Denver Public
Schools Retirement System
Annual Actuarial Valuation
December 31, 2004

GRS

CONTENTS

April 14, 2005

The Board of Trustees
Denver Public Schools Retirement System
Denver, Colorado

Dear Board Members:

The results of the ***Annual Actuarial Valuation*** of the Denver Public Schools Retirement System are presented in this report. The purpose of the valuation was to measure the system's funding progress and to determine the computed employer contribution rate for the next fiscal year.

The valuation was based upon information, furnished by Retirement System staff, concerning Retirement System benefits, financial transactions, and active members, terminated members, retirees and beneficiaries. Data was checked for internal and year-to-year consistency but was not otherwise audited.

The date of the valuation was ***December 31, 2004.***

To the best of our knowledge this report is complete and accurate and the valuation was conducted in accordance with standards of practice prescribed by the Actuarial Standards Board. It is our opinion that the actuarial assumptions used for the valuation produce results which are reasonable.

Respectfully submitted,

Norman L. Jones, FSA, MAAA   Judith A. Kermans, EA, MAAA

RS:lr

SECTION A

Valuation Results

FUNDING OBJECTIVE AND EXECUTIVE SUMMARY

The funding objective of the Retirement System is to establish and receive contributions, expressed as percents of active member payroll, that will accumulate assets during each member's working years which, together with regular interest, will be sufficient to pay promised benefits after retirement.

EXECUTIVE SUMMARY

- The recommended employer contribution for the fiscal year beginning July 1, 2006, based on normal cost plus 30-year amortization, would be 14.47% of payroll. This compares with the new phase-in funding policy contribution rate of 11.14% (see page A-2).
- The current actuarial funding ratio of 88.2% has decreased slightly from last year. The market value of assets was $56 million less than the funding value of assets as of December 31, 2004. In the absence of offsetting future gains, the funded ratio is likely to continue to decline in the coming years.
- This valuation reflects the recently adopted provisions for new members hired or re-hired on or after July 1, 2005 as follows:
  - Early retirement reduction changed from 4% to 6%.
  - ARAA decreased from 3.25% to the lesser of 3.00% compounded or the compound increase in the urban wage earners and clerical workers consumer price index (CPI).
  - First ARAA increase received on a pro-rated basis.

  These changes acted to reduce the recommended employer contribution rate by 0.47% of payroll.
- This valuation reflects the following changes in assumptions adopted by the Board of Trustees effective January 1, 2005 (see report dated September 10, 2004).

  Non-Economic
  - Rates of Withdrawal
  - Merit and Longevity Assumptions (CoPERA)
  - Regular Retirement
  - Early Retirement
  - Post-Retirement Mortality (CoPERA)
  - Pre-Retirement Death-in-Service Rates

  Economic
  - 8.5% Interest
  - 4.50% Wage Inflation

CONCLUSION

The Denver Public Schools Retirement System continues to be in sound financial condition based on actuarial principles of level percent-of-payroll financing. In order to meet Plan obligations, receipt of the recommended contribution amounts is essential.

CONTRIBUTIONS TO PROVIDE BENEFITS EXPRESSED AS PERCENTS OF ACTIVE MEMBER PAYROLL FOR FISCAL YEARS BEGINNING JULY 1, 2005 AND 2006

Contributions for	FY Beginning 7/1/06 Recommended	FY Beginning 7/1/06 Funding# Policy	FY Beginning 7/1/05 Recommended	FY Beginning 7/1/05 Funding# Policy
Normal cost of benefits:				
Age & service	12.20 %		12.84 %	
Disability	1.00 %		0.99 %	
Death-in-service	0.25 %		0.21 %	
Refunds of member contributions	1.90 %		1.75 %	
Total normal cost	15.35 %		15.79 %	
Member contributions	8.00 %		8.00 %	
Employer Normal Cost	7.35 %		7.79 %	
Unfunded Actuarial Accrued Liabilities	7.12 %*		5.76 %*	
COMPUTED EMPLOYER RATE	**14.47 %**	**11.14 %**	**13.55 %**	**9.48 %**

* *Amortized as a level percent of payroll over a period of 30 years.*

\# *Based on funding policy beginning 7/1/2005 that includes a 4-year phase-in of the employer contribution rate to the level recommended by the actuary.*

Actual employer contributions for the last completed fiscal year were reported to be $21,142,815.

DERIVATION OF EXPERIENCE GAIN (LOSS)
YEAR ENDED DECEMBER 31, 2004

Actual experience will never (except by coincidence) coincide exactly with assumed experience. Gains and losses often offset one another over a period of years, but sizable year-to-year fluctuations are common. Detail on the derivation of the experience gain (loss) is shown below.

	12/31/2004
(1) UAAL* at start of year	$262,042,556
(2) Normal cost from last valuation	50,231,410
(3) Actual contributions	47,135,203
(4) Interest accrual: (1) x .0875 + ((2) - (3) x .04375)	23,064,183
(5) Expected UAAL before changes: (1) + (2) - (3) + (4)	288,202,946
(6) Change in assumptions	37,946,958
(7) Changes in benefits #	21,933,010
(8) Expected UAAL after changes: (5) + (6) + (7)	348,082,914
(9) Actual UAAL at end of year	349,466,421
(10) Gain (loss): (8) - (9)	$ (1,383,507)
(11) Gain (loss) as percent of actuarial accrued liabilities at start of year ($2,793,788,109)	(0.0%)

* *Unfunded actuarial accrued liability.*

\# *The new tier of benefits for new hires is financed based on the ultimate normal cost method which results in a decrease in normal cost and a corresponding increase in UAAL (see page C-1).*

Derivation of Experience Gain (Loss) By Source
Year Ended December 31, 2004

	$ Amount	% of AAL*
Age & Service Retirements Members retired at younger ages or with higher final average pay or service than assumed, causing a loss.	$ (7,094,671)	(0.3%)
Disability Retirements Disability claims were less than assumed, causing a small gain.	45,968	0.0%
Death-in-Service Benefits Survivor claims were more than assumed, causing a loss.	(144,675)	0.0%
Withdrawal from Employment More liabilities were released by withdrawals than assumed, causing a gain.	4,373,561	0.2%
Pay Increases Pay increases were less than assumed, causing a gain.	32,996,399	1.2%
Investment Income Recognized investment income was less than assumed, causing a loss.	(13,898,092)	(0.5%)
New Entrants New members with prior service causing a loss.	(5,677,574)	(0.3%)
Death After Retirement Retirants lived for a shorter period than assumed, causing a gain.	4,867,349	0.2%
Other Miscellaneous gains and losses resulting from other data adjustments, timing of financial transactions, subsidized service purchases, recognition of additional outside and non-qualified service, etc.	(16,851,772)	(0.5%)
Gain (or Loss) During Year From Financial Experience	$ (1,383,507)	(0.0%)

