



STATE OF MINNESOTA

Summary of 1998 Actuarial Valuations

Presented by:
Milliman & Robertson, Inc.



LCP & R JAN 25 1999



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Minnesota Legislative Commission
on Pensions and Retirement
55 State Office Building
St. Paul, Minnesota 55155-1201

ATTENTION: Mr. Lawrence A. Martin

Commission Members:

We have completed all of the July 1, 1998 Actuarial Valuations pursuant to the terms of our Actuarial Services Contract. This report summarizes the results of these actuarial valuations, with particular emphasis on changes occurring since the prior year's actuarial valuations.

This report covers commentary on the 1998-99 funding levels, as well as summaries of significant plan changes and actuarial assumptions used. The analysis of purchased service credits, required by Minnesota Statutes Chapter 390, Article 4, is included as Table I-E.

We hope that you will find this summary report informative as a supplement to the more detailed reports for each of the funds.

Respectfully submitted,

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STATE OF MINNESOTA

SUMMARY OF 1998 ACTUARIAL VALUATIONS

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STATE OF MINNESOTA

SUMMARY OF 1998 ACTUARIAL VALUATIONS

I. 1998-99 FUNDING LEVELS (TABLES 1-A, 1-B, 1-C AND I-D)

As the Commission Actuary, we have determined the actuarial funding requirements in accordance with the requirements of Section 356.215, Minnesota Statutes, for each of the Funds covered by those statutes. Each employer contributes to their respective Fund on the basis of statutory requirements set by statutes for the individual Fund.

In Table I-A, we provide a detailed comparison of the requirements under Section 356.215 and the statutory employer contribution. It is this comparison which allows an analysis of the Fund's ability to meet its long-term commitments. Table I-B provides a three-year history of the sufficiency determination. The pattern of these results gives a more complete picture of emerging concerns as to the adequacy of statutory requirements.

Another measure of funding adequacy is the ratio of plan assets to the present value of accrued benefits. These ratios are summarized for the last three valuations in Table I-C. Since this is more of a termination measure of adequacy, it is generally considered a less important measure for public plans than the sufficiency determination summarized in Tables I-A and I-B. Nonetheless, it does give a somewhat different and useful perspective when viewed in conjunction with other factors. If proper funding progress is made, these numbers should move toward a ratio of slightly over 100%.

Below we comment by plan on our analysis of the actuarial valuations.

PERA

1. The Public Employees plan continues to see a significant increase in participation. There were 4 percent more active members in our July 1, 1998 valuation than in our July 1, 1997 valuation. Actuarial liabilities in total are very close to expected. Plan assets generated a substantial gain over this twelve-month period resulting in significant improvement in the plan's funding ratios. This plan now shows a small sufficiency as statutory contribution rates are modestly higher than required contributions.
2. The Police and Fire plan continues to be in a well-funded position. Favorable asset experience has driven funding ratios even higher and dramatically increased the sufficiency measure. While statutes require that rates be reduced this year (and that is appropriate), we caution against reduction all the way to the current measure of required

contributions. Since that would put statutory contributions substantially below ongoing normal costs, such a change may lead to the need for dramatic rate increases in the future.

3. In total and with few individual exceptions, the funding ratios have also improved in the Police and Fire Consolidation Account. Only 15 of the 43 accounts have additional municipal contribution requirements. A continuing issue of concern is the ability of each account to transfer the required reserve for new retirees to MPRIF. We have again included Table I-D to present a brief analysis of each account's ability to make the required transfer of MPRIF reserves out of current plan assets. Here, too, the exposure to bad surprises is diminishing.

MSRS

4. The State General Employees plan continues to show a modest contribution sufficiency. The sufficiency measure would be significantly greater if the required contribution determination recognized the fact that the plan has assets well in excess of its actuarial accrued liability. Favorable asset experience has contributed to further increases in all funding ratios.
5. Favorable asset experience more than offset modest liability losses in the State Patrol plan. All funding ratios improved as did the sufficiency measure, which is driven in large part by the method of recognizing the negative unfunded actuarial liability.
6. While the Correctional Employees plan enjoyed favorable asset experience like the other plans, changes on the liability side created modest deterioration in funding ratios and in the sufficiency measure. Many new job classifications were allowed to transfer into the Correctional plan (we saw an 8.35% increase in active membership in this plan). In most cases, the assets transferred in from MSRS General and TRA were not adequate to fully cover the actuarial accrued liability of these new participants. The plan still has assets in excess of its actuarial accrued liability and it is still modestly sufficient. The sufficiency measure needs to be monitored carefully, however, since the statutory contribution rates are less than ongoing normal costs of the plan.
7. The Legislators plan is funded on a terminal funding basis. This funding basis means that the State (as employer) does not pre-fund for benefits earned while service is being performed. Rather, at the time of retirement of one of these participants, the State must fund that portion of the retirement benefit not covered by member contributions. This funding approach has several disadvantages:

- a. It can lead to substantial fluctuations in year-to-year funding requirements;
- b. Due to lack of investment income, it means ultimate State costs are higher; and
- c. It defers funding obligations from one generation of taxpayers to the next.

