Management Report

**City of Cincinnati
Retirement System for Employees
Actuarial Valuation – December 31, 2000**

May 2001

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Introduction

This actuarial summary provides management with current year information and historical data relative to the Retirement System. While the annual actuarial valuation report primarily develops information for the year ending December 31, 2000 and the 2002 contribution rate, this summary also tracks trends over the last 25 years regarding:

1) contributions as a percent of total payroll, and in dollar amounts, including sources of change from the prior year,

2) plan participation, and

3) the funding progress (last 5 years).

This summary also discusses current issues and considerations relative to the Retirement System.

Summary of Valuation Results

Retirement System of The City of Cincinnati

	12/31/98	12/31/99	12/31/2000	Percentage (Decrease) Increase 1999/2000
Participants				
Active - Full Time	4,306	4,221	4,128	(2.2)%
Inactive	4,236	4,300	4,334	0.8%
Total Payroll	$ 170,393,096	$ 172,268,484	$ 171,555,002	(0.4)%
Developed Employer Normal Cost as a Percent of Payroll	(7.10)%	(8.30)%	14.43%	N/A
Employer Total Contribution as a Percent of Payroll	(7.10)%[2]	(8.30)%[2]	(4.80)%[2]	N/A
Actual Contribution				
Employer	$ 24,815,296	$ 12,768,885	$ 12,520,902	(1.9)%
Members	12,881,766	13,163,743	12,991,882	(1.3)%
Assets				
Market Value	$ 2,410,525,750	$ 2,626,392,512	$ 2,560,804,597	(2.5)%
Actuarial Value	2,036,031,301	2,251,554,942	2,363,697,947	5.0%
Return (Market Value)	14.10%	12.10%	0.60%	
Return (Actuarial Value)	16.30%	14.30%	8.75%	
Present Value of Benefits	$ 1,971,678,434	$ 2,162,175,783	$ 2,330,890,618	7.8%
Actuarial Accrued Liability	$ 1,740,182,139	$ 1,909,684,171	$ 2,071,566,514	8.5%
Value of Accrued Benefits				
Vested	$ 1,447,409,153	$ 1,580,417,442	$ 1,736,364,291	9.9%
Total	1,494,170,497	1,630,762,160	1,793,830,533	10.0%
Funding Progress	117%	118%	114%	(3.0)%

[1] Actual

[2] Contributions are being made at 7.0% for 1999 through 2001.
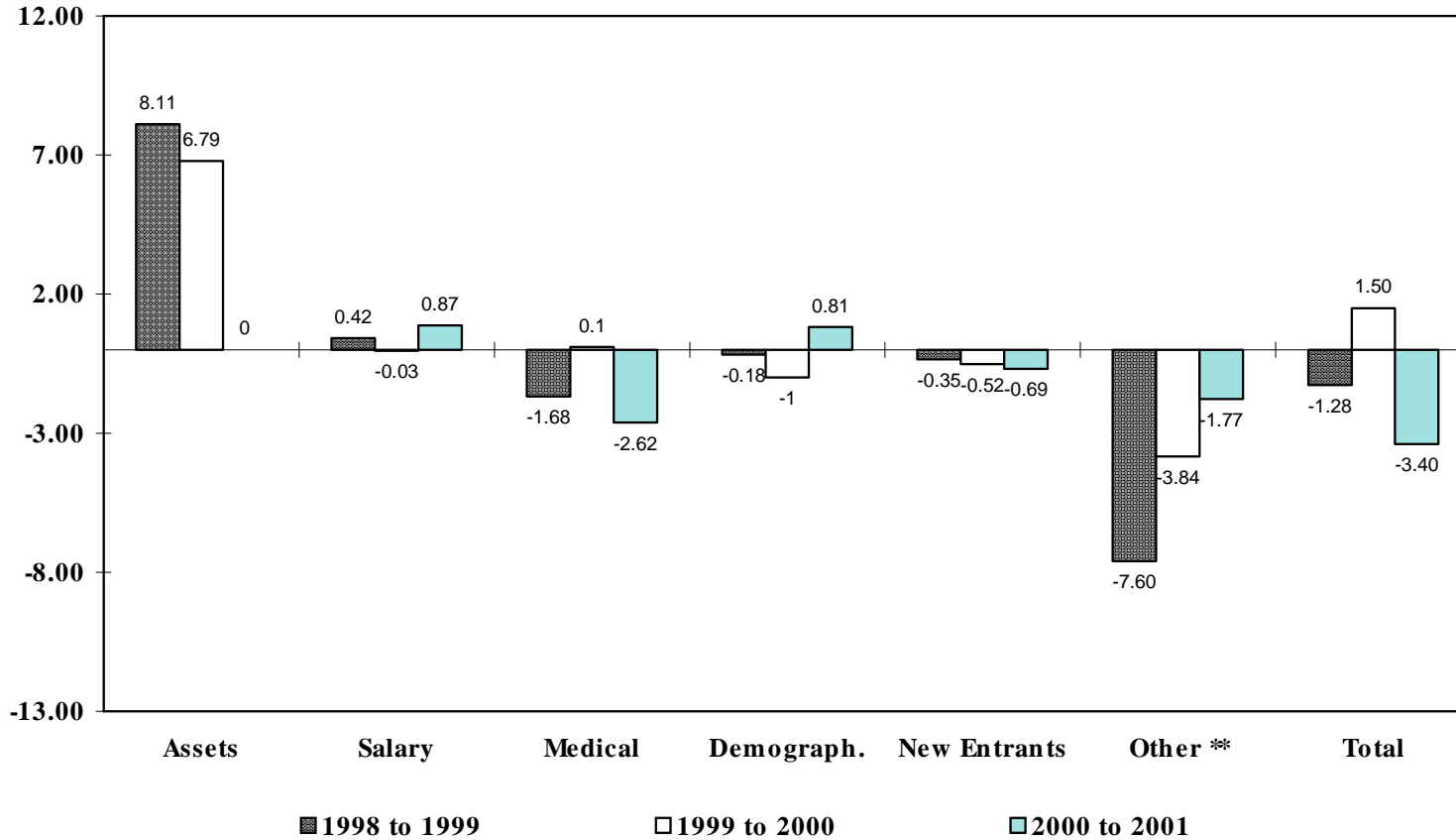
Summary of Valuation Results

