12.25%
2007	90,272	3,402	12,852	(9,450)	8.00%	6,849	87,671	74,942	3.50%	13.22%
2008	87,671	3,544	14,358	(10,814)	8.00%	6,587	83,444	68,585	3.50%	14.18%
2009	83,444	3,692	15,942	(12,250)	8.00%	6,192	77,386	61,159	3.50%	15.11%
2010	77,386	3,849	17,570	(13,721)	8.00%	5,649	69,314	52,673	3.50%	15.98%
2011	69,314	4,016	19,240	(15,224)	8.00%	4,944	59,034	43,136	3.50%	16.77%
2012	59,034	4,190	20,787	(16,597)	8.00%	4,067	46,504	32,673	3.50%	17.36%
2013	46,504	4,370	22,262	(17,892)	8.00%	3,014	31,626	21,365	3.50%	17.83%
2014	31,626	4,555	23,404	(18,849)	8.00%	1,786	14,563	9,460	3.50%	17.98%
2015	14,563	4,747	24,630	(19,883)	8.00%	380	(4,940)	(3,086)	3.50%	18.16%
2016	(4,940)	4,944	25,939	(20,995)	8.00%	(1,224)	(27,159)	(16,311)	3.50%	18.36%

Funding Level 1 is the present contribution rate for post-retirement Health Care and Medicare reimbursement. The fund remains solvent until 2015 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
2003	$88,495	$11,934	$7,884	$4,050	8.00%	$7,240	$99,785	$99,785	14.50%	9.58%
2004	99,785	12,453	8,958	3,495	8.00%	8,121	111,401	107,116	14.50%	10.43%
2005	111,401	12,990	10,142	2,848	8.00%	9,025	123,274	113,974	14.50%	11.32%
2006	123,274	13,535	11,435	2,100	8.00%	9,945	135,319	120,298	14.50%	12.25%
2007	135,319	14,095	12,852	1,243	8.00%	10,875	147,437	126,030	14.50%	13.22%
2008	147,437	14,681	14,358	323	8.00%	11,808	159,568	131,153	14.50%	14.18%
2009	159,568	15,295	15,942	(647)	8.00%	12,740	171,661	135,666	14.50%	15.11%
2010	171,661	15,945	17,570	(1,625)	8.00%	13,669	183,705	139,601	14.50%	15.98%
2011	183,705	16,637	19,240	(2,603)	8.00%	14,594	195,696	142,993	14.50%	16.77%
2012	195,696	17,360	20,787	(3,427)	8.00%	15,520	207,789	145,990	14.50%	17.36%
2017	260,510	21,312	27,430	(6,118)	8.00%	20,599	274,991	158,800	14.50%	18.66%
2022	335,004	26,021	36,875	(10,854)	8.00%	26,372	350,522	166,373	14.50%	20.55%
2027	412,986	32,079	48,511	(16,432)	8.00%	32,390	428,944	167,340	14.50%	21.93%
2032	498,571	39,916	59,732	(19,816)	8.00%	39,103	517,858	166,052	14.50%	21.70%
2037	603,785	48,977	72,377	(23,400)	8.00%	47,379	627,764	165,449	14.50%	21.43%
2042	735,525	59,761	87,443	(27,682)	8.00%	57,749	765,592	165,843	14.50%	21.22%
2047	896,935	72,371	107,567	(35,196)	8.00%	70,365	932,104	165,958	14.50%	21.55%
2052	1,079,584	87,471	133,645	(46,174)	8.00%	84,543	1,117,953	163,602	14.50%	22.15%
2062	1,512,491	130,101	196,570	(66,469)	8.00%	118,375	1,564,397	154,661	14.50%	21.91%
2072	2,124,973	193,001	287,634	(94,633)	8.00%	166,261	2,196,601	146,707	14.50%	21.61%
2082	2,864,820	284,274	434,411	(150,137)	8.00%	223,257	2,937,940	132,559	14.50%	22.16%
2092	3,553,102	422,291	638,473	(216,182)	8.00%	275,712	3,612,632	110,118	14.50%	21.92%
2102	3,894,308	624,713	942,698	(317,985)	8.00%	298,988	3,875,311	79,801	14.50%	21.88%