** AAL: Beginning of year actuarial accrued liability.*

SUMMARY STATEMENT OF SYSTEM RESOURCES AND OBLIGATIONS

Present Resources and Expected Future Resources

A.	Present valuation assets	
	1. Net assets from system financial statements	$2,555,931,368
	2. Funding value adjustment	55,592,367
	3. Valuation assets	2,611,523,735
B.	Actuarial present value of expected future employer contributions	
	1. For normal costs	191,104,244
	2. For unfunded actuarial accrued liability	349,466,421
	3. Totals	540,570,665
C.	Actuarial present value of expected future member contributions	194,432,484
D.	Total Present and Expected Future Resources	$3,346,526,884

Actuarial Present Value of Expected Future Benefit Payments

A.	To retirees and beneficiaries	
	1. Annual allowances	$2,029,798,848
	2. Unallocated Reserve	0
	3. Totals	2,029,798,848
B.	To vested terminated members	13,726,644
C.	To present active members	
	1. Allocated to service rendered prior to valuation date - actuarial accrued liability	917,464,664
	2. Allocated to service likely to be rendered after valuation date	385,536,728
	3. Totals	1,303,001,392
D.	Total Actuarial Present Value of Expected Future Benefit Payments	$3,346,526,884

Computed Employer Contributions
Comparative Statement

	Active Members				Retirees & Beneficiaries			
		Valuation Payroll				Annual Benefits		Employer
							% of	Contribution
December 31	No.#	Total	Average	% Incr.	No.	Dollars	Payroll	Rate
1995	5,934	$206,751,000	$34,842	4.82 %	4,861	$ 92,926,440	44.9 %	16.27 %
1996	6,158	223,841,000	36,350	4.33 %	4,910	97,420,560	43.5 %	15.75 %
1997	6,300	235,279,509	37,346	2.74 %	4,957	101,190,312	43.0 %	2.68 %
1998	6,434	248,766,208	38,664	3.53 %	5,037	108,710,952	43.7 %	2.90 %
1999	6,677	264,079,253	39,551	2.29 %	5,158	115,755,528	43.8 %	2.90 %
2000	7,182	292,404,031	40,713	2.94 %	5,222	125,550,888	42.9 %	2.90 %
2001	7,466	307,833,700	41,231	1.27 %	5,514	141,383,423	45.9 %	4.98 %*
2002@	7,691	331,607,085	43,116	4.57 %	5,610	151,283,074	45.6 %	8.12 %*
2003	7,311	318,121,662	43,513	0.92 %	5,699	160,764,146	50.5 %	8.66 %*
2004	7,192	315,156,876	43,820	0.71 %	5,869	174,668,685	55.4 %	11.25 %*
2004@	7,192	315,156,876	43,820	0.71 %	5,869	174,668,685	55.4 %	11.30 %*
2004@!	7,192	315,156,876	43,820	0.71 %	5,869	174,668,685	55.4 %	11.14 %*

* *Based on current funding policy, see page A-2.*
\# *Excludes affiliate members.*
@ *After experience study.*
! *After benefit changes.*

ACTUARIAL ACCRUED LIABILITIES & VALUATION ASSETS COMPARATIVE STATEMENT

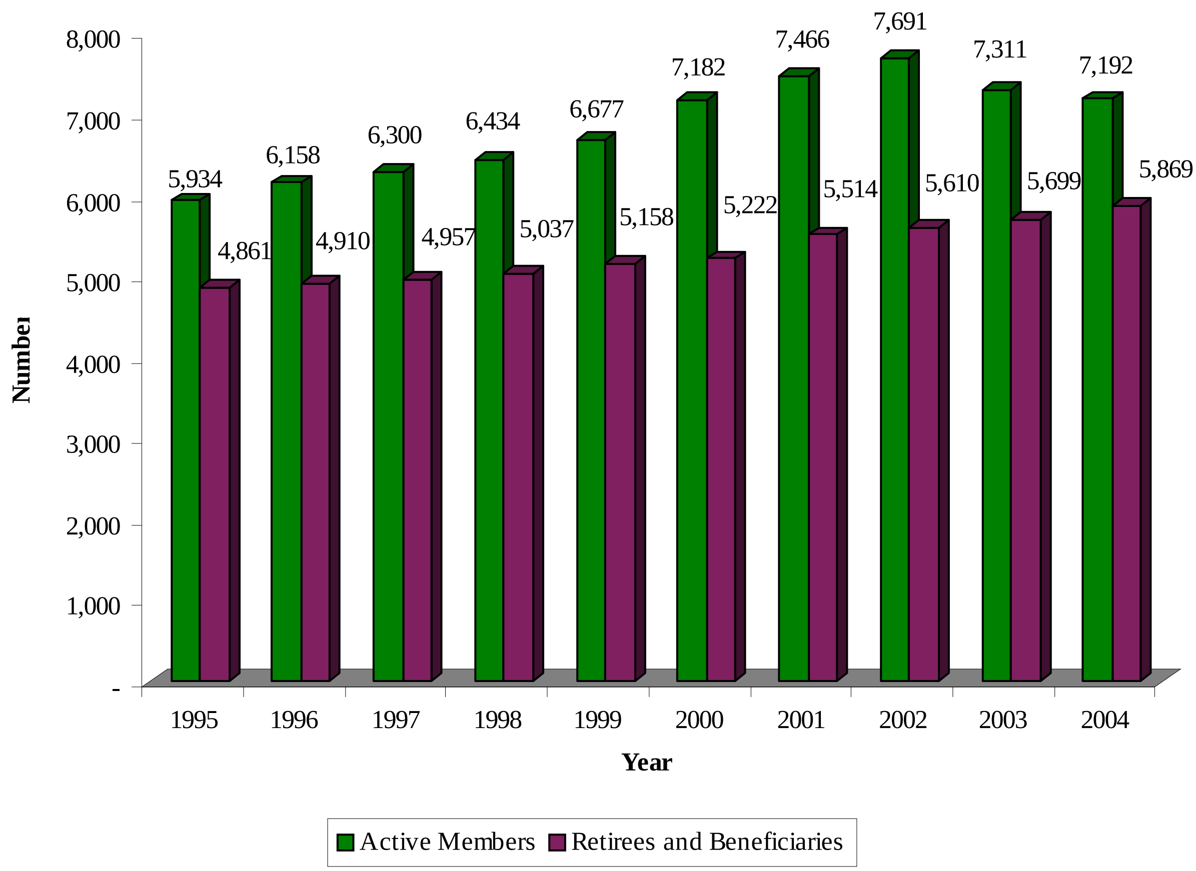
December 31,	Actuarial Accrued Liability (AAL) (1)	Valuation Assets (2)	Unfunded Actuarial Liability (UAAL) (1) - (2) (3)	Ratio of Present Assets to AAL (2)/(1) (4)	Annual Covered Payroll (5)	Ratio of UAAL to Valuation Payroll (3)/(5) (6)
1997	$1,727,251,343	$1,760,123,981	$ (32,872,638)	101.9 %	$235,279,509	-
1998	1,894,138,915	1,889,151,846	4,987,069	99.7 %	248,766,208	2.0 %
1999	1,983,399,740	2,044,332,158	(60,932,418)	103.1 %	264,079,253	-
2000	2,371,925,173	2,308,030,298	63,894,875 #	97.3 %	292,404,031	21.9 %
2001	2,550,556,774	2,462,548,441	88,008,333	96.5 %	307,833,700	28.6 %
2002*	2,712,292,741	2,465,049,249	247,243,492	90.9 %	331,607,085	74.6 %
2003	2,793,788,109	2,531,745,553	262,042,556	90.6 %	318,121,662	82.4 %
2004	2,901,110,188	2,611,523,735	289,586,453	90.0 %	315,156,876	91.9 %
2004*	2,939,057,146	2,611,523,735	327,533,411	88.9 %	315,156,876	103.9 %
2004*@	2,960,990,156	2,611,523,735	349,466,421	88.2 %	315,156,876	110.9 %