The Elective State Officers plan is handled on a pay-as-you-go basis. This funding basis means there is no accumulated funding (other than Member contributions held by the State's general fund). Actual retirement benefits are paid from the general funds via direct disbursements to the retirees (or beneficiaries).

Not surprisingly, Table I-C continues to show low funding ratios for these plans year-after-year. Since the Legislator's plan has been closed to new members, it is probably not prudent to consider pre-funding at this time.

8. We note modest increases in the funding ratios and sufficiency measure for the Judges plan. In total, modest asset gains were more than offset by liability losses. Nonetheless, continued funding at the current statutory rates has driven the funding ratios higher and has substantially diminished any ongoing concern relating to short-term cash shortages.

TEACHERS

9. Because the July 1, 1997 valuation of the Teachers Retirement Association plan showed an excess of assets over actuarial accrued liability, the employee supplemental contribution requirement was dropped, thereby decreasing the statutory contribution rate. This is the primary factor in the reduction in this plan's sufficiency measure. Substantial asset gains were only partly offset by modest liability losses. Accordingly, funding ratios, except for the projected ratio, showed further improvement. The sufficiency measure would be significantly higher if the determination of the required contribution recognized the excess assets.
10. The Duluth Teachers plan showed a dramatic improvement. Funding ratios increased by nearly 10% and the sufficiency measure jumped from a deficiency of 0.57% last year to a sufficiency measure of 2.06% this year. While favorable asset experience was a contributing factor, a major factor in these results was the fact that as of the valuation date no contract agreement had been reached with the Duluth Teachers. Accordingly, salaries showed no increase. This contributed large gains to the valuation process, some of which will undoubtedly be given back once salaries under a new contract are reflected in the valuation.
11. Several factors had significant but offsetting impacts on the results of the valuation of the St. Paul Teachers plan. The active member population jumped nearly 17 percent. Revisions were made in the July 1, 1997 valuation results to reflect the impact of adjustments in the monthly benefit amounts as of July 1997 as part of the Pension Uniformity Act. There was generally favorable asset and liability experience. The

supplemental contribution made by the State was higher on a one-time basis in 1997 and has dropped back somewhat for 1998 and later. Funding ratios are modestly lower than reported in last year's valuation, but substantially improved from the revised levels. This plan shows a deficiency of 1.23% of payroll in this valuation. While this continues to deserve close monitoring, we point out that for this plan the actuarial value of assets is only 84% of the market value.

12. For the Minneapolis Teachers plan, favorable asset experience (accentuated by realized gains associated with a manager change) was only slightly offset by modest liability losses. Accordingly, all funding ratios improved significantly. Despite this favorable experience, the current year sufficiency measure dropped from a sufficiency of 0.38% to a deficiency of 0.41%. This was caused by the decrease in the State supplemental contribution. Despite significant improvements over the last several years, this plan is still not out-of-the-woods and warrants continued close attention for the foreseeable future.

MERF

13. The Minneapolis Employees Retirement Fund also had very favorable asset experience in the 1997-98 year which was only modestly offset by small liability losses. Required contribution rates dropped over 5.0% of pay and the State's portion of the supplemental contribution dropped well below its statutory maximum.

ANALYSIS OF PURCHASED SERVICE CREDITS

New provisions under Minnesota Statutes Chapter 390, Article 4, provide a modified methodology for determining the amounts required to purchase prior service credits under certain circumstances. Those provisions also require the Commission Actuary to provide an analysis by individual and by plan of the impact on the plan's funded status of the service credits actually purchased during the 12 months preceding the valuation. Accordingly, we have added a new Table I-E. In the period ending June 30, 1998, the Teachers Retirement Association was the only plan to have any actual purchases executed. The methodology used to complete this analysis was to calculate the actuarial accrued liability for each individual using our valuation routine (based on status as of July 1, 1998) first reflecting the additional service and then with service adjusted to remove the added service. Table I-E compares the difference in calculated actuarial accrued liability to the amounts paid for the added service. Since many of the purchases involve fractional years of service (and our valuation routine deals with projected benefits using whole years), the results by individual can look strange. We see some participants with no change in calculated liability and others with increases much greater than the purchase amount. In total, however, the service credits purchase amounts in the 1997-98 year were 41% more than the increase in liability, thus generating a small aggregate gain to the funded status of the TRA.

We believe that the nature of financial oversight of the operation of the Minnesota public employee retirement plans may be entering a new era. With few exceptions, these plans are now near or above full funding of their actuarial accrued liability. Even the plans that have reached that level have seen significant improvement in their funding ratios over the last several years.