Change in Normal Cost Rate

Prior to reflecting the change in funding methods, the normal cost rate before expenses as of the beginning of the year decreased from (12.39)% of payroll in 2000 to (8.99)% in 2001. The change can be attributed primarily to the addition of dental and vision benefits and a sharp increase in medical costs.

Component		Percent of Payroll
Asset experience	-	0.00%
Salary experience	Gain	(0.87)%
New entrants	Loss	0.69%
Participant demographics	Gain	(0.81)%
Medical	Loss	2.62%
Plan change	-	2.59%
Actuarial Assumptions	-	0.00%
Additional Contributions	Gain	(0.82)%

The following exhibit illustrates the changes in normal cost rate for the past three years.

CHANGE IN NORMAL COST RATE *
1998, 1999 AND 2000

* Changes in normal cost rate before reflecting expenses.
** Other: Includes 1997-1998 Actuarial Assumptions; 1998-1999 Plan Changes; 1999-2000 Plan Changes

Summary of Valuation Results

Change in Funding Method

The funding method was changed to the Individual Entry Age Normal method.

The change in funding method to the Entry Age Normal cost method helps to illustrate the long-term cost effect since costs are determined as a level percentage of pay over each individual's career. Based on the actuarial assumptions the Entry Age Normal method determines the level percentage of pay for each active participant that is needed, over the entire plan population, to fund all expected benefits of the plan. Each participant's percentage is multiplied by expected pay for the year to determine the normal cost (see line 9). Adjustments are made to this to reflect employee contributions, next year's expected expenses and the expected timing of contributions to determine the employer's normal cost for the year (line 13).

The present value of all benefits expected to be paid is determined for each participant of the plan (line 1). From this the present value of expected future employee contributions (line 2) and future employer normal costs (line 3) are subtracted. The remainder represents the theoretical amount that should have already been funded in the past (line 4) called the Entry Age Accrued Liability. The Entry Age Accrued Liability is compared to the Actuarial Value of Assets to determine the underfunded or surplus nature of the plan as viewed by this funding method. The surplus is then amortized over 15 years in equal payments.

This method clearly splits costs between past and future, more clearly illustrating both the long-term cost of the plan as well as the current funded position.

The value, payable throughout the year, of benefits that are attributed to the year under the Entry Age Normal cost method is 16.72% of pay (on a monthly basis). Expenses increase the percentage by 5.04% while employee contributions decrease the percentage by 7.32% (7.0% employee contributions, contributed monthly, yield 7.32% at the end of the year). The net long-term employer cost under this cost method for 2001 is 14.43% of compensation.

The current over funding produces a reduction in the cost equivalent to 19.25% of pay. Therefore, the required funding rate is (4.81)%.

City of Cincinnati
Comparison of Results to Last Year
December 31, 2000 Results

		12/31/1999		12/31/2000
1.	Present Value of Projected Benefits:			
	(a) Active Participants	1,115,102,265		1,160,326,080
	(b) Participants with Deferred Benefits	18,769,542		21,095,541
	(c) Participants Receiving Benefits	1,028,303,976		1,149,468,997
	(d) Total	2,162,175,783		2,330,890,618
2.	Present Value of Future Employee Contributions	115,371,456		113,558,750
3.	Present Value of Future Normal Costs	137,120,156		145,765,354
4.	Entry Age Accrued Liability (1)(d) - (2) - (3)	1,909,684,171		2,071,566,514
5.	Actuarial Value of Assets	2,251,554,942		2,363,697,947
6.	Unfunded/(Surplus) (4) - (5)	(341,870,771)		(292,131,433) *