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
2003	$88,495	$2,881	$7,884	$(5,003)	8.00%	$6,882	$90,374	$90,374	3.50%	9.58%
2004	90,374	3,006	9,199	(6,193)	8.00%	6,985	91,166	87,660	3.50%	10.71%
2005	91,166	3,135	10,650	(7,515)	8.00%	6,997	90,648	83,809	3.50%	11.89%
2006	90,648	3,267	12,224	(8,957)	8.00%	6,898	88,589	78,755	3.50%	13.10%
2007	88,589	3,402	13,927	(10,525)	8.00%	6,672	84,736	72,433	3.50%	14.33%
2008	84,736	3,544	15,701	(12,157)	8.00%	6,299	78,878	64,832	3.50%	15.51%
2009	78,878	3,692	17,513	(13,821)	8.00%	5,764	70,821	55,971	3.50%	16.60%
2010	70,821	3,849	19,301	(15,452)	8.00%	5,056	60,425	45,918	3.50%	17.55%
2011	60,425	4,016	21,135	(17,119)	8.00%	4,158	47,464	34,681	3.50%	18.42%
2012	47,464	4,190	22,835	(18,645)	8.00%	3,061	31,880	22,398	3.50%	19.07%
2013	31,880	4,370	24,455	(20,085)	8.00%	1,757	13,552	9,155	3.50%	19.59%
2014	13,552	4,555	25,710	(21,155)	8.00%	249	(7,354)	(4,777)	3.50%	19.75%
2015	(7,354)	4,747	27,057	(22,310)	8.00%	(1,469)	(31,133)	(19,446)	3.50%	19.95%

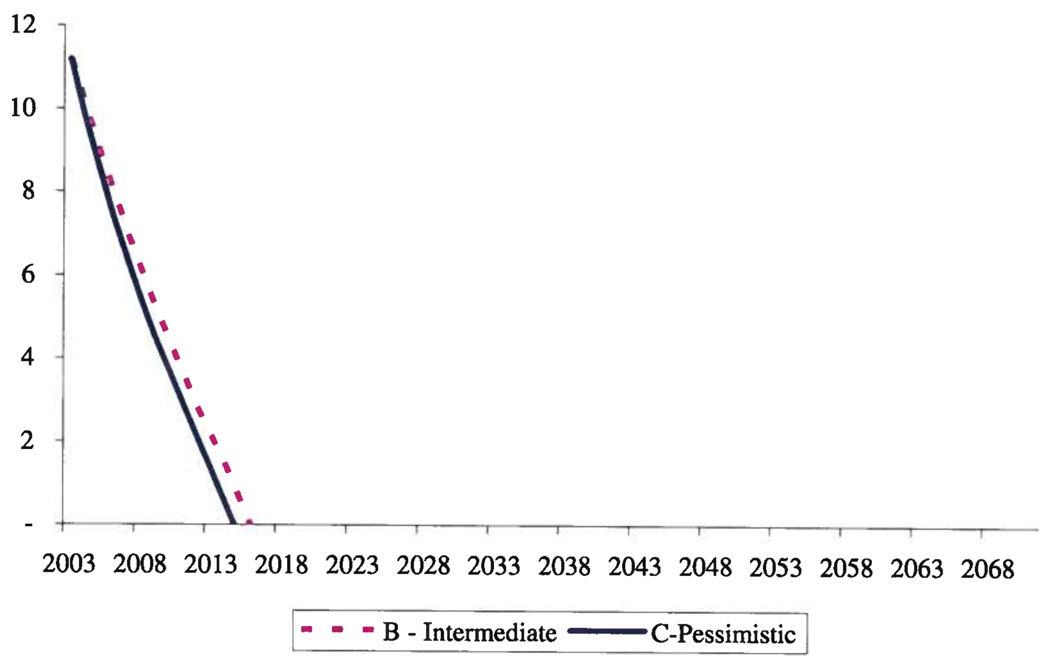
Funding Level 1 is the present contribution rate for post-retirement Health Care and Medicare reimbursement. The fund remains solvent until 2014 in this projection.