What implications does this have for the Legislative Commission on Pensions and Retirement? We believe that the primary issues of concern for this body will increasingly become focused on the asset side of the ledger. Clearly investment performance is key, and we have observed good efforts to require complete and consistent reporting in these areas. From an actuarial perspective, we see the following issues:

- Volatility in asset performance has the potential of creating large year-to-year swings in the required contribution levels. Once again we urge the Commission to consider and adopt the proposed asset valuation method. We believe that it will do a substantially better job of dampening future market fluctuations than the present method.
- What is the proper treatment of negative Unfunded Actuarial Accrued Liabilities? We do not believe that it is prudent to treat some plans differently than others. In our opinion, the PERA P&F, State Patrol, and Correctional Employees plans give too great a recognition of this component while Teachers and State General Employees give none. We would like to see a consistent treatment of this to be adopted as part of the funding method applied to all plans.

As Commission Actuary, we stand ready to assist the Commission with these and other issues.

TABLE 1-A: 1998-1999 FUNDING LEVELS (PERCENTAGES)

Fund	Section 356.215 Requirements				Statutory Requirements			Sufficiency/ Deficiency
	Normal Cost	Supplemental Cost	Expense	Total	Employee	Employer	Total	
Public Employees (Chapter 353)	7.61%	2.01%	0.22%	9.84%	4.79%	5.24%	10.03%	0.19%
Police and Fire (Chapter 353)	20.21%	(8.95%)	0.14%	11.40%	7.60%	11.40%	19.00%	7.60%
Police and Fire Consolidation	21.56%	(2.56%)*	0.00%	19.00%	7.60%	11.40%	19.00%	0.00%
State Employees (Chapter 352)	7.58%	0.00%	0.15%	7.73%	4.00%	4.00%	8.00%	0.27%
State Patrol (Chapter 352B)	22.50%	(8.51%)	0.15%	14.14%	8.40%	12.60%	21.00%	6.86%
Correctional (Chapter 352)	14.88%	(2.06%)	0.17%	12.99%	5.50%	7.70%	13.20%	0.21%
Legislators (Chapter 3A)	18.27%	28.54%	0.38%	47.19%	9.00%	Terminal Funding	N/A	N/A
Elective State Officers (Chapter 352C)	13.40%	37.66%	0.60%	51.66%	9.00%	Paygo Funding	N/A	N/A
Judges (Chapter 490)	16.00%	11.18%	0.14%	27.32%	6.28%	22.00%	28.28%	0.96%
Teachers (Chapter 354)	9.60%	0.00%	0.22%	9.82%	5.00%	5.00%	10.00%	0.18%
Duluth Teachers (Chapter 354A)	8.22%	1.31%	0.71%	10.24%	5.50%	6.80%**	12.30%	2.06%
St. Paul Teachers (Chapter 354A)	9.83%	8.76%	0.23%	18.82%	6.20%	11.39%**	17.59%	(1.23%)
Minneapolis Teachers (Chapter 354A)	11.22%	14.32%	0.26%	25.80%	6.40%	18.99%**	25.39%	(0.41%)
Minneapolis Employees (Chapter 422A)	18.19%	16.94%	1.67%	36.80%	9.75%	26.75%**	36.50%	(0.30%)

* Equal to the total statutory requirement less the normal cost.

** Includes State contributions of 1.01% for Duluth Teachers, 9.65% for Minneapolis Teachers, 2.13% for St. Paul Teachers, and 8.40% for Minneapolis Employees.

TABLE 1-B: PATTERN OF SUFFICIENCY/DEFICIENCY: 1996-1998

Fund	Actuarial Requirements			Statutory Requirements			Sufficiency/Deficiency		
	1996	1997	1998	1996	1997	1998	1996	1997	1998
Public Employees	9.75%	9.80%	9.84%	8.88%	9.46%	10.03%	(0.87%)	(0.34%)	0.19%
Police and Fire	15.11%	15.21%	11.40%	19.00%	19.00%	19.00%	3.89%	3.79%	7.60%
Police and Fire Consolidation	22.79%	19.00%	19.00%	22.79%	19.00%	19.00%	0.00%	0.00%	0.00%
State Employees	7.21%	7.61%	7.73%	8.27%	8.00%	8.00%	1.06%	0.39%	0.27%
State Patrol	21.33%	15.67%	14.14%	23.80%	21.00%	21.00%	2.47%	5.33%	6.86%
Correctional	11.21%	12.49%	12.99%	11.17%	13.20%	13.20%	(0.04%)	0.71%	0.21%
Legislators	43.96%	48.03%	47.19%	T.F.	T.F.	T.F.	N/A	N/A	N/A
Elective State Officers	43.49%	51.07%	51.66%	P.G.	P.G.	P.G.	N/A	N/A	N/A
Judges	27.01%	27.60%	27.32%	28.36%	28.29%	28.28%	1.35%	0.69%	0.96%
Teachers	12.78%	9.85%	9.82%	14.66%	11.64%	10.00%	1.88%	1.79%	0.18%
Duluth Teachers	13.60%	12.87%	10.24%	11.29%	12.30%	12.30%	(2.31%)	(0.57%)	2.06%
St. Paul Teachers	16.97%	20.35%	18.82%	15.91%	19.24%	17.59%	(1.06%)	(1.11%)	(1.23%)
Minneapolis Teachers	25.15%	28.23%	25.80%	19.18%	28.61%	25.39%	(5.97%)	0.38%	(0.41%)
Minneapolis Employees	45.74%	42.41%	36.80%	45.74%	42.29%	36.50%	0.00%	(0.12%)	(0.30%)