\# *Actual UAAL on valuation date before any offsets.*
* *After experience study.*
@ *After benefit changes.*

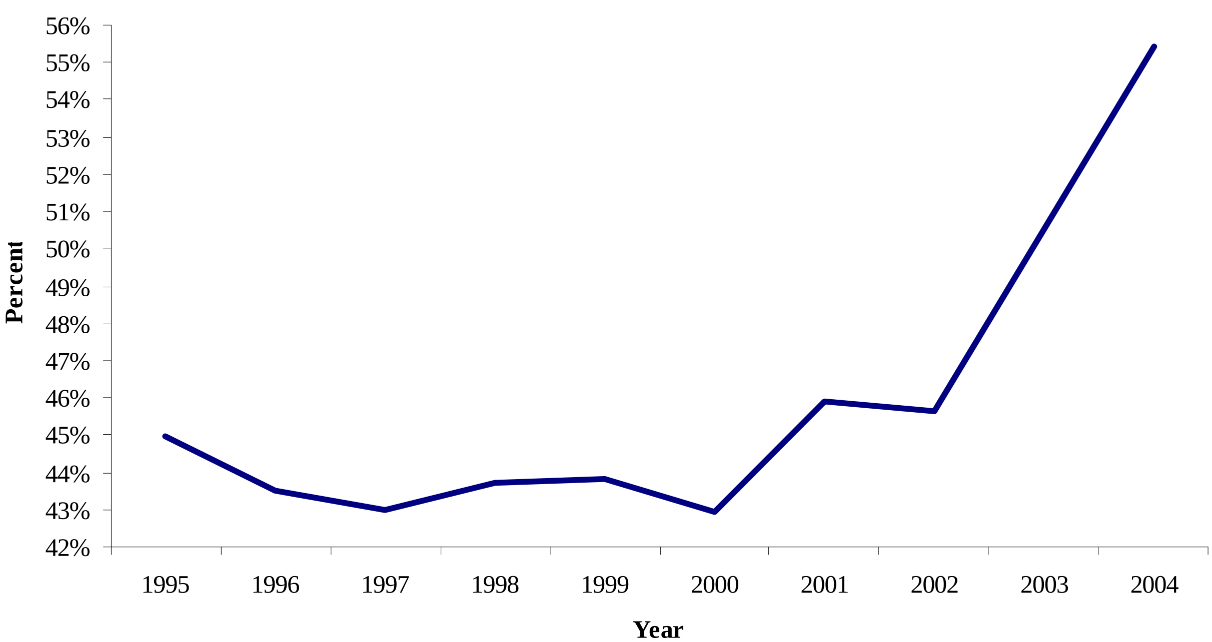
The Ratio of Valuation Assets to AAL is a traditional measure of a system's funding progress. Except in years when the system is amended or actuarial assumptions are revised or there are extraordinary experience gains or losses, this ratio can be expected to move gradually toward 100%.

The Ratio of UAAL to Valuation Payroll is another relative index of condition. Actuarial unfunded liabilities represent debt, while active member payroll represents the system's capacity to collect contributions to pay toward debt. The lower the ratio is, the greater the financial strength and vice-versa.

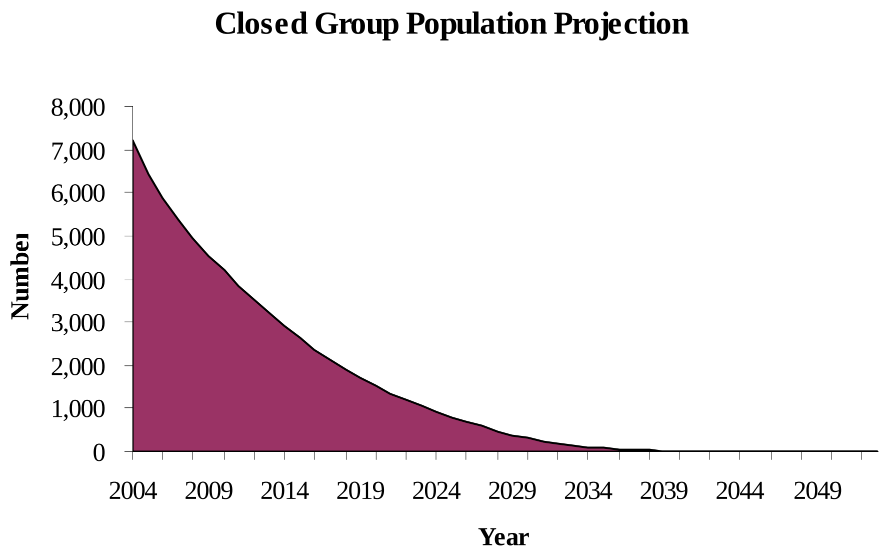
Active and Retired Members and Beneficiaries