		Dollar Amount	Percent of Proj. Pay	Dollar Amount	Percent of Proj. Pay
7.	Amortization of Unfunded/(Surplus) Over 15 Years (at the beginning of the year)	(38,425,898)	-21.37%	(32,835,252)	-18.40%
8.	Amortization of Unfunded/(Surplus)Over 15 Years (assuming monthly payments)	(40,201,174)	-22.35%	(34,352,241)	-19.25%
9.	Total Normal Cost (at the beginning of the year)	27,570,551	15.33%	28,516,179	15.98%
10.	Expenses	8,000,000	4.45%	8,600,000	4.82%
11.	Total Normal Cost (assuming monthly payments)	37,213,910	20.69%	38,830,946	21.76%
12.	Employees' Expected Contributions to Normal Cost (assuming monthly payments)	13,171,447	7.32%	13,069,922	7.32%
13.	Employer Normal Cost (11) - (12)	24,042,463	13.37%	25,761,024	14.43%
14.	Employer Total Cost (8) + (13)	(16,158,711)	-8.98%	(8,591,217)	-4.81%

* $34.2 million of this surplus is attributable to employer contributions made in excess of the required contributions for prior years.

Actuarial Summary

Employer Contributions

The graph on page 8 shows employer contributions over the 25 years preceding 2000, expressed as a percent of total payroll.

This exhibit shows a total employer contribution which was generally stable from 1976 to 1983. However, more volatility occurred between 1984 and 1994, with a big drop in contribution rate occurring when the unfunded liability became completely paid off in 1998.

Based on the actuarial method used to value liabilities, the employer contribution is broken into two components as shown on page 9:

- One to reflect the theoretical current cost (normal cost)

- One to handle unfunded past costs or surplus.

Since this is a split based on theoretical formulas, one component absorbs most of the volatility. In the method used prior to 2001, the normal cost absorbs the volatility. As of the end of 1998 the unfunded past costs had been completely amortized, leaving only the normal cost of the plan.

Beginning with the calculation of the contribution requirements for 2002 and later, the normal cost portion of the contribution will be more stable. The volatility associated with gains and losses and the reflection of the funded status will be made in the amortization portion of the costs.