TABLE 1-C: ACCRUED BENEFIT FUNDING RATIOS: 1996-1998*(Dollars in Millions)*

Fund	Current Assets			P.V. of Accrued Benefit			A.B. Funding Ratio		
	1996	1997	1998	1996	1997	1998	1996	1997	1998
Public Employees	\$5,786	\$6,658	\$7,637	\$6,609	\$7,330	\$7,956	87.56%	90.84%	95.98%
Police and Fire	\$1,633	\$1,975	\$2,337	\$1,243	\$1,491	\$1,638	131.33%	132.41%	142.68%
Police and Fire Consolidation	\$754	\$876	\$1,011	\$769	\$865	\$956	98.01%	101.28%	105.77%
State Employees	\$3,976	\$4,665	\$5,391	\$3,612	\$4,079	\$4,513	110.06%	114.34%	119.45%
State Patrol	\$324	\$376	\$430	\$292	\$322	\$360	110.78%	116.73%	119.32%
Correctional	\$194	\$242	\$295	\$150	\$191	\$235	129.60%	126.80%	125.86%
Legislators	\$23	\$26	\$31	\$51	\$57	\$60	43.83%	44.88%	51.70%
Elective State Officers	\$0.4	\$0.5	\$0.5	\$2.8	\$3.1	\$3.2	14.49%	14.85%	15.52%
Judges	\$65	\$75	\$87	\$105	\$112	\$125	62.05%	66.46%	69.41%
Teachers	\$9,541	\$11,104	\$12,728	\$9,697	\$10,262	\$11,332	98.40%	108.20%	112.31%
Duluth Teachers	\$157	\$170	\$187	\$177	\$187	\$187	88.56%	90.94%	100.30%
St. Paul Teachers	\$495	\$556	\$625	\$631	\$756	\$810	78.39%	73.64%	77.17%
Minneapolis Teachers	\$613	\$673	\$810	\$1,009	\$1,124	\$1,217	60.74%	59.89%	66.55%
Minneapolis Employees	\$1,019	\$1,081	\$1,207	\$1,232	\$1,250	\$1,319	82.66%	86.47%	91.53%

**TABLE 1-D: PERA CONSOLIDATION ACCOUNTS
SUFFICIENCY FOR MPRIF TRANSFERS**

Consolidation Account	# Eligible to Retire Now	Add'l # Eligible Within 5 years	Current Assets	MPRIF Reserve	Comment Code
Albert Lea Fire	6	1	\$16,647,014	\$7,574,322	A
Albert Lea Police	5	1	\$12,882,726	\$5,751,973	A
Anoka Police	1	0	\$3,368,846	\$2,597,085	B
Austin Fire	0	0	\$8,650,177	\$7,741,761	A
Austin Police	4	1	\$13,133,543	\$8,436,721	B
Bloomington Police	14	8	\$64,936,502	\$23,983,507	A
Brainerd Police	3	5	\$5,191,320	\$2,149,905	B
Buhl Police	0	0	\$1,376,463	\$630,498	A
Chisolm Fire	1	0	\$2,558,745	\$1,818,741	B
Chisolm Police	1	0	\$1,660,656	\$999,539	B
Columbia Heights Fire	0	0	\$2,366,586	\$1,120,819	A
Columbia Heights Police	2	0	\$4,479,321	\$3,550,129	D
Crookston Fire	4	0	\$1,900,349	\$858,126	C
Crystal Police	3	3	\$12,146,454	\$5,400,090	A
Duluth Fire	25	22	\$42,116,136	\$40,126,930	B*
Duluth Police	15	16	\$50,210,064	\$35,926,977	B*
Faribault Fire	0	1	\$6,027,716	\$5,373,175	B
Faribault Police	4	1	\$5,406,740	\$3,235,729	B
Fridley Police	6	1	\$10,949,002	\$5,396,291	A
Hibbing Fire	2	7	\$7,761,190	\$7,183,244	D
Hibbing Police	5	4	\$6,934,907	\$5,505,904	C

COMMENT CODE:

- A-Currently well-funded; special assessment for MPRIF transfer unlikely for foreseeable future.
- B-Significant special assessment for MPRIF transfer within five years is possible but not highly probable.
- C-Chance of special assessment this year is small, but chance of special assessment within five years is significant.
- D-Significant chance that special assessment for MPRIF transfer may be needed this year.