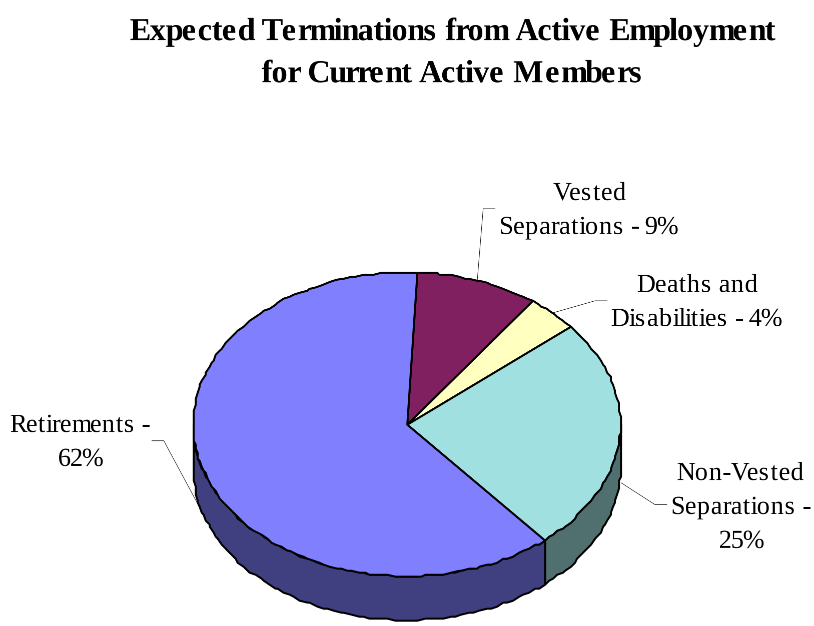


Benefits as a Percent of Payroll



EXPECTED DEVELOPMENT OF PRESENT POPULATION BASED ON CURRENT PLAN ASSUMPTIONS





SECTION B

Summary of Benefit Provisions and Valuation Data

BRIEF SUMMARY OF BENEFIT PROVISIONS EVALUATED DECEMBER 31, 2004

Regular Retirement (no reduction factor for age):

Eligibility - Age 50 with 30 or more years of earned service or age 55 with 25 or more years of earned and outside service (must include 15 years with the District), or age 65 with 5 years of earned service.

Type of Final Average Salary (FAS) - Highest 36 months of earned service or career average, whichever is greater.

Annual Amount - 2.5% of FAS times earned service. Minimum benefit is $15 times first 10 years of earned service plus $20 times earned service over 10 years.

Early Retirement:

Eligibility – Age 55 with 15 years of service with the District but less than 25 years of service or any age with at least 25 years of service with the District.

Annual Amount - Same as regular retirement but reduced by the following amount:

Age	Service	Reduction Amount*
Under 50	30 years	4% for each year prior to age 50
Under 50	25-30 years	Greater of: • 4% for each year of service below 30 years • 4% for each year below age 50
Age 50 - 55	25-30 years	Lesser of: • 4% for each year under age 55 • 4% for each year of service below 30 years
Over 55	15 years	Lesser of: • 4% for each year under age 65 • 4% for each year below 25 years

** Reduction amounts based on 6% rather than 4% for those hired on or after July 1, 2005.*

Deferred Retirement (vested benefit):

Eligibility - 5 years of service. Benefit begins at age 50 with 30 years of service, age 55 with 25 years of service (15 with District), or age 65 with 5 years of service.

Annual Amount - Computed as regular retirement but based upon service and final average salary at time of termination. In lieu of retirement benefit, members may receive 200% of accumulated contributions in a lump sum or an annuity equal to the actuarial equivalent of 200% of contributions plus minimum benefit.

Disability Retirement:

Eligibility – 5 years of service. Recalculated benefit is payable at age 55 with 25 years of service, at age 50 with 30 years of service, or at age 65.

Annual Amount **–** Accrued benefit immediately. Upon attaining voluntary retirement age, additional qualified service credit is granted and benefit is recomputed.

Death Before Retirement:

Eligibility - No age or service requirements for a refund of member contributions.

Annual Amount **–** If the member is eligible for retirement, the beneficiary may receive a refund of accumulated contributions, survivor benefits, or the regular or early retirement benefit.

Survivor benefits are as follows and require that the member have a minimum of 5 years of earned service with the district immediately prior to death:

Type of Survivor	Survivor Benefits
Child	The greater of 10% of Final Average Salary for each child up to a limit of 30%; and $160 (pro-rated) for each child up to a limit of $480.
Spouse and child	The greater of the difference between child benefit above and 30% (40% if 15 years of service plus 2% for each year of service beyond 25 years) of Final Average Salary; and $480.
Dependent Parent	The greater of 10% of Final Average Salary; and $240 per parent.
Spouse:	
• Less than 15 years of service	The lesser of 30% of Final Average Salary; and $480.
• 15 years of service or more	The greater of 30% of Final Average Salary, plus an additional 1% for each year of service over 15 years; and $480.

Spouse's benefit is payable at age 50 with at least 15 years of service or at age 60.

Member Contributions:

8.0% of annual compensation. Interest is credited at a rate of 5% per year compounded monthly.

Post-Retirement Increases: (ARAA)

3.25% per year compounded. Effective on the January 1st immediately following retirement. Associate members are not eligible for the annual retirement increase. For those hired on or after July 1, 2005, the increase is based on the lesser of 3.00% per year or the increase in the urban wage earners and clerical workers consumer price index (CPI), with the first increase calculated on a pro-rated basis.

SERVICE

Earned Service is used in the determination of benefits and eligibility. It includes periods of employment (regular or casual) with the District or with a Charter School or qualified leaves of absence.

Outside and Non-qualified service counts as service up to a total of 10 years of service in determining eligibility for full retirement with 25 years of service. If purchased, also counts as earned service.

OPTIONAL FORMS OF PAYMENT

Option A:	Single life annuity (SLA) with residual refund of member contributions.
Option B:	Installment refund annuity (SLA with reserve balance paid to beneficiary in monthly installments upon employee's death).
Option C:	100% joint and survivor with 10 years certain.
Option D:	Cash refund on annuity portion and SLA on pension portion.
Option E:	50% joint and survivor with 10 years certain.
Option P2:	50% joint and survivor with pop-up and residual refund of member contributions.
Option P3:	100% joint and survivor with pop-up and residual refund of member contributions.