Post-Retirement Health Care & Medicare Reimbursement
Cash Flow Projection
Pessimistic Assumptions: C
Funding Level 2

Fiscal	Fund Balance				Investment	Investment	Fund Balance EOY		% of Payroll	
Year	BOY	Contributions	Benefits	Net	Return %	Return $	Nominal $	Real $	Contrib.	Benefits
2003	$ 88,495	$ 13,333	$ 7,884	$ 5,449	8.00%	$ 7,295	$ 101,239	$ 101,239	16.20%	9.58%
2004	101,239	13,913	9,199	4,714	8.00%	8,285	114,238	109,844	16.20%	10.71%
2005	114,238	14,513	10,650	3,863	8.00%	9,292	127,393	117,782	16.20%	11.89%
2006	127,393	15,122	12,224	2,898	8.00%	10,306	140,597	124,990	16.20%	13.10%
2007	140,597	15,748	13,927	1,821	8.00%	11,320	153,738	131,416	16.20%	14.33%
2008	153,738	16,402	15,701	701	8.00%	12,327	166,766	137,069	16.20%	15.51%
2009	166,766	17,088	17,513	(425)	8.00%	13,324	179,665	141,992	16.20%	16.60%
2010	179,665	17,815	19,301	(1,486)	8.00%	14,315	192,494	146,280	16.20%	17.55%
2011	192,494	18,588	21,135	(2,547)	8.00%	15,299	205,246	149,971	16.20%	18.42%
2012	205,246	19,396	22,835	(3,439)	8.00%	16,284	218,091	153,228	16.20%	19.07%
2017	274,020	23,810	30,133	(6,323)	8.00%	21,672	289,369	167,103	16.20%	20.50%
2022	352,763	29,072	40,509	(11,437)	8.00%	27,769	369,095	175,188	16.20%	22.57%
2027	434,476	35,840	53,291	(17,451)	8.00%	34,069	451,094	175,981	16.20%	24.09%
2032	523,459	44,595	65,618	(21,023)	8.00%	41,047	543,483	174,269	16.20%	23.84%
2037	632,589	54,719	79,508	(24,789)	8.00%	49,628	657,428	173,267	16.20%	23.54%
2042	768,933	66,768	96,059	(29,291)	8.00%	60,358	800,000	173,296	16.20%	23.31%
2047	935,245	80,856	118,165	(37,309)	8.00%	73,346	971,282	172,933	16.20%	23.68%
2052	1,121,261	97,726	146,813	(49,087)	8.00%	87,763	1,159,937	169,746	16.20%	24.34%
2062	1,550,738	145,354	215,938	(70,584)	8.00%	121,272	1,601,426	158,321	16.20%	24.07%
2072	2,138,200	215,629	315,975	(100,346)	8.00%	167,094	2,204,948	147,264	16.20%	23.74%
2082	2,787,160	317,603	477,214	(159,611)	8.00%	216,670	2,844,219	128,330	16.20%	24.34%
2092	3,220,064	471,801	701,382	(229,581)	8.00%	248,540	3,239,023	98,729	16.20%	24.08%
2102	2,942,612	697,956	1,035,581	(337,625)	8.00%	222,077	2,827,064	58,215	16.20%	24.03%

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, 2002



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%

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

Section C

Gain/Loss Analysis

GAIN/(LOSS) ANALYSIS

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

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

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

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

DEVELOPMENT OF TOTAL GAIN/(LOSS)
JANUARY 1, 2002 TO DECEMBER 31, 2002

Unfunded Accrued Liabilities (UAL), January 1	$85,436,020
Normal Cost	18,401,267
Contributions	22,431,978
Interest	6,673,653
Expected UAL Before Any Changes	$88,078,962
Effect of Changes in Assumptions	(5,536,127)
Expected UAL After all Changes	$82,542,835
Actual UAL	$135,465,349
Gain/(Loss) for Year From Financial Experience	**$(52,922,514)**

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, 2002 AND 2001

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	
	2002	2001
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.	**$ 231,811**	$ 202,278
Disability Retirements. If disability claims are less than assumed, there is a gain. If more claims, a loss.	**886,041**	(121,688)
Death-in-Service Benefits. If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	**(61,175)**	(228,887)
Withdrawal From Employment. If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	**(135,024)**	(56,856)
Pay Increases. If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	**2,461,513**	(12,023,972)
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.	**(58,251,719)**	(55,763,211)
Other. Miscellaneous gains and losses resulting from data adjustments, timing of financial transactions, valuation methods, etc.	**1,946,039**	3,607,454
Gain (or Loss) During Year From Financial Experience	**$(52,922,514)**	$ (64,384,882)
Non-Recurring Items (Effect of Benefit/Assumption Changes)	**5,536,127**	0
Composite Gain (or Loss) During Year	**$(47,386,387)**	$ (64,384,882)

Investment Gain Loss
Development of Portion Attributable to Retirement, Survivor and Disability Allowances
January 1, 2002 to December 31, 2002

Assets, Beginning of Year	$551,279,438
Net Cash Flow	(9,159,248)
Assumed Investment Return	43,735,985
Expected Assets End of Year	$585,856,175
Actual Assets End of Year	527,604,456
Gain/(Loss) for Year	**$(58,251,719)**

The total investment gain (loss) was $(67,677,156). This amount includes health assets and a change in the asset valuation corridor.