**Combined rating for both police and fire (fire alone would be D; police alone would be A).*

**TABLE 1-D: PERA CONSOLIDATION ACCOUNTS
SUFFICIENCY FOR MPRIF TRANSFERS**

Consolidation Account	# Eligible to Retire Now	Add'l # Eligible Within 5 years	Current Assets	MPRIF Reserve	Comment Code
Mankato Fire	0	0	\$8,601,631	\$8,165,474	A
Mankato Police	1	0	\$10,626,378	\$8,846,457	A
New Ulm Police	2	0	\$6,229,988	\$3,637,430	A
Red Wing Fire	3	0	\$8,358,905	\$3,780,219	A
Red Wing Police	2	1	\$12,457,954	\$1,974,294	A
Richfield Fire	3	1	\$11,183,638	\$6,750,306	A
Richfield Police	7	5	\$18,529,158	\$5,407,134	A
Rochester Fire	11	4	\$37,603,440	\$10,829,364	A
Rochester Police	12	11	\$38,081,814	\$19,624,882	A
Saint Cloud Fire	8	1	\$13,030,384	\$11,258,964	C
Saint Cloud Police	3	0	\$14,733,518	\$9,566,452	A
Saint Louis Park Fire	3	3	\$15,236,164	\$3,307,608	A
Saint Louis Park Police	13	4	\$27,162,142	\$10,656,149	A
Saint Paul Fire	59	82	\$192,719,021	\$130,043,154	A
Saint Paul Police	132	66	\$246,142,181	\$122,213,719	A
South St. Paul Fire	5	1	\$7,323,270	\$5,112,724	C
South St. Paul Police	4	2	\$10,205,651	\$7,542,751	B
Virginia Police	1	5	\$10,055,970	\$3,473,123	A
West St. Paul Fire	3	1	\$10,059,004	\$3,815,057	A
West St. Paul Police	5	3	\$10,350,276	\$3,468,723	A
Winona Fire	3	6	\$11,734,830	\$10,286,811	C
Winona Police	7	3	\$10,231,947	\$8,180,552	C

COMMENT CODE:

A-Currently well-funded; special assessment for MPRIF transfer unlikely for foreseeable future.

B-Significant special assessment for MPRIF transfer within five years is possible but not highly probable.

C-Chance of special assessment this year is small, but chance of special assessment within five years is significant.

D-Significant chance that special assessment for MPRIF transfer may be needed this year.

**TABLE 1-E: ANALYSIS OF SERVICE CREDIT PURCHASES
MADE IN PERIOD ENDING JUNE 30, 1998**

Teachers Retirement Plan

	TRA Number	TRA Employer Unit	Amount of Service Purchased	Employee Purchase Payment	Employer Purchase Payment	Change in Actuarial Liability	Gain/(Loss) to Plan
Active Members:	106329	62-621	0.46828	\$1,839.30	\$6,148.38	\$0	\$7,988
	116875	07-777	3.00000	\$9,853.36	\$30,903.58	\$37,538	\$3,219
	137478	02-11	0.43824	\$1,831.53	\$3,419.64	\$0	\$5,251
	105518	93-938	0.33529	\$98.00	\$2,952.04	\$11,365	(\$8,315)
	130484	02-11	0.45588	\$1,831.53	\$3,713.85	\$8,897	(\$3,352)
	89540	22-2860	0.55294	\$941.42	\$508.73	\$0	\$1,450
	114806	02-11	0.44412	<u>\$1,477.48</u>	<u>\$6,545.89</u>	<u>\$0</u>	<u>\$8,023</u>
Active subtotal:				\$17,872.62	\$54,192.11	\$57,800	\$14,264
Deferred Vested Members:	116482	19-199	0.10588	\$348.30	\$1,405.70	\$3,908	(\$2,154)
	100436	02-13	1.00000	\$7,990.97	\$12,401.66	\$12,589	\$7,804
	181340	90-905	1.00000	\$8,504.95	\$2,537.10	\$2,672	\$8,370
	83332	19-197	0.50000	\$1,912.15	\$4,724.24	\$115	\$6,521
	102878	19-200	1.00000	<u>\$2,375.94</u>	<u>\$2,925.00</u>	<u>\$4,862</u>	<u>\$439</u>
Deferred Vested subtotal:				\$21,132.31	\$23,993.70	\$24,146	\$20,980
Retired Members:	93321	19-194	0.46471	\$1,797.02	\$2,379.98	\$4,832	(\$655)
	54524	81-2168	0.02941	<u>\$868.78</u>	<u>\$1,143.20</u>	<u>\$190</u>	<u>\$1,822</u>
Retired subtotal:				\$2,665.80	\$3,523.18	\$5,022	\$1,167
TOTAL (TRA)				\$41,670.73	\$81,708.99	\$86,968	\$36,411

II. PLAN PROVISIONS

This section of our summary presents a brief summary of those changes made to the statutes since last year's report which had an impact on the actuarial funding of a plan. This section is not designed to provide a comprehensive summary of all changes which were made. For a more detailed description of the plan provisions, please refer to the individual report for each Fund.