EMPLOYER CONTRIBUTION

AS A PERCENT OF PAYROLL
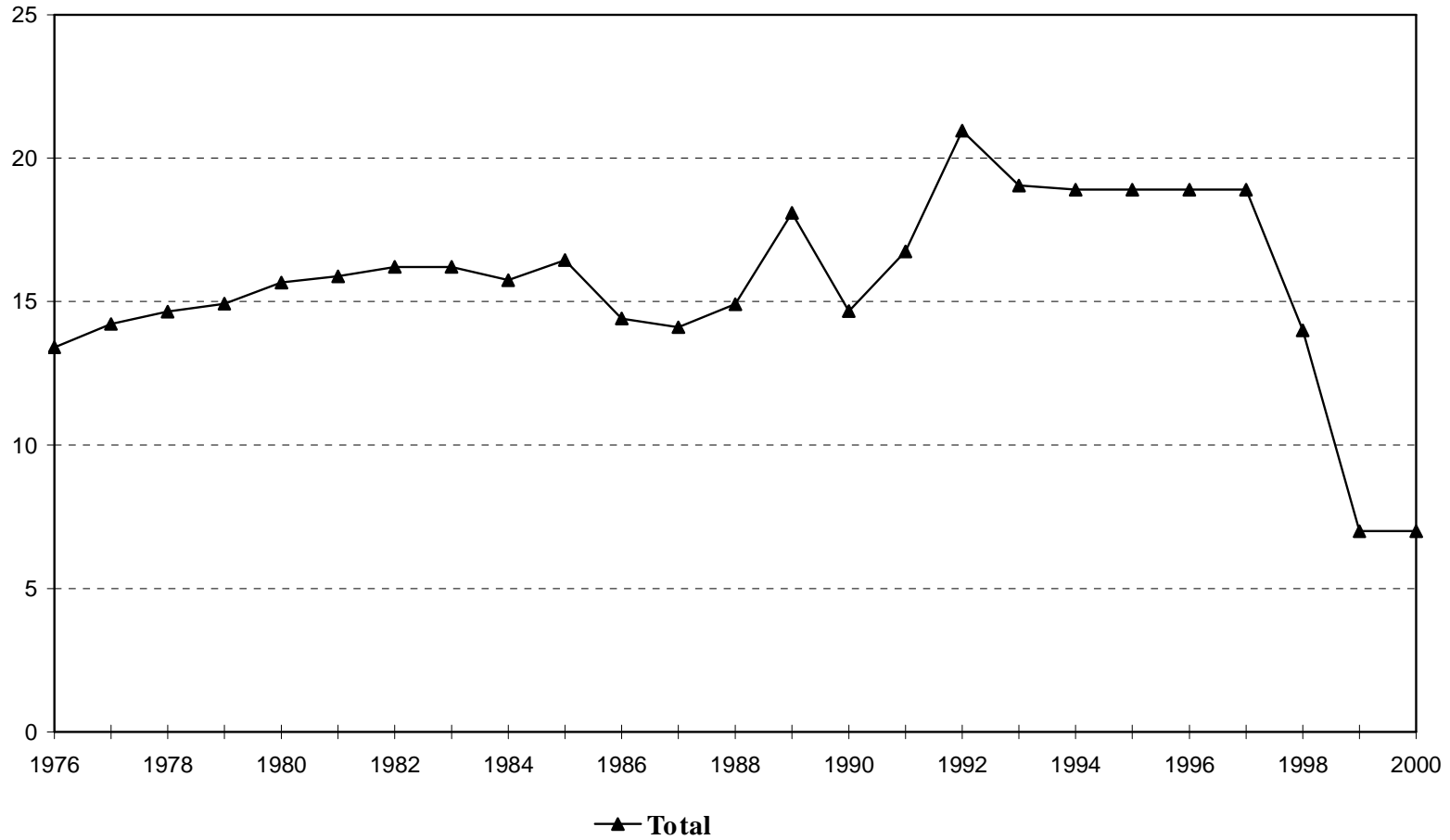
— ▲ — Total

25 YEAR HISTORY

Actuarial Summary *(continued)*

Employer Contribution as a Percent of Payroll
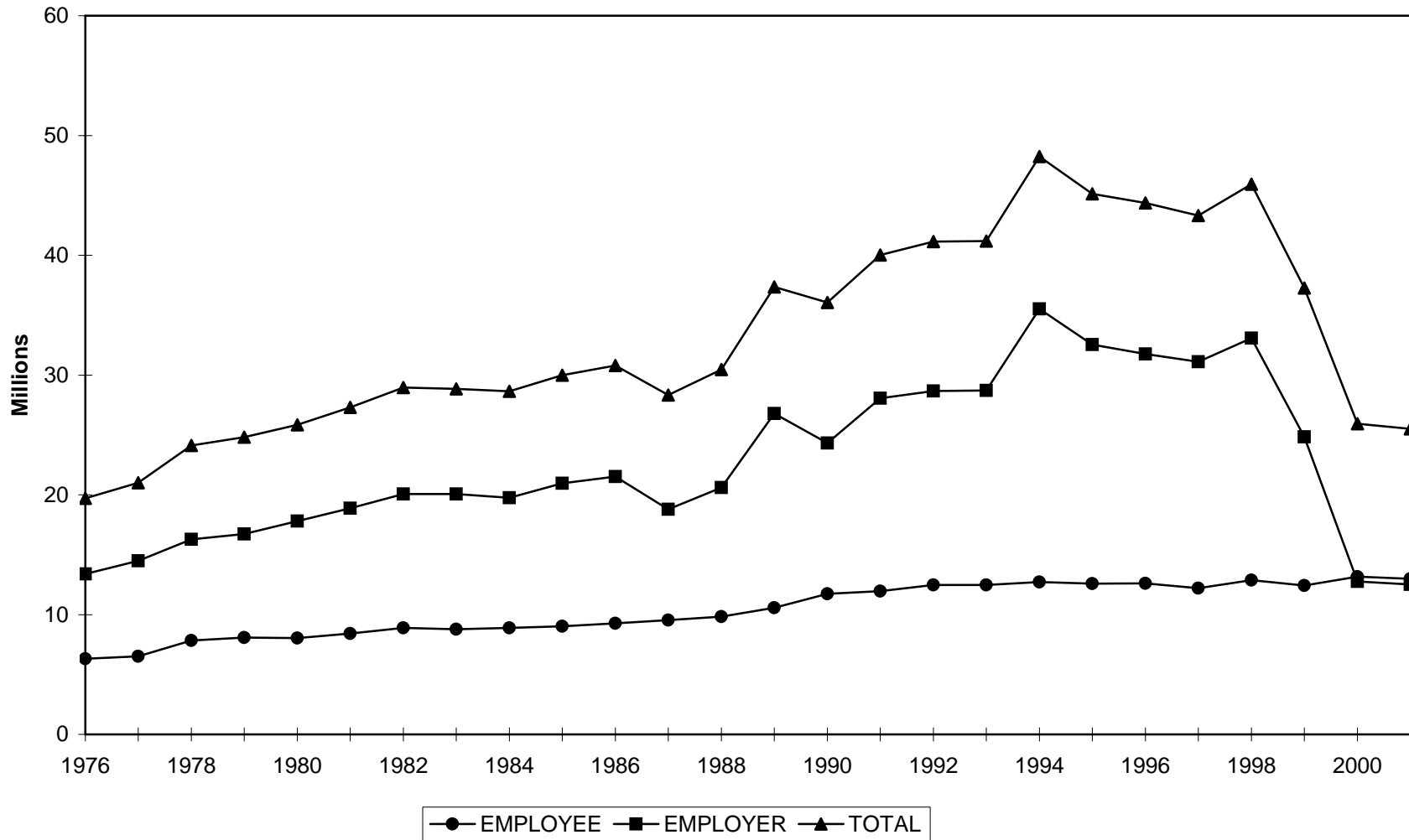
City of Cincinnati Retirement System