ACTIVE MEMBER POPULATION RECONCILIATION
JANUARY 1, 2002 TO DECEMBER 31, 2002

	Actual	Expected
Active Members Beginning of Year	1,520	
Plus New Hires	92	
Minus Retirements	35	26.7
Minus Deaths	0	0.9
Minus Disabilities	3	6.2
Minus Other Terminations*	25	20.0
Plus or Minus Data Correction	(1)	
Active Members End of Year	**1,548**	

* *Includes 3 members who took a leave of absence and 1 member who transferred out of the System.*

Section D

Financial Information

CURRENT ASSET INFORMATION FURNISHED FOR THE VALUATION DECEMBER 31, 2002

Balance Sheet

Current Assets (Market Value)		Fund Balance	
Cash & short-term investments	$ 12,793,719	Employees' Savings Fund	$ 73,052,750
Fixed Income	140,571,735	Employers Accumulation Fund	62,681,133
Stocks	294,690,337	Pension Reserve Fund	319,676,089
Real Estate	79,223,405	Survivors Benefit Fund	23,553,447
Other short-term	177,734	Health Care Fund	94,919,899
Accruals & Receivables	(14,041,000)	Income Fund	(60,467,388)
Total Current Assets	$ 513,415,930	Total Fund Balance	$ 513,415,930

Revenues and Expenditures

	2002	2001
Balance - January 1	$575,955,680	$608,318,172
Revenues*		
Employee contributions	7,824,450	7,722,423
Employer contributions (net)	18,388,243	17,293,598
Investment income (net)	(49,595,339)	(20,820,340)
Miscellaneous	0	0
Total	(23,382,646)	4,195,681
Expenditures		
Benefit payments	31,240,089	29,392,281
Health insurance	7,025,043	6,179,096
Refund of member contributions	266,137	306,452
Administrative Expenses	540,835	615,344
Death benefit	85,000	65,000
Total	39,157,104	36,558,173
Net Addition to Assets	(62,539,750)	(32,362,492)
Balance - December 31	$513,415,930	$575,955,680

* *Revenues include transfers to and from systems.*

CAFR Asset Information Furnished for the Valuation
December 31, 2002

Additions by Source

	Pension Benefits					Other Postemployment Benefits		
	Contributions							
Year	Member*	Employer	Net Investment Income	Transfers from Other Systems	Total	Employer Contributions	Net Investment Income	Total
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)

** Does not include service purchases.*

Deductions by Type

	Pension Benefits					Other Postemployment Benefits		
Year	Benefits#	Refunds	Transfers to Other Systems	Administrative	Total	Health Care	Administrative	Total
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