For the July 1, 1998 Actuarial Valuation, we highlight the following:

Public Employees (Chapter 353):

Increase in contribution rates for both Member and Employer.

Police and Fire (Chapter 353):

None

Police and Fire Consolidation:

Added two new accounts – Austin Fire and St. Cloud Police.

The increase in the highest benefit accrual factor from 2.65% to 3.0% implemented in 1997 is not to be effective until each respective municipality approves the increase. All new accounts come in at 3.0%. As of July 1, 1998, the following municipalities had not taken formal additional action to approve the change in the benefit accrual factor and our valuation reflects continuation of the 2.74 or 2.9% multiplier for these municipalities:

<u>Relief Association</u>	<u>Factor</u>
Crookston Fire	2.9%
Duluth Fire	2.9%
Duluth Police	2.9%
Faribault Fire	2.9%
Faribault Police	2.9%
Fridley Police	2.9%
Mankato Fire	2.74%
Mankato Police	2.9%
Rochester Fire	2.9%
Rochester Police	2.9%
St. Paul Fire	2.9%
St. Paul Police	2.9%
Virginia Police	2.9%

State Employees (Chapter 352): None

State Patrol (Chapter 352B): None

Correctional Employees (Chapter 352): None

Legislators (Chapter 3A): None

Elective State Officers (Chapter 352C): None

Judges (Chapter 490): None

Teachers Retirement Association (Chapter 354): Due to full funding reached last year, the employer contribution rate was reduced by 1.64%.

Duluth Teachers (Chapter 354A): A change in the Actuarial Equivalence Table was adopted, consistent with results from recent experience studies.

St. Paul Teachers (Chapter 354A): None

Minneapolis Teachers (Chapter 354A): None

Minneapolis Employees (Chapter 422A): A benefit improvement was granted for short service survivors (more than 18 months of service but less than 20 years of service).

1. For survivors with a pre-July 1, 1983 effective date, the minimum amount of monthly benefit is raised from \$500 to \$750.
2. For post-July 1, 1983 effective dates, the current monthly benefit is increased by 15%.

III. ACTUARIAL ASSUMPTIONS (TABLES III-A, III-B AND III-C)

In projecting costs to be incurred by a pension plan in future years, it is necessary to provide actuarial assumptions relating to the future events which trigger those costs. To provide for all **significant** events, a wide range of assumptions must be utilized. These assumptions may be classified into three different categories.

The *first category* involves the economic assumptions. These assumptions include assumed investment return, salary increases, social security increases and cost-of-living increases on plan benefits. These assumptions are characterized as economic because they generally tend to be affected by interrelated factors which also affect economic growth.

The *second category* relates to assumptions which affect the expected working lifetime (and retired lifetime) of a member. These assumptions include mortality rates, disability rates and rates of separation due to other causes. Within a particular group classification (such as teachers or policemen), year-to-year mortality and disability rates may be reasonably represented by standard published tables. Separation due to other causes may vary considerably and should be reviewed and monitored on an individual group basis. In particular, where a subsidized benefit exists (such as for early retirement), extra care must be provided with respect to the rate of separation which is assumed to occur (such as the rate of early retirement).

The *third category* relates to miscellaneous assumptions which are needed to accommodate special plan provisions which are not adequately covered in the first two categories. These would include (but are not limited to) items such as assumed family composition, plan expenses, election to specific benefit forms, etc. These assumptions need to be monitored so that they remain consistent with the plan provisions which are in effect.

In Tables III-A, III-B and III-C, we have prepared a summary of some of the assumptions being used by each plan in all three categories. For a comprehensive review of all assumptions being used for a particular plan, please refer to the July 1, 1998 Actuarial Valuation for that Fund.

In our opinion the assumptions used for July 1, 1998 valuations are reasonable and well within the mainstream of current actuarial practice. For all but the three statewide plans and MERF, new assumptions were approved by the LCPR last spring and reflected for the first time in these valuations. These assumptions were based on recent experience studies of the respective plans. Experience during the 1992-96 period has been analyzed for the three large statewide plans and appropriate recommended changes in the assumptions for these plans have been developed. A complete description of the specific recommendations and the cost implications thereof will be prepared and provided to the LCPR in a separate report.