RETIREES AND BENEFICIARIES DECEMBER 31, 2004
TABULATED BY OPTIONAL FORM BEING PAID

	Optional Form					
	A	**B**	**C**	**D**	**E**	**TOTAL**
Superannuation and Early Retirement						
(Includes survivors of deceased employees)						
Males						
Number	138	141	1,521	147	218	2,165
Average Monthly Benefit	$2,632	$2,607	$2,994	$2,723	$2,401	$2,867
Females						
Number	603	563	908	807	336	3,217
Average Monthly Benefit	$2,475	$2,126	$2,448	$2,506	$2,422	$2,408
Total						
Number	**741**	**704**	**2,429**	**954**	**554**	**5,382**
Average Monthly Benefit	**$2,504**	**$2,222**	**$2,790**	**$2,539**	**$2,414**	**$2,593**
Regular Disability						
Males						
Number	53	8	40	4	11	116
Average Monthly Benefit	$1,287	$985	$1,245	$2,033	$1,504	$1,298
Females						
Number	146	26	40	25	15	252
Average Monthly Benefit	$1,418	$1,084	$1,372	$1,116	$1,084	$1,327
Total						
Number	**199**	**34**	**80**	**29**	**26**	**368**
Average Monthly Benefit	**$1,383**	**$1,061**	**$1,309**	**$1,242**	**$1,262**	**$1,318**
Survivors of Active Members and Disability Deaths						
Number						**119**
Average Monthly Benefit						**$ 965**
Grand Total						
Number						**5,869**
Average Monthly Benefit						**$2,480**

RETIREES AND BENEFICIARIES DECEMBER 31, 2004
TABULATED BY ATTAINED AGES

Attained Ages		Years Since Retirement						
		0-4	5-9	10-14	15-19	20-24	25-29	30+
Under 45	Number	4	4	0	0	0	0	0
	Total Benefit	$ 65,605	$ 27,882	$ 0	$ 0	$ 0	$ 0	$ 0
45-49	Number	16	8	2	0	0	0	0
	Total Benefit	$ 327,017	$ 62,443	$ 12,738	$ 0	$ 0	$ 0	$ 0
50-54	Number	117	24	2	1	0	0	0
	Total Benefit	$ 4,416,134	$ 377,474	$ 24,670	$ 10,815	$ 0	$ 0	$ 0
55-59	Number	629	87	26	6	1	0	0
	Total Benefit	$25,316,530	$ 2,529,041	$ 439,224	$ 52,187	$ 6,929	$ 0	$ 0
60-64	Number	340	378	101	2	3	1	1
	Total Benefit	$12,280,573	$ 13,190,470	$ 2,673,161	$ 39,627	$ 29,245	$ 3,333	$ 4,765
65-69	Number	284	165	413	21	2	0	0
	Total Benefit	$ 6,336,455	$ 5,115,715	$15,174,939	$ 466,911	$ 28,982	$ 0	$ 0
70-74	Number	33	182	421	259	1	0	0
	Total Benefit	$ 612,536	$ 3,379,439	$14,366,423	$ 8,634,388	$ 11,999	$ 0	$ 0
75-79	Number	10	26	364	346	207	1	2
	Total Benefit	$ 182,197	$ 517,790	$ 9,790,057	$10,934,909	$ 6,173,858	$ 11,439	$ 27,868
80-84	Number	2	5	52	394	284	49	4
	Total Benefit	$ 90,926	$ 107,527	$ 1,290,330	$ 9,693,865	$ 8,234,718	$ 1,050,871	$ 47,891
85-89	Number	0	0	7	41	248	67	7
	Total Benefit	$ 0	$ 0	$ 163,350	$ 727,959	$ 4,293,303	$1,560,038	$ 70,940
90 & Over	Number	0	1	0	1	17	137	63
	Total Benefit	$ 0	$ 6,590	$ 0	$ 7,388	$ 383,923	$2,115,420	$1,167,878
Totals	Number	1,435	880	1,388	1,071	763	255	77
	Total Benefit	$49,627,973	$25,314,371	$43,934,892	$30,568,049	$19,162,957	$4,741,101	$1,319,342

Average Age = 71.7　　　　Average Years Since Retirement* = 12.6

**Excluding Beneficiaries*

INACTIVE MEMBERS
ELIGIBLE FOR DEFERRED BENEFITS DECEMBER 31, 2004
TABULATED BY ATTAINED AGES

Attained Ages	No.	Monthly Allowances
25-29	2	$ 2,405
30-34	14	18,573
35-39	42	51,086
40-44	33	42,406
45-49	46	55,680
50-54	51	58,509
55-59	61	52,585
60-64	27	20,430
Totals	276	301,674

ACTIVE MALE MEMBERS DECEMBER 31, 2004
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Age	Years of Service to Valuation Date: 0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	Totals: No.	Valuation Payroll
Under 20	1							1	$ 22,226
20-24	33							33	893,365
25-29	125	21	4					150	4,977,257
30-34	163	79	12	2				256	9,602,806
35-39	117	85	34	16	2			254	11,151,048
40-44	98	77	54	44	14	5		292	13,572,952
45-49	116	63	46	75	36	36	3	375	17,575,238
50-54	76	60	49	58	34	31	11	319	15,743,082
55-59	65	53	43	39	32	20	16	268	14,511,731
60	7	2	5	4	3	3	2	26	1,314,678
61	2	2	6	1	1	2	2	16	801,634
62	4	2	1	7	2		2	18	1,100,968
63	5	6	3			1	2	17	798,086
64	5	3	3	3	1	1	1	17	989,899
65	3	2	3	1			1	10	452,130
66	1	3	3		1		1	9	433,601
67						1	1	2	126,112
68	1	1	1	1				4	92,878
69	2	2		2				6	334,541
70	1			1				2	66,990
71			1	1				2	80,972
72				1				1	27,770
73									
74									
75	1		1					2	50,201
76			1					1	37,110
77				1				1	23,933
78		1						1	33,403
79									
Totals	**826**	**462**	**270**	**257**	**126**	**100**	**42**	**2,083**	**$94,814,611**

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age:	44.58	years
Service:	9.66	years