Year	Normal Cost	Unfunded Liability	Total
1976	9.18%	4.23%	13.41%
1977	9.20%	5.02%	14.22%
1978	9.28%	5.37%	14.65%
1979	9.44%	5.49%	14.93%
1980	9.74%	5.92%	15.66%
1981	9.95%	5.93%	15.88%
1982	10.24%	5.97%	16.21%
1983	10.24%	5.97%	16.21%
1984	9.78%	5.97%	15.75%
1985	10.26%	6.19%	16.45%
1986	6.42%	7.99%	14.41%
1987	4.55%	9.56%	14.11%
1988	5.08%	9.83%	14.91%
1989	8.29%	9.80%	18.09%
1990	4.02%	10.65%	14.67%
1991	6.61%	10.14%	16.75%
1992	10.94%	10.02%	20.96%*
1993	8.12%	10.93%	19.05%*
1994	7.42%	11.48%	18.90%
1995	13.42%	5.48%	18.90%
1996	5.63%	13.27%	18.90%
1997	(2.30)%	21.20%	18.90%
1998	(8.90)%	19.85%	10.95% **
1999	(7.10)%	–	(7.10)% ***
2000	(8.30)%	–	(8.30)% ***
2001	14.43%	(19.25)%	(4.81)% ***

*   Actual contribution rate was 16.75%
**   Actual contribution rate was 14.00%
*** Actual contribution rate was 7.00%

CONTRIBUTIONS

25 YEAR HISTORY

Actuarial Summary *(continued)*

Employee and Employer Contributions

City of Cincinnati Retirement System

Year	Employee Contributions	Employer Contributions	Total
1976	6,317,592	13,401,401	19,718,993
1977	6,521,773	14,494,524	21,016,297
1978	7,845,889	16,274,538	24,120,427
1979	8,075,767	16,731,827	24,807,594
1980	8,041,465	17,805,044	25,846,509
1981	8,424,258	18,873,284	27,297,542
1982	8,886,544	20,069,129	28,955,673
1983	8,778,247	20,064,858	28,843,105
1984	8,894,553	19,749,529	28,644,082
1985	9,035,000	20,962,057	29,997,057
1986	9,263,000	21,524,797	30,787,797
1987	9,539,000	18,792,634	28,331,634
1988	9,839,752	20,615,414	30,455,166
1989	10,568,577	26,784,729	37,353,306
1990	11,729,000	24,330,056	36,059,056
1991	11,968,000	28,060,699	40,028,699
1992	12,469,765	28,670,374	41,140,139
1993	12,471,725	28,717,266	41,188,991
1994	12,718,012	35,516,832	48,234,844
1995	12,591,364	32,532,039	45,123,403
1996	12,604,757	31,761,983	44,366,740
1997	12,869,394	33,072,461	45,941,855
1998	12,881,766	24,815,296	37,697,062
1999	13,163,743	12,768,885	25,932,628
2000	12,991,882	12,520,902	25,512,784
2001	12,490,000	12,490,000	24,980,000

Actuarial Summary *(continued)*

Total Contributions to Plan

The graph on page 10 illustrates all contributions to the retirement system during the past 25 years. Employer and employee contributions are shown separately. For 1999 to 2001, the employer contribution was reduced to the same level as the employee contributions primarily because the unfunded liability had been paid off in 1998.

Expected 2001 Contribution

Shown below is the expected 2001 contribution level.

Expected Contributions at 7% Rate	$12,490,000

The minimum required contribution is less than the current employer contribution rate of 7%. This is a result of the well funded status of the plan.

Expected 2002 Contribution Rate

For 2002, required contributions will be based on the normal cost adjusted for the amortization of the current funding surplus. Based on the December 31, 2000 actuarial valuation, the required contribution rate is 0%.

Actuarial Summary *(continued)*

Plan Participants

This section illustrates changes in both active and retired participants over a 25-year period.

The number of retirees and deferred participants has grown from 2,129 at the end of 1976 to 4,334 at December 31, 2000. There are now twice as many retirees as 25 years ago. The number of retirees has remained essentially flat for the last 5 years.

The number of active full-time participants has *decreased* during the 25-year period, beginning at the peak of 8,632 in 1976, and declining to 4,128 at December 31, 2000.

During the last 10 years the number of active full-time participants has decreased from 5,601 to 4,128. During this period, the closed group (Hamilton County, University Hospital and University of Cincinnati) decreased from 976 to 293. The City participants decreased from 4,625 to 3,835 during this time period.

The relationship of active to retired employees has changed markedly in 25 years, with almost 4.1 actives per retiree in 1976, but only .95 actives per retiree in 2000. A significant part of this decline is due to the impact of the closed groups. If City participants are reviewed separately, the ratio of active to retired employees is 1.41. The ratio for the plan as a whole is likely to remain low for the next 10 years or more, and could decrease as Hospital and University participation is gradually eliminated and the number of City participants remains unchanged. If all active participants in the closed groups were to immediately retire, the ratio would drop to .83 active participants per retiree.