 # Includes death benefits.

DEVELOPMENT OF FUNDING VALUE OF RETIREMENT SYSTEM ASSETS
DECEMBER 31, 2002

	2000	2001	2002	2003	2004	2005
A. Funding Value From Prior Year	$ 642,601,859	$ 668,233,948	$ 645,070,362			
B. Market Value End of Year	608,318,172	575,955,680	513,415,930			
C. Market Value Beginning of Year	634,769,676	608,318,172	575,955,680			
D. Non-Investment Net Cash Flow	(8,571,646)	(10,926,808)	(12,403,576)			
E. Investment Return:						
E1. Market Total: B - C - D	(17,879,858)	(21,435,684)	(50,136,174)			
E2. For Immediate Recognition (8.0%)	49,469,493	53,021,644	51,109,486			
E3. Amount for Phased-In Recognition E1-E2	(67,349,351)	(74,457,328)	(101,245,660)			
F. Phased-In Recognition of Investment Return:						
F1. Current Year: 25% x E3	(16,837,338)	(18,614,332)	(25,311,415)			
F2. First Prior Year	(1,155,598)	(16,837,338)	(23,038,227)	$ (34,227,729)		
F3. Second Prior Year	(7,092,568)	(1,155,598)	0	0	$ (34,227,729)	
F4. Third Prior Year	9,819,746	(7,092,567)	0	0	0	$ (34,227,728)
F5. Total Recognized Phase-ins	$ (15,265,758)	$ (43,699,835)	$ (48,349,642)	$ (34,227,729)	$ (34,227,729)	$ (34,227,728)
G. Funding Value End of Year:						
G1. Preliminary Funding Value End of Year: A + D + E2 + F5	$ 668,233,948	$ 666,628,949	$ 635,426,630			
G2. Upper Corridor Limit: 120% x B		$ 645,070,362	$ 616,099,116			
G3. Lower Corridor Limit: 80% x B		$ 506,840,998	$ 410,732,744			
G4. Funding Value End of Year	$ 668,233,948	$ 645,070,362	$ 616,099,116			
H. Difference between Market Value and Funding Value	$ (53,724,544)	$ (69,114,682)	$ (102,683,186)			
I. Funding Value Rate of Return	5.4%	(1.8)%	(2.6)%			
J. Market Value Rate of Return	(2.8)%	(3.6)%	(8.8)%			
K. Ratio of Funding Value to Market Value	110%	112%	120%			

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, 2002

	Pension	Health	Total
A. Market Value Beginning of Year	$492,213,784	$83,741,896	$575,955,680
B. Member Contributions	7,824,450	0	7,824,450
C. Employer Contributions	14,607,528	3,780,715	18,388,243
D. Benefits Paid	31,240,089	7,025,043	38,265,132
E. Refunds of Member Contributions	266,137	0	266,137
F. Death Benefits	85,000	0	85,000
G. Net External Cash Flow (B + C - D - E - F)	(9,159,248)	(3,244,328)	(12,403,576)
H. Other Changes in Market Value	(43,384,156)	(6,752,018)	(50,136,174)
I. Market Value End of Year (A + G + H)	439,670,380	73,745,550	513,415,930
J. Funding Value Adjustment	87,934,076	14,749,110	102,683,186
K. Funding Value End of Year (I + J)	$527,604,456	$88,494,660	$616,099,116

Line J is allocated in proportion to Line I.

Section E

Summary of Member Data

ACTIVE MEMBERS AS OF DECEMBER 31, 2002
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	73	1						74	$ 2,648,758
25-29	216	86	1					303	13,002,061
30-34	126	180	88	1				395	18,702,845
35-39	31	70	133	47				281	14,973,171
40	2	8	14	26	2			52	2,863,821
41		6	15	25	3			49	2,853,759
42		2	6	21	11			40	2,324,310
43		1	8	15	28			52	3,076,175
44		1	5	18	31	2		57	3,435,467
45			1	10	34			45	2,780,936
46			2	9	29	1		41	2,444,716
47				4	23	7		34	1,963,601
48				4	23	14		41	2,535,557
49			1	2	14	8		25	1,667,140
50				4	11	6		21	1,220,975
51				1	4	8		13	899,480
52				1	5	3	1	10	614,804
53					3	3	3	9	627,144
54					1		2	3	166,404
55						1	1	2	156,949
59						1		1	38,992
Totals	**448**	**355**	**274**	**188**	**222**	**54**	**7**	**1,548**	**$78,997,065**

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

Age: 35.7 years.

Service: 11.1 years.

Annual Pay: $51,032

Active Members
By Ages of Entry into Service
December 31, 2002

Entry Age Nearest Birthday	Number	Cumulative Number	Percent	Cumulative Percent
Less than 18	0	0	0.00%	0.00%
18	5	5	0.32%	0.32%
19	32	37	2.07%	2.39%
20	39	76	2.52%	4.91%
21	199	275	12.85%	17.76%
22	247	522	15.96%	33.72%
23	192	714	12.40%	46.12%
24	184	898	11.89%	58.01%
25	133	1,031	8.59%	66.60%
26	129	1,160	8.34%	74.94%
27	94	1,254	6.07%	81.01%
28	72	1,326	4.65%	85.66%
29	43	1,369	2.78%	88.44%
30	59	1,428	3.81%	92.25%
31	38	1,466	2.45%	94.70%
32	26	1,492	1.68%	96.38%
33	25	1,517	1.62%	98.00%
34	19	1,536	1.22%	99.22%
35	10	1,546	0.65%	99.87%
36	0	1,546	0.00%	99.87%
37	0	1,546	0.00%	99.87%
38	1	1,547	0.07%	99.94%
39	1	1,548	0.06%	100.00%
40 & Up	0	1,548	0.00%	100.00%
Total	**1,548**			