ACTIVE FEMALE MEMBERS DECEMBER 31, 2004

BY ATTAINED AGE AND YEARS OF SERVICE

Attained Age	Years of Service to Valuation Date: 0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	Totals: No.	Valuation Payroll
Under 20									
20-24	73	1						74	$ 2,097,119
25-29	510	44						554	18,523,296
30-34	445	197	10					652	23,532,953
35-39	257	205	76	13				551	22,069,998
40-44	207	150	103	99	13			572	23,504,284
45-49	176	145	122	145	73	23		684	30,854,932
50-54	171	135	153	141	106	128	12	846	41,503,565
55-59	133	114	118	129	111	87	58	750	37,782,944
60	11	14	17	14	15	9	9	89	4,275,862
61	13	14	14	12	18	12	4	87	4,111,064
62	15	5	12	13	5	9	2	61	3,140,555
63	12	6	11	8	11	9	2	59	3,035,694
64	5	6	5	9	6	10	4	45	2,168,225
65	3	2	5	5	1	6	1	23	1,035,792
66	2	3	1	4	4	5	3	22	1,042,552
67		4	1	1			1	7	271,171
68	2	1	2	1	1			7	270,151
69		1	1	4		1	2	9	375,002
70			1					1	24,516
71			1	1			1	3	115,002
72			1		1	2		4	194,005
73				1				1	61,621
74				1				1	25,456
75				1		1		2	109,144
76							1	1	34,799
77							1	1	57,432
78			1	1				2	55,325
79							1	1	69,806
Totals	**2,035**	**1,047**	**655**	**603**	**365**	**302**	**102**	**5,109**	**$220,342,265**

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age:	44.6	years
Service:	9.88	years

TOTAL ACTIVE MEMBERS DECEMBER 31, 2004
BY ATTAINED AGE AND YEARS OF SERVICE

	Years of Service to Valuation Date							Totals	
Attained Age	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	1							1	$ 22,226
20-24	106	1						107	2,990,484
25-29	635	65	4					704	23,500,553
30-34	608	276	22	2				908	33,135,759
35-39	374	290	110	29	2			805	33,221,046
40-44	305	227	157	143	27	5		864	37,077,236
45-49	292	208	168	220	109	59	3	1059	48,430,170
50-54	247	195	202	199	140	159	23	1165	57,246,647
55-59	198	167	161	168	143	107	74	1018	52,294,675
60	18	16	22	18	18	12	11	115	5,590,540
61	15	16	20	13	19	14	6	103	4,912,698
62	19	7	13	20	7	9	4	79	4,241,523
63	17	12	14	8	11	10	4	76	3,833,780
64	10	9	8	12	7	11	5	62	3,158,124
65	6	4	8	6	1	6	2	33	1,487,922
66	3	6	4	4	5	5	4	31	1,476,153
67		4	1	1		1	2	9	397,283
68	3	2	3	2	1			11	363,029
69	2	3	1	6		1	2	15	709,543
70	1		1	1				3	91,506
71			2	2			1	5	195,974
72			1	1	1	2		5	221,775
73				1				1	61,621
74				1				1	25,456
75	1		1	1		1		4	159,345
76			1				1	2	71,909
77				1			1	2	81,365
78		1	1	1				3	88,728
79							1	1	69,806
Totals	**2,861**	**1,509**	**925**	**860**	**491**	**402**	**144**	**7,192**	**$315,156,876**

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age:	44.6	years
Service:	9.82	years

Active Members December 31,

	2004	2003	2002	2001	2000
Active and Affiliate Members	7,223	7,339	7,722	7,497	7,213
Payroll (in thousands)*	$315,157	$318,122	$331,607	$307,834	$292,404
Average Salary*	$ 43,820	$ 43,513	$ 43,116	$ 41,231	$ 40,713
Average Age*	44.6	44.6	44.0	44.0	44.3
Average Service*	9.8	10.2	10.8	10.3	9.9

**Excluding Affiliate Members*

All Plan Members December 31, 2004

	Males	Females	Total
Active Members			
Number	2,083	5,109	7,192
Annual Payroll	$ 94,814,610	$ 220,342,266	$ 315,156,876
Affiliate Members	5	26	31
Deferred Retirements			
Number	62	214	276
Estimated Monthly Benefit	$ 73,547	$ 228,127	$ 301,674
Retired Members			
Number	2,244	3,257	5,501
Annual Benefit	$ 75,389,066	$ 93,461,253	$ 168,850,319
Disabled Participants			
Number	116	252	368
Annual Benefits	$ 1,806,963	$ 4,011,403	$ 5,818,366
Subtotal Number	4,510	8,858	13,368
Nonvested and Unelected Vested Terminations			
Terminated, Owed Refunds			2,689
Total Number			**16,057**

DEVELOPMENT OF FUNDING VALUE OF RETIREMENT SYSTEM ASSETS DECEMBER 31, 2004

	Development of Funding Value of Assets	2004	2003
1	Funding Value (FV) of Assets - BOY	$2,531,745,552	$2,465,049,249
2	Employer Contributions	21,142,815	13,023,157
3	Member Contributions	25,992,388	32,665,945
4	Benefit Payments and Refunds	169,627,621	157,732,542
5	Decrease in Pension Assessment Expenses	0	0
6	Release of Prior Unallocated Excess Earnings	0	0
7	FBE Transfer for Benefit Improvements	0	0
8	Interest at 8.75%	216,168,693	210,789,909
9	Expected FV of Assets - EOY: (1)+(2)+(3)-(4)-(5)+(6)+(7)+(8)	2,625,421,827	2,563,795,718
10	Market Value (MV) of Assets	2,555,931,368	2,403,544,891
11	FBE Balance	0	0
12	Unallocated Excess Earnings	0	0
13	Adjusted MV of Assets: (10)-(11)-(12)	2,555,931,368	2,403,544,891
14	Difference between EFV and AMV: (13)-(9)	(69,490,459)	(160,250,827)
15	20% of Difference: 0.20 x (14)	(13,898,092)	(32,050,165)
16	**Funding Value of Assets - EOY: (9) + (15)**	**2,611,523,735**	**2,531,745,552**

The Funding Value of Assets recognizes 20% of the difference between Market Value and expected Funding Value each year. Expected Funding Value is equal to last year's Funding Value increased by contributions and assumed investment income and decreased by benefit payments. During periods when investment performance exceeds the assumed rate, Funding Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than market value.