Since the plan is well funded, a ratio below 1.00 is not a concern, except in one aspect: increased volatility of "required" contributions as a percent of covered payroll. When asset returns exceed expectations or medical experience is better than assumed, the leveraging effect of the retirees produces greater decreases in plan costs. However, this same leveraging will have a negative impact on contribution rates if experience is not as good as assumed.

ACTIVE AND INACTIVE MEMBERS
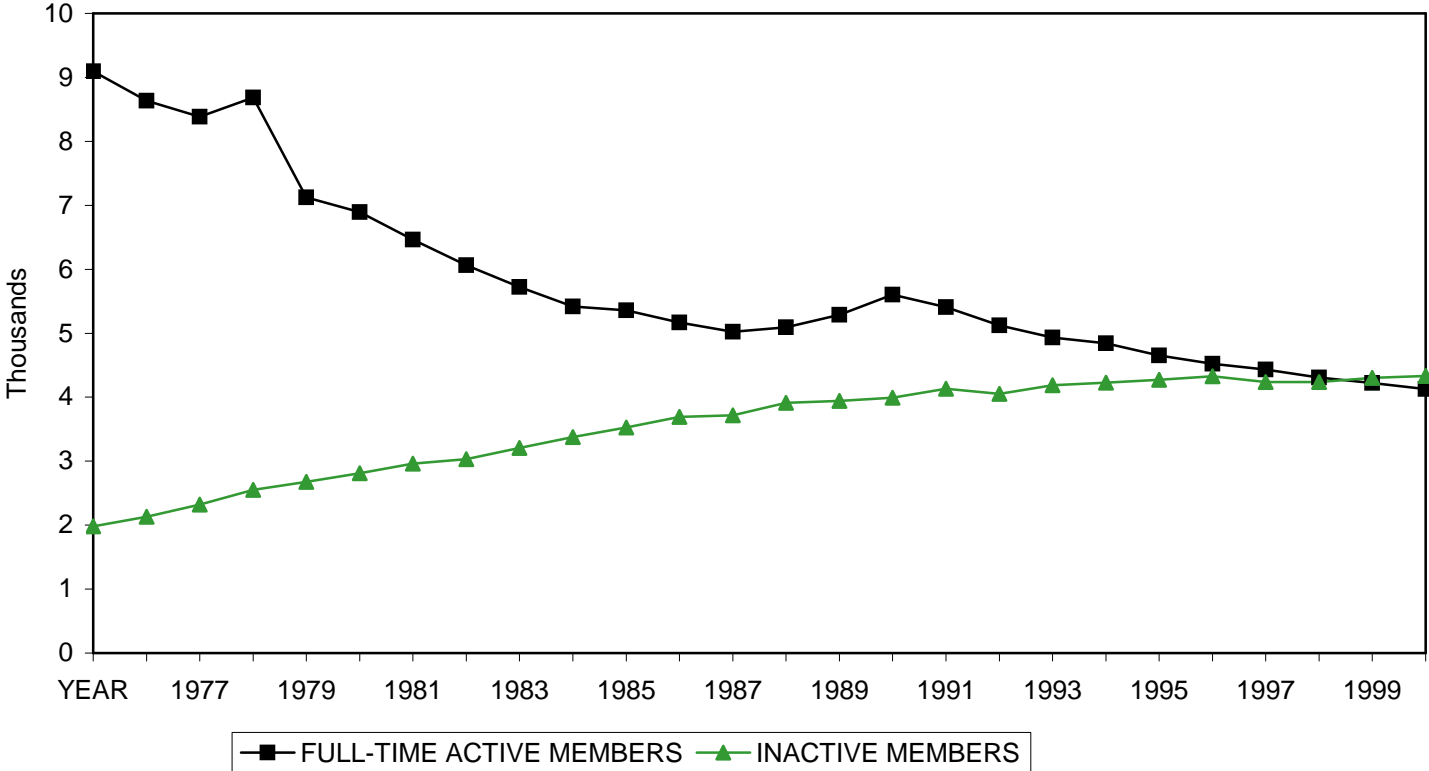
25 YEAR HISTORY

Actuarial Summary *(continued)*

Active Members and Retirees

City of Cincinnati Retirement System

Year	Full-Time Active Members	Retired and Deferred	Ratio of Active to Retired
1976	8,632	2,129	4.05
1977	8,386	2,322	3.61
1978	8,683	2,551	3.40
1979	7,123	2,674	2.66
1980	6,892	2,813	2.45
1981	6,463	2,960	2.18
1982	6,065	3,031	2.00
1983	5,721	3,206	1.78
1984	5,420	3,378	1.60
1985	5,360	3,527	1.52
1986	5,170	3,694	1.40
1987	5,022	3,715	1.35
1988	5,095	3,913	1.30
1989	5,287	3,944	1.34
1990	5,601	3,992	1.40
1991	5,410	4,131	1.31
1992	5,122	4,053	1.26
1993	4,930	4,189	1.18
1994	4,841	4,226	1.15
1995	4,650	4,270	1.09
1996	4,524	4,329	1.05
1997	4,433	4,236	1.05
1998	4,306	4,236	1.02
1999	4,221	4,300	0.98
2000	4,128	4,334	0.95

Actuarial Summary *(continued)*

Funding Progress

The funded progress of the plan is determined by comparing the entry age normal accrued liability with the actuarial value of assets. This ratio reflects the funding status relative to the level anticipated by the funding method as required to pay for benefits attributable to the past.