AGE AND SERVICE PENSIONS BEING PAID DECEMBER 31, 2002
BY ATTAINED AGES

Attained Ages	Number	Monthly Pensions	Number Married	Average Age of Spouse
48	4	$10,430	3	47
49	7	18,687	5	49
50	19	58,895	13	48
51	31	79,341	26	47
52	40	105,640	36	50
53	37	106,725	32	50
54	50	134,642	47	53
55	74	207,841	67	53
56	46	136,186	44	55
57	42	121,098	37	55
58	54	153,338	53	55
59	41	108,826	40	56
60	54	143,109	50	56
61	40	104,424	39	57
62	29	80,749	28	58
63	28	78,894	28	60
64	28	63,904	28	61
65	28	70,673	27	62
66	20	45,279	20	63
67	16	37,382	16	65
68	16	33,849	14	64
69	10	18,828	10	65
70	15	31,066	14	67
71	14	28,628	14	69
72	16	35,362	16	68
73	18	29,832	17	72
74	17	27,474	16	72
75	16	24,471	15	72
76	10	14,174	9	73
77	15	21,698	13	74
78	9	13,524	8	76
79	6	7,993	4	74
80	8	10,562	6	77
81	6	8,381	6	79
82	7	10,760	5	78
83	4	5,491	2	82
84	4	5,192	4	80
85 & Over	15	19,472	9	79
Totals	**894**	**$2,212,820**	**821**	

DISABILITY PENSIONS BEING PAID DECEMBER 31, 2002
BY ATTAINED AGE

Attained Ages	Number	Monthly Pensions	Number Married	Average Age of Spouse
31	1	$2,228	1	27
34	1	2,038	1	36
35	1	2,028	0	N/A
36	3	5,604	1	36
37	1	1,821	1	46
38	1	2,040	0	N/A
39	4	8,958	3	35
40	1	2,482	1	35
41	2	5,280	2	42
42	5	10,966	3	40
43	3	9,439	1	36
44	4	8,343	3	44
45	5	10,419	3	44
46	3	6,808	2	44
47	2	5,175	2	49
49	3	7,103	3	47
50	2	3,917	0	N/A
51	2	4,630	2	46
52	1	1,487	1	47
53	3	6,950	3	51
54	6	10,504	5	51
55	1	2,015	1	55
56	3	6,152	3	52
58	2	4,445	2	59
59	3	4,591	3	57
60	1	2,068	1	60
61	2	2,549	2	52
65	1	2,561	1	62
67	1	1,275	1	63
71	1	1,248	1	71
72	1	1,249	1	67
73	2	2,565	1	69
75	1	1,283	1	73
76	1	1,284	1	76
80	1	1,289	1	80
Totals	**75**	**$152,794**	**58**	

DEPENDENTS BEING PAID AS OF DECEMBER 31, 2002
TABULATED BY ATTAINED AGE

Attained Ages	Number	Monthly Pensions
12 & Under	14	$2,263
14	1	182
15	1	158
16	5	840
17	1	182
18	1	182
19	2	358
20	4	715
21	2	340
25	1	927
29	2	1,879
32	1	905
34	1	1,062
36	1	974
37	1	949
38	1	949
40	2	1,976
43	2	363
45	2	2,085
47	2	1,960
48	2	1,995
50	1	1,021
51	4	4,142
52	3	3,006
53	1	1,280
54	3	3,345
55	5	4,948
56	2	2,392
57	3	3,053
58	3	3,353
59	3	3,031
60	6	7,101
61	1	1,021
62	2	1,977
63	4	4,141
64	3	4,060
65	4	4,968
66	4	3,906
67	4	3,743
68	4	3,989
69	2	1,956
70	10	10,032
70-79	88	86,850
80-89	48	47,802
90 & Over	5	5,133
Totals	**262**	**$237,494**

ACTIVE MEMBER VALUATION DATA, 1993 TO 2002

Actuarial Valuation as of December 31	Number of Active Members	Annual Payroll	Average Annual Salary	% Increase in Average Pay
1993	1,467	$55,781,585	$38,024	3.8 %
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

RETIRANTS AND BENEFICIARIES VALUATION DATA, 1993 TO 2002

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			
1993	27		10		723	$ 927,168	$1,282
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

Of the 1,231 retirants and beneficiaries as of December 31, 2002, 894 are service retirees, 75 are disability retirees and 262 are survivor beneficiaries. The average monthly benefits are $2,475 for service retirees, $2,037 for disability retirees and $906 for survivor beneficiaries.