SUMMARY OF ACTUARIAL ASSETS, REVENUES AND EXPENDITURES

BALANCE SHEET

Valuation Assets		Reserves for	
Cash, receivables, accruals and other short-term assets	$ 30,875,454	Member contributions	$ 228,454,544
Stocks	1,537,228,579	Pensions and annuities	1,939,394,770
Bonds	726,522,721	Deferred retirement allowances	9,549,416
Other	261,304,614	Unrealized asset appreciation	378,532,638
Funding value adjustment	55,592,367	Funding value adjustment	55,592,367
Total Current Assets	$2,611,523,735	Total Applied Reserves	$2,611,523,735

REVENUES AND EXPENDITURES

	2004	2003
Balance - January 1	$2,531,745,552	$2,465,049,249
BOY Adjustments	0	0
Adjusted BOY Balance (A)	2,531,745,552	2,465,049,249
Revenues		
Member contributions	25,992,388	32,665,945
Employer contributions	21,142,815	13,023,157
Recognized investment income (I)	205,838,822	181,973,590
Total	252,974,025	227,662,692
Expenditures		
Benefit payments	169,627,621	157,732,542
Administrative and investment expenses (E)	3,568,221	3,233,847
Total	173,195,842	160,966,389
Balance - December 31 (B)	$2,611,523,735	$2,531,745,552
Recognized rate of return: (I-E)/[½ x (A+B-I+E)]	8.2%*	7.4%*

** Market value rate of return was 11.7 % in 2004 and 22.2% in 2003.*

RECOMMENDED RESERVE TRANSFERS
DECEMBER 31, 2004

1.	**Reserve for Retired Service and Age - Basic**	
	a. Ledger Reserve as of December 31, 2004	$1,112,734,467
	b. Required reserve according to actuarial valuation	1,125,399,329
	c. Amount to be transferred to this reserve	12,664,862
2.	**Reserve for Retired Regular Disability - Basic**	
	a. Ledger Reserve as of December 31, 2004	$ 33,311,002
	b. Required reserve according to actuarial valuation	32,999,393
	c. Amount to be transferred to this reserve	(311,609)
3.	**Reserve for Survivor Benefits - Basic**	
	a. Ledger Reserve as of December 31, 2004	$ 7,601,125
	b. Required reserve according to actuarial valuation	7,626,058
	c. Amount to be transferred to this reserve	24,933
4.	**Reserve for Retired Service and Age - ARAA**	
	a. Ledger Reserve as of December 31, 2004	$ 804,864,346
	b. Required reserve according to actuarial valuation	833,771,178
	c. Amount to be transferred to this reserve	28,906,832
5.	**Reserve for Retired Regular Disability - ARAA**	
	a. Ledger Reserve as of December 31, 2004	$ 25,079,635
	b. Required reserve according to actuarial valuation	23,174,991
	c. Amount to be transferred to this reserve	(1,904,644)
6.	**Reserve for Survivor Benefits - ARAA**	
	a. Ledger Reserve as of December 31, 2004	$ 6,937,901
	b. Required reserve according to actuarial valuation	6,827,899
	c. Amount to be transferred to this reserve	(110,002)

In order to maintain an exact balance between reserve accounts and retiree liability, as calculated in the December 31, 2004 valuation, the above transfers should be made. Differences between reserve accounts and liabilities occur due to differences between actual and expected mortality among retirees.

SECTION C

Summary of Valuation Methods and Assumptions

ACTUARIAL COST METHODS

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

(i) the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is 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.

Financing of Unfunded Actuarial Accrued Liabilities (UAAL). Unfunded actuarial accrued liabilities (full funding credit of assets exceed liabilities) are amortized by level (principal & interest combined) percent-of-payroll contributions over a period of 30 future years.

Ultimate Normal Cost Method. Contribution rates were determined using the Ultimate Normal Cost method. Under this method, the normal cost is based on the benefits applicable to new hires. This results in a larger portion of current benefit obligations being financed with UAAL contributions.

ACTUARIAL ASSUMPTIONS USED FOR THE VALUATION

The actuary calculates the contribution requirements and benefit values by applying actuarial assumptions to the benefit provisions and census data furnished, using the actuarial cost methods described on the previous page.

The principal areas of financial risk which require assumptions about future experiences are:

- long-term rates of investment return to be generated by system assets.
- patterns of pay increases to members.
- rates of mortality among members, retirees and beneficiaries.
- rates of separation (withdrawal) from active membership.
- rates of disability among active members.
- the age patterns of actual retirement.

In a valuation, the actuary calculates the monetary effect of each assumption for as long as each covered person survives - - - a period of time which can be as long as a century.

Actual experience of the Fund will not coincide exactly with assumed experience, regardless of the quality of the assumptions, or the skill of the actuary and the precision of the many calculations made. Each valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experience. The result is a continual series of adjustments (usually small) to the computed contribution rate.

From time to time it is appropriate to modify one or more of the assumptions to reflect experience trends (but not random year-to-year fluctuations).

The rates of salary increase used for individual members are in accordance with the following table. This assumption is used to project a member's current salary to the salaries upon which benefits will be based.

	% Increase in Salary at Sample Ages		
Sample Ages	**Merit and Seniority**	**Base (Economic)**	**Increase Next Year**
20	5.0%	4.5%	9.5%
25	4.5%	4.5%	9.0%
30	3.6%	4.5%	8.1%
35	2.8%	4.5%	7.3%
40	2.1%	4.5%	6.6%
45	1.4%	4.5%	5.9%
50	0.8%	4.5%	5.3%
55	0.4%	4.5%	4.9%
60	0.0%	4.5%	4.5%
65	0.0%	4.5%	4.5%

If the number of active members remains constant, then the total active member payroll will increase 4.5% annually, the base portion of the individual salary increase assumptions. This increasing payroll was recognized in amortizing unfunded actuarial accrued liabilities.

The rate of net investment return was 8.50% a year, compounded annually. This assumption is used to make money payable at one point in time equal in value to a different amount of money payable at another point in time.

The assumed real return is the rate of return in excess of wage inflation. Considering other assumptions used in the valuation, the 8.50% nominal rate translates to a net real return of 4.00% a year. Experience over the last 4 years has been more favorable than assumed, as illustrated below:

	Year Ended December 31				4-Year
	2004	**2003**	**2002**	**2001**	**Average**
Nominal rate (net)	8.2 %	7.4 %	4.6 %	6.5 %	6.7 %
Increase in CPI	3.3 %	2.1 %	1.1 %	3.2 %	2.4 %
Average salary increase	0.7 %	0.9 %	4.6 %	1.3 %	1.9 %
Real return as measured by					
- CPI: (1)-(2)					4.3 %
- Salary increases: (1)-(3)					4.8 %

The nominal rate of return was computed using the approximate formula: i = I divided by 1/2 (A+B-I), where I is realized investment income, A is the beginning of year asset value and B is the end of year asset value.

The mortality table was as shown below:

Sample Attained Ages	Value at Retirement of $1 Monthly Increasing 3.25% Annually After Retirement		Future Life Expectancy (years)	
	Men	Women	Men	Women
50	$178.67	$192.26	31.57	36.49
55	166.83	181.53	27.31	31.85
60	152.60	168.39	23.13	27.27
65	135.61	153.10	19.05	22.88
70	117.62	135.71	15.36	18.72
75	99.49	116.40	12.13	14.84
80	82.03	96.35	9.40	11.39

This assumption is used to measure the probabilities of each benefit payment being made after retirement. The possibility of members dying before retirement is 50% of the rates shown above.