To the extent the funding progress is less than 100%, contributions greater than normal cost are required in order to catch up to the anticipated level of funding. If the funding progress exceeds 100%, as is currently the case, it indicates contributions less than normal cost are required since there is a cushion.

	Funding Progress		
	Total	**Pension**	**Medical**
December 31, 1996	108% *	107% *	111% *
December 31, 1997	117% *	116% *	119% *
December 31, 1998	117%	114%	123%
December 31, 1999	118%	113%	131%
December 31, 2000	114%	113%	116%

* Estimate

At December 31, 2000, the ratio of actuarial value of assets to the entry age accrued liability is 114%. This is a decrease from the previous year when the ratio was 118%. The decrease is due primarily to the addition of dental and vision benefits and a higher than expected increase in the medical costs of the plan.

Current Issues

1. Actuarial Experience/Actuarial Assumptions/Plan Changes

   As of December 31, 2000, the market value of assets exceeded the actuarial value of assets by $197 million, or 8%. This, combined with the smoothing method, continues to provide some cushion should assets not recover from the decline during the first part of 2001. During 2000 about half the cushion available as of the end of 1999 was consumed as a result of the asset performance.

   Demographic experience has been reasonably close to that assumed since introducing the 1995 assumptions.

   For the December 31, 2000 valuation, the funding method was changed to individual Entry Age Normal.

   Dental and vision benefits were added to the plan and are payable under the same conditions as are medical benefits. The dental plan is essentially the same as the active dental plan and includes a $1,000 annual maximum. The vision plan has a $100 annual maximum benefit. The change in the required contribution for the plan change is $4.9 million composed of $0.4 million of increased normal cost and $4.5 million resulting from the 15-year amortization of the additional actuarial accrued liability attributable to these benefits..

2. Medical Liability

   This year's valuation showed an actuarial *loss* from this component following last year's small gain. Actual costs increased 14.3% compared to the 7% assumed. Other plan sponsors are also experiencing larger increases in rates; therefore, continued vigilance regarding medical liabilities is important.

3. Participating Groups (Full-Time Participants)

	Number	Total Salary	Average Age	Average Service	Average Salary	Number Eligible to Retire Unreduced Benefits	Number Eligible to Retire Reduced Benefits
City of Cincinnati	3,835	158,278,520	44.5	14.4	41,272	221	97
University Hospital*	158	7,266,469	52.7	27.2	45,990	28	22
University of Cincinnati*	115	5,049,763	53.3	27.5	43,911	30	14
Hamilton County*	20	960,216	54.4	27.5	48,011	5	2
Total	4,128	171,554,968**	45.1	15.3	41,559	284	135

* Closed groups.
** Slightly less than numbers used for the valuation. Includes corrected pay data.

Current Issues *(continued)*

As of December 31, 2000, there are 293 active participants in the closed groups. They represent 7.1% of the total active population. In the last five years, the closed groups have declined 48% from 558 participants who represented 12.0% of the active population. The closed groups will continue to exert a smaller effect on the plan as their numbers dwindle.

For the City of Cincinnati, 318 participants are currently eligible for retirement–221 of them on an unreduced basis and 97 on a reduced basis. Over the next five years, 722 additional City of Cincinnati participants will become eligible for retirement–614 on an unreduced basis. (Plus the 97 now eligible to retire on a reduced basis will also be able to retire with an unreduced benefit in five years.) Thus about 24% of the current City participants will be eligible to retire with unreduced benefits prior to January 1, 2006.

4. Contribution Stability

Employer "required" contributions have fluctuated in recent years. The most recent year has seen the following factors influence the contribution rate:

Positive Factors	Negative Factors
▪ Demographics of Plan Participants	▪ Investment Climate
▪ Smoothed Asset Values	▪ Growing Maturity of Plan
	▪ Benefit Improvements
	▪ Health Care Costs

The City has stabilized actual contribution rates for some periods by choosing fixed contribution rates other than those actuarially determined. As long as contributions are actuarially balanced over the long term, this is an acceptable process.

Due to the asset experience of recent years, the "cost" of the plan continues to be negative. However, the City has elected to contribute 7% for the period 1999 through 2001. These contributions will provide an additional cushion if asset values fall significantly. Contributing 7% during 2000 decreased the required contribution rate by approximately .8% for 2001 and will have an additive effect for future years. The cumulative affect of these additional contributions is that the required contribution rate is approximately 2.25% less than it would have been without the additional contributions.

Current Issues *(continued)*

5. Actuarial Value of Assets

   Historically, the plan used book value as the actuarial value of assets. With the December 31, 1995 valuation, this method was changed to the current method for these main reasons:

   - Book value and therefore actuarial value can change depending on what particular securities are sold independent of market value;
   - Over the long term, book value tends to lag market value; and
   - Because of the volatility in employer contribution costs, the employers wanted to control the asset gain or loss on a year-to-year basis while continuing to reflect in some manner current market values.