TABLE III-A: JULY 1, 1998 ACTUARIAL ASSUMPTIONS - CATEGORY 1
(Highlighted box indicates change from prior year.)

Fund	Interest Rates Pre-retire/Post-retire	Salary Increase %/ Data Used	Social Security	COLA on Benefits
Public Employees (Chapter 353)	8.5%/6.0%	*/Prior Year Salary Increased	N/A	2.5% Implied by 6.0% Interest Rate
Police and Fire (Chapter 353)	8.5%/6.0%	*/ Prior Year Salary Increased	N/A	2.5% Implied by 6.0% Interest Rate
Police and Fire Consolidation	8.5%/6.0% (PERA) 8.5% (Local)	*/Prior Year Salary increased	N/A	2.5% Implied (PERA) 5.0% Explicit (Local) (with exceptions)
State Employees (Chapter 352)	8.5%/6.0%	*/Prior Year Salary Increased	N/A	2.5% Implied by 6.0% Interest Rate
State Patrol (Chapter 352B)	8.5%/6.0%	*/Prior Year Salary Increased	N/A	2.5% Implied by 6.0% Interest Rate
Correctional (Chapter 352)	8.5%/6.0%	*/Prior Year Salary Increased	Current Law and 6.0% Salary Scale	2.5% Implied by 6.0% Interest Rate
Legislators (Chapter 3A)	8.5%/5.0%	Statutory salary, then 5.0%	N/A	3.5% Implied by 5.0% Interest Rate
Elective State Officers (Chapter 352C)	8.5%/5.0%	Statutory Salary, then 5.0%	N/A	3.5% Implied by 5.0% Interest Rate
Judges (Chapter 490)	8.5%/6.0%	Statutory Salary, then 5.0%	N/A	2.5% Implied by 6.0% Interest Rate
Teachers (Chapter 354)	8.5%/6.0%	*/Prior Year Salary Increased	N/A	2.5% Implied by 6.0% Interest Rate
Duluth Teachers (Chapter 354A)	8.5%/6.5%	*/Reported Salary Increased	N/A	2% Implied by 6.5% Interest Rate
St. Paul Teachers (Chapter 354A)	8.5%/8.5%	*/Reported Salary Increased	N/A	2% Per Annum
Minneapolis Teachers (Chapter 354A)	8.5%/8.5%	*/Reported Salary Increased	N/A	2% Per Annum
Minneapolis Employees (Chapter 422A)	6.0%/5.0%	4.0%/Reported Pay Increased 1.0198%	N/A	1.0% Implied by 5.0% Interest Rate

*Graded rates using a 5.0% base increase plus a merit scale.

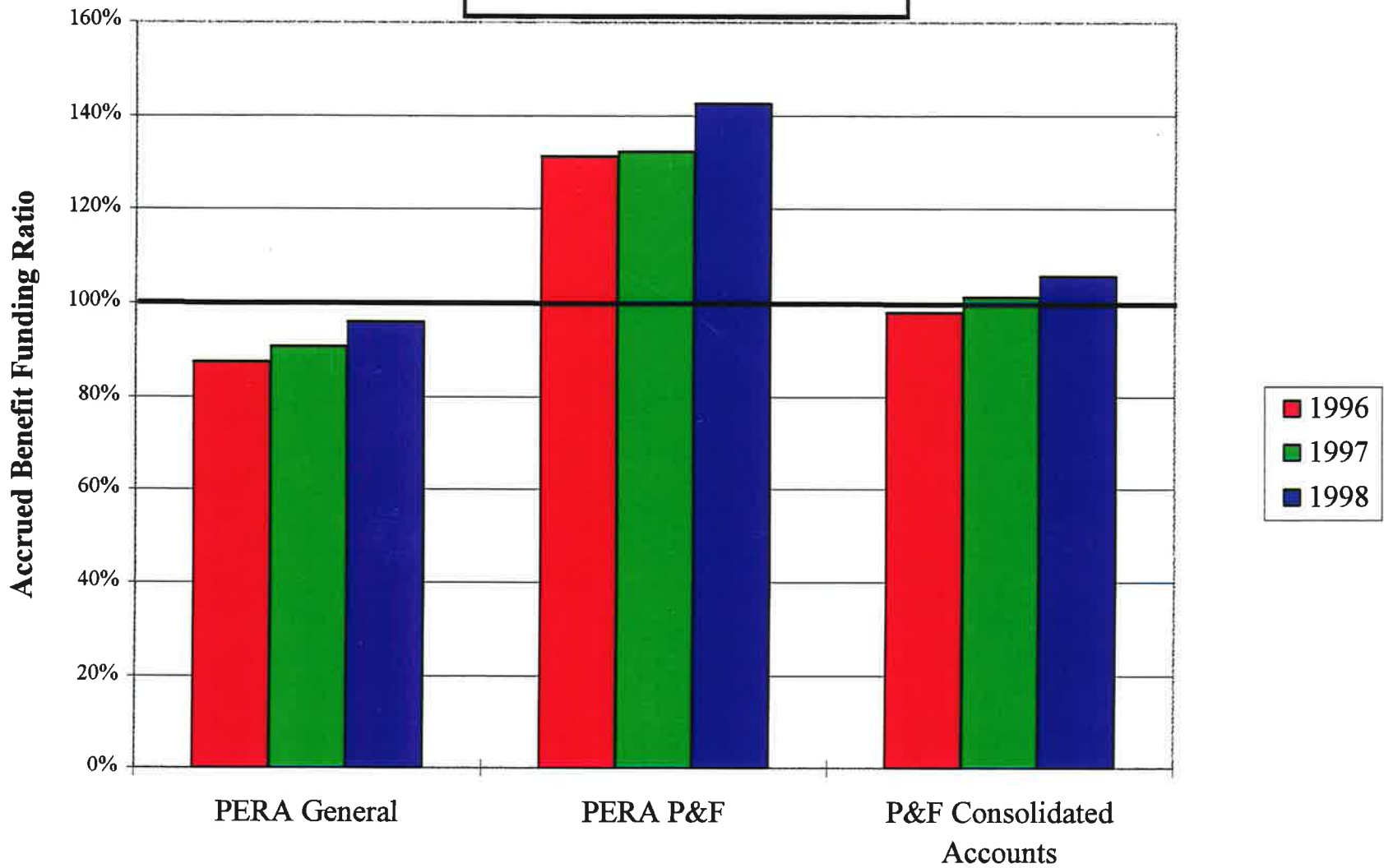
TABLE III-B: JULY 1, 1998 ACTUARIAL ASSUMPTIONS - CATEGORY 2
(Highlighted box indicates change from prior year.)