The rates of retirement used to measure the probability of eligible members retiring during the next year were as follows:

Retirement Ages	Normal Retirement		Early Retirement	
	Men	Women	Men	Women
50	25%	25%	10%	5%
51	25%	25%	10%	5%
52	25%	25%	10%	6%
53	30%	25%	10%	7%
54	30%	30%	10%	8%
55	35%	35%	10%	9%
56	30%	15%	10%	10%
57	30%	20%	10%	12%
58	30%	20%	11%	12%
59	30%	20%	12%	13%
60	30%	20%	13%	14%
61	35%	20%	14%	14%
62	40%	25%	15%	15%
63	35%	20%	15%	17%
64	35%	25%	15%	20%
65	40%	30%		
66	25%	25%		
67	25%	25%		
68	25%	25%		
69	25%	25%		
70	100%	100%		

Rates of separation from active membership were as shown below (rates do not apply to members eligible to retire and do not include separation on account of death or disability). This assumption measures the probabilities of members remaining in employment.

Sample Ages	**Years of Service**	**% of Active Members Separating Within Next Year**	
		Men	**Women**
ALL	0	20.00%	20.00%
	1	18.00%	16.00%
	2	15.00%	14.00%
	3	12.00%	12.00%
	4	10.00%	10.00%
25	5 & Over	6.40%	8.60%
30		5.30%	7.70%
35		4.45%	6.40%
40		3.85%	5.06%
45		3.40%	3.42%
50		2.95%	2.40%
55		2.70%	2.20%
60		2.50%	2.20%
65		2.00%	2.20%

Rates of disability among active members.

Sample Ages	**% Becoming Disabled Within Next Year**	
	Men	**Women**
20	0.00%	0.00%
25	0.06%	0.06%
30	0.06%	0.06%
35	0.07%	0.07%
40	0.10%	0.10%
45	0.17%	0.17%
50	0.31%	0.31%
55	0.56%	0.56%
60	1.19%	1.19%
65	0.00%	0.00%

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS
DECEMBER 31, 2004

Marriage Assumption:	80% of members are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses.
Pay Increase Timing:	Eight months after valuation date.
Decrement Timing:	Decrements of all types are assumed to occur at the middle of the year.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and exact fractional service.
Decrement Relativity:	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
Decrement Operation:	All decrements operate during the first 5 years of service.
Incidence of Contributions:	Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.
Normal Form of Benefit:	Straight Life.
Option Factors:	Option factors are based on 8.50% interest and a 50% unisex blend of male and female mortality.
Special Adjustments:	None.

SECTION D

Basic Financial Objective and Operation of the Retirement System

BASIC FINANCIAL OBJECTIVE AND OPERATION OF THE RETIREMENT SYSTEM

Benefit Promises Made Which Must Be Paid For. A retirement program is an orderly means of handing out, keeping track of, and financing contingent pension promises to a group of employees. As each member of the retirement program acquires a unit of service credit they are, in effect, handed an "IOU" which reads: "Your Retirement System promises to pay you one unit of retirement benefits, payments in cash commencing when you retire."

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 financial objective of DPSRS is to establish and receive contributions, expressed as percents of active member payroll, which will remain approximately level from year to year and will not have to be increased for future generations of taxpayers.

Translated into actuarial terminology, a level percent-of-payroll contribution objective means that the contribution rate must be at least:

> ***Normal Cost*** (the current value of benefits likely to be paid on account of members' service being rendered in the current year)
> . . . plus . . .
> ***Interest on the Unfunded Actuarial Accrued Liability*** (the difference between the actuarial accrued liability and current system assets).

If contributions to the retirement program are less than the preceding amount, the difference, ***plus investment earnings not realized thereon***, will have to be contributed at some later time, or, benefits will have to be reduced, to satisfy the fundamental fiscal equation under which all retirement programs must operate; that is:

$$\mathbf{B = C + I - E}$$

Benefit payments to any group of members and their beneficiaries cannot exceed the sum of:

Contributions received on behalf of the group

. . . plus . . .

Investment earnings on contributions received and not required for immediate payment of benefits

. . . minus . . .

Expenses incurred in operating the program.

There are retirement programs designed to defer the bulk of contributions far into the future. Lured by artificially low present contributions, the inevitable consequence is a relentlessly increasing contribution rate to a level greatly in excess of the level percent-of-payroll rate.

A by-product of the level percent-of-payroll contribution objective is the accumulation of invested assets for varying periods of time. Invested assets are a by-product of level percent-of-payroll contributions, not the objective. ***Investment income becomes the major contributor*** to the retirement program, and the amount is directly related to the amount of contributions and investment performance.

Computed Contribution Rate Needed To Finance Benefits. From a given schedule of benefits and from the data furnished him, the actuary calculates the contribution rate ***by means of an actuarial valuation*** - the technique of assigning monetary values to the risks assumed in operating a retirement program.

Actuarial Accrued Liability	The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as "accrued liability" or "past service liability."
Accrued Service	The service credited under the plan which was rendered before the date of the actuarial valuation.
Actuarial Assumptions	Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the "actuarial present value of future plan benefits" between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the "actuarial funding method."
Actuarial Equivalent	A single amount or series of amounts of equal value to another single amount or series of amounts, computed on the basis of the rate(s) of interest and mortality tables used by the plan.
Actuarial Present Value	The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.
Amortization	Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.
Experience Gain (Loss)	A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

Normal Cost	The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as “current service cost.” Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.
Plan Termination Liability	The actuarial present value of future plan benefits based on the assumption that there will be no further accruals for the future service and salary. The termination liability will generally be less than the liabilities computed on a “going-concern” basis and is not normally determined in a routine actuarial valuation.
Reserve Account	An account used to indicate that funds have been set aside for a specific purpose and that are not generally available for other uses.
Unfunded Actuarial Accrued Liability	The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as “unfunded accrued liability.”
Valuation Assets	The value of current plan assets recognized for valuation purposes. Generally related to market value in a manner which spreads unexpected gains or losses over a period of future years.

April 14, 2005

Mr. Robert Scott, Executive Director
Executive Director
Denver Public Schools
Retirement System
1301 Pennsylvania Street
Suite 700
Denver, Colorado 80203-5014

Dear Mr. Scott:

Enclosed are twenty copies of the Annual Actuarial Valuation as of December 31, 2004 of the Denver Public Schools Retirement System. Please let us know if you need additional copies.

Sincerely,

Judith A. Kermans

JAK:lr
Enclosures

cc: Judy Shimono