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

	Census Date									
	12/02	**12/01**	**12/00**	**12/99**	**12/98**	**12/97**	**12/96**	**12/95**	**12/94**	**12/93**
Recipients:										
w/o Medicare A	**773**	771	761	724	656	589	534	460	425	408
Medicare A	**386**	368	346	339	337	333	322	298	274	266
Spouses:										
w/o Medicare A	**483**	471	447	429	373	354	324	277	253	237
w Medicare A	**158**	155	151	146	139	130	117	111	99	91
Dependent Children	**111**	105	110	107	75	70	59	54	56	49
Orphans	**32**	30	33	27	22	23	23	25	26	30
Total	**1,943**	1,900	1,848	1,772	1,602	1,499	1,379	1,225	1,133	1,081

A summary of recipients and dependents covered by AETNA and Medical Mutual of Ohio for 2002 and 2001 follows:

	AETNA		Medical Mutual		
	Network	**Non-Network**	**Network**	**Non-Network**	**Total**
2001	899	493	468	40	1,900
2002	880	491	516	56	1,943

DEFERRED PENSIONS AS OF DECEMBER 31, 2002
TABULATED BY ATTAINED AGE

Attained Ages	Number	Monthly Pensions
44	2	$3,673
46	1	2,654
47	3	5,513
Totals	**6**	**$11,840**

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

Section F

Assumptions Used in the Valuation

APPENDIX

SUMMARY OF VALUATION METHOD AND ASSUMPTIONS DECEMBER 31, 2002

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	Present Value of $1 Monthly for Life		Future Life Expectancy (years)	
Ages	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.

Sample Ages	Percent of Active Members Separating Within Next Year				Salary Increase Assumptions for an Individual Member			
	Disability	Death: Men	Death: Women	Other	Service	Merit & Seniority	Base (Economic)	Increase Next Year
20	0.08%	0.02%	0.01%	2.57%	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 During Year A	Number Added During Year E	Retirement A	Retirement E	Disability Retirement A	Disability Retirement E	Died-in Service A	Died-in Service E	Other Terminations A	Other Terminations E	Active Members
1993	134	69.7	23	29.8	2	1.6	1	3.1	12	35.2	1,467
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
Total	**937**	**720.4**	**491**	**423.7**	**58**	**34.6**	**9**	**19.9**	**202**	**242.2**	

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 2002

Age Group	15-19	20-24	25-29	30 Plus	Total
Under 20					
20-24					
25-29					
30-34					
35-39					
40-44					
45					
46					
47					
48		2	3		5
49		3	5		8
50		1	2		3
51			1	3	4
52	1	4		1	6
53			2	1	3
54				5	5
55				1	1
56					
57					
58					
59					
60 & Over					
Totals	**1**	**10**	**13**	**11**	**35**

DISABILITY RETIREMENTS DURING CALENDAR YEAR 2002

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

DEATH-IN-SERVICE TERMINATIONS DURING CALENDAR YEAR 2002

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

WITHDREW AND ELIGIBLE FOR DEFERRED BENEFIT TERMINATIONS DURING CALENDAR YEAR 2002

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

WITHDREW AND PENDING CONTRIBUTIONS TERMINATION DURING CALENDAR YEAR 2002

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

WITHDREW AND REFUNDED TERMINATIONS* DURING CALENDAR YEAR 2002

Age Group	Years of Accrued Service 0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	Total
Under 20								
20-24	6							6
25-29	5	1						6
30-34	1	1	1					3
35-39			5					5
40-44				1				1
45-49								
50 & Over								
Totals	**12**	**2**	**6**	**1**				**21**

* *In addition to the 21 terminations above, there were also 3 members who took a leave of absence, 1 member who transferred out of the System and 1 data correction.*

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 of 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)