Fund	Mortality Table (male rates shown)	Disability Table (male rates shown)	Retirement Age (Coordinated)	Other Separation (male rates shown)
Public Employees (Chapter 353)	1983 GAM Male set back 5 years	Graded: .12% @ 35 .58% @ 55	Age 64 and 50% of Rule of 90 (first year only)	Graded: 7.19% @ 35 1.95% @ 55
Police and Fire (Chapter 353)	1983 GAM Male set back 5 years	Graded: .19% @ 35 1.35 @ 55	Graded from age 50	Graded: 1.83% @ 35 .11% @ 55
Police and Fire Consolidation	1983 GAM Male set back 5 years	Graded: .19% @ 35 1.35% @ 55	PERA: Graded from age 50 Local: Varies between ages 50-60	Graded: 1.83% @ 35 .11% @ 55
State Employees (Chapter 352)	1983 GAM Male set back 4 years	Graded: .02% @ 35 .34% @ 55	Graded from age 58 and 25% of Rule of 90	Graded: 7.20% @ 35 2.10% @ 55
State Patrol (Chapter 352B)	1983 GAM Male set back 1 year	Graded: .11% @ 35 .88% @ 55	Graded from age 50	Graded: 0.70% @ 35 0.00% @ 55
Correctional (Chapter 352)	1983 GAM Male set back 1 year	Graded: .11% @ 35 .88% @ 55	Graded from age 50	Graded: 6.00% @ 35 1.40% @ 55
Legislators (Chapter 3A)	1983 GAM Male set back 4 years	None	Age 62	Varies based upon service; 0% @ 9 years
Elective State Officers (Chapter 352C)	1983 GAM Male set back 4 years	None	Age 62	Varies based upon service; 0% @ 9 years
Judges (Chapter 490)	1983 GAM Male set back 4 years	Graded: .02% @ 35 .34% @ 55	Graded from age 62	None
Teachers (Chapter 354)	1983 GAM Male set back 8 years	Graded: .06% @ 35 .36% @ 55	Age 62 and 30% of Rule of 90	Select & ultimate graded
Duluth Teachers (Chapter 354A)	1983 GAM Male set back 4 years	Graded: .06% @ 35 .36% @ 55	Graded from age 55 40% under Rule of 90	Graded: 4.91% @ 35 .13% @ 55
St. Paul Teachers (Chapter 354A)	1983 GAM Male set back 5 years	Graded: .06% @ 35 .36% @ 55	Graded from age 55	Graded: 4.50% @ 35 0.50% @ 55
Minneapolis Teachers (Chapter 354A)	1983 GAM Male set back 6 years	Graded: .05% @ 35 .36% @ 55	Graded from age 55	Graded: 4.50% @ 35 0.50% @ 55
Minneapolis Employees (Chapter 422A)	1986 Projected Exp. Table set back 1 year	Graded: .30% @ 35 1.60% @ 55	Age 61	Graded: 1.50% @ 35 1.00% @ 55