   The method has worked well in smoothing out investment gains and losses, but subsequently, the Board has chosen to consider multiple-year funding targets rather than year-to-year changes. In addition, a lag between the valuation date and year of contribution requirement has been added. As a result, year-to-year minimum contribution rate volatility loses importance and a method of determining the actuarial value of assets that provides better long-term smoothing and forecasting might be preferable.

   The following pages demonstrate a method we suggest for your consideration. This method is one that is automatically approved by the IRS for use by ERISA plans. This method reflects actuarial gains or losses over a 5-year period at a rate of 20% per year.

   We have illustrated the effect on this year's calculations if the method had been in place for the last 5 years. It is also possible to start the method as a fresh start. For the first year, market value is used and then subsequent gains and losses are reflected over the following 5 years.

6. Investment Return Assumption

   Based on the current asset mix, the investment return assumption was selected as 8.75%. Over the past year or so, members of the Board have discussed changing the asset mix (less equity, more bonds) or decreasing the expected return assumptions to reflect lowered expectations for the future. If the expected return is decreased, the actuarial value of liabilities will increase and the current funding progress should be reevaluated.

Current Issues *(continued)*

7. Analysis of Experience

Periodically the actuarial assumptions should be reviewed to make sure they are all still appropriate for forecasting the future. The last such analysis occurred during 1995 and the one previous to that occurred in 1989. We recommend that such an analysis be undertaken in 2001.

The areas to be analyzed include:
> Turnover
> Retirement
> Disability (if there is sufficient data)
> Salary Increases
> Retiree Medical Costs
> Costs for Part-time Participants
> Review of Mortality Forecasts

The result of the study will be an analysis of historical results compared to the assumptions and a recommendation of what changes, if any, should be adopted as well as the actuarial impact of the changes.

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Appendix – Alternative Contribution Rate Calculations

City of Cincinnati
Determination of Proposed Actuarial Value of Assets Method

Market Value $ 2,560,804,597

Year		Gain/(Loss)	Factor		
2000	$	(210,529,208)	0.8	$	(168,423,366)
1999	$	79,773,176	0.6	$	47,863,906
1998	$	114,015,961	0.4	$	45,606,384
1997	$	198,554,346	0.2	$	39,710,869
1996	$	131,018,354	0	$	–

Total Adjustment $ (35,242,207)

Actuarial Value of Assets $ 2,596,046,804

Known Adjustments for Following Years

Adjustment to 12/31/2001 Market Value of Assets

Year		Gain/(Loss)	Factor		
2001		?	0.8		?
2000	$	(210,529,208)	0.6	$	(126,317,525)
1999	$	79,773,176	0.4	$	31,909,270
1998	$	114,015,961	0.2	$	22,803,192
1997	$	198,554,346	0	$	–
1996	$	131,018,354	0	$	–

Total Adjustment $ (71,605,063)
                plus 2001 adjustment

Adjustment to 12/31/2002 Market Value of Assets

Year		Gain/(Loss)	Factor		
2002		?	0.8		?
2001		?	0.6		?
2000	$	(210,529,208)	0.4	$	(84,211,683)
1999	$	79,773,176	0.2	$	15,954,635
1998	$	114,015,961	0	$	–
1997	$	198,554,346	0	$	–

Total Adjustment $ (68,257,048)
                plus 2001 & 2002 adjustments

City of Cincinnati
Results of Changing to Entry Age Normal Method and Revised Actuarial Value of Assets Method
December 31, 2000 Preliminary Results

1.	Present Value of Projected Benefits:	
	(a) Active Participants	1,160,326,080
	(b) Participants with Deferred Benefits	21,095,541
	(c) Participants Receiving Benefits	1,149,468,997
	(d) Total	2,330,890,618
2.	Present Value of Future Employee Contributions	113,558,750
3.	Present Value of Future Normal Costs	145,765,354
4.	Entry Age Accrued Liability (1)(d) - (2) - (3)	2,071,566,514
5.	Actuarial Value of Assets	2,596,046,804
6.	Unfunded/(Surplus) (4) - (5)	(524,480,290)

		Dollar Amount	Percent of Proj. Pay
7.	Amortization of Unfunded/(Surplus) Over 15 Years (at the beginning of the year)	(58,951,007)	-33.03%
8.	Amortization of Unfunded/(Surplus) Over 15 Years (assuming monthly payments)	(61,674,544)	-34.56%
9.	Total Normal Cost (at the beginning of the year)	28,516,179	15.98%
10.	Expenses	8,600,000	4.82%
11.	Total Normal Cost (assuming monthly payments)	38,830,946	21.76%
12.	Employees' Expected Contributions to Normal Cost (assuming monthly payments)	13,069,922	7.32%
13.	Employer Normal Cost (11) - (12)	25,761,024	14.43%
14.	Employer Total Cost (8) + (13)	(35,913,520)	-20.12%