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

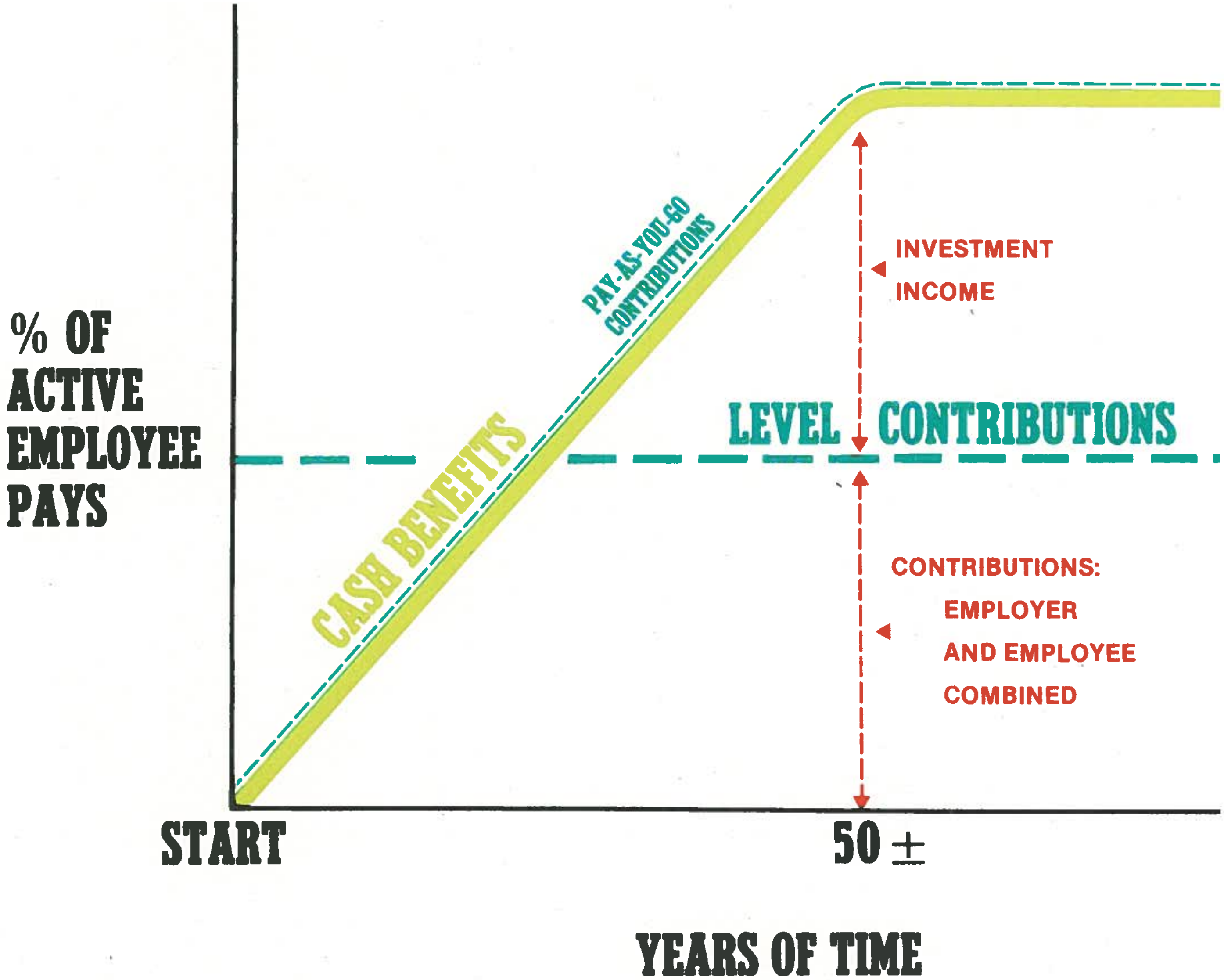
> ***Normal Cost*** (the value assigned to service being rendered this year)
>
> . . . plus . . .
>
> ***Interest on Unfunded Actuarial Accrued Liabilities*** (the difference between liabilities for service already rendered and the accrued assets of the Retirement System).

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

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

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

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



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

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

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

THE ACTUARIAL VALUATION PROCESS

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

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

Retired lives now receiving benefits

Former employees with vested benefits not yet payable

Active employees

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

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

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

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

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

G. = Determination of:

Plan Financial Position and/or

New Employer Contribution Rate

MEANING OF "UNFUNDED ACTUARIAL ACCRUED LIABILITIES"

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

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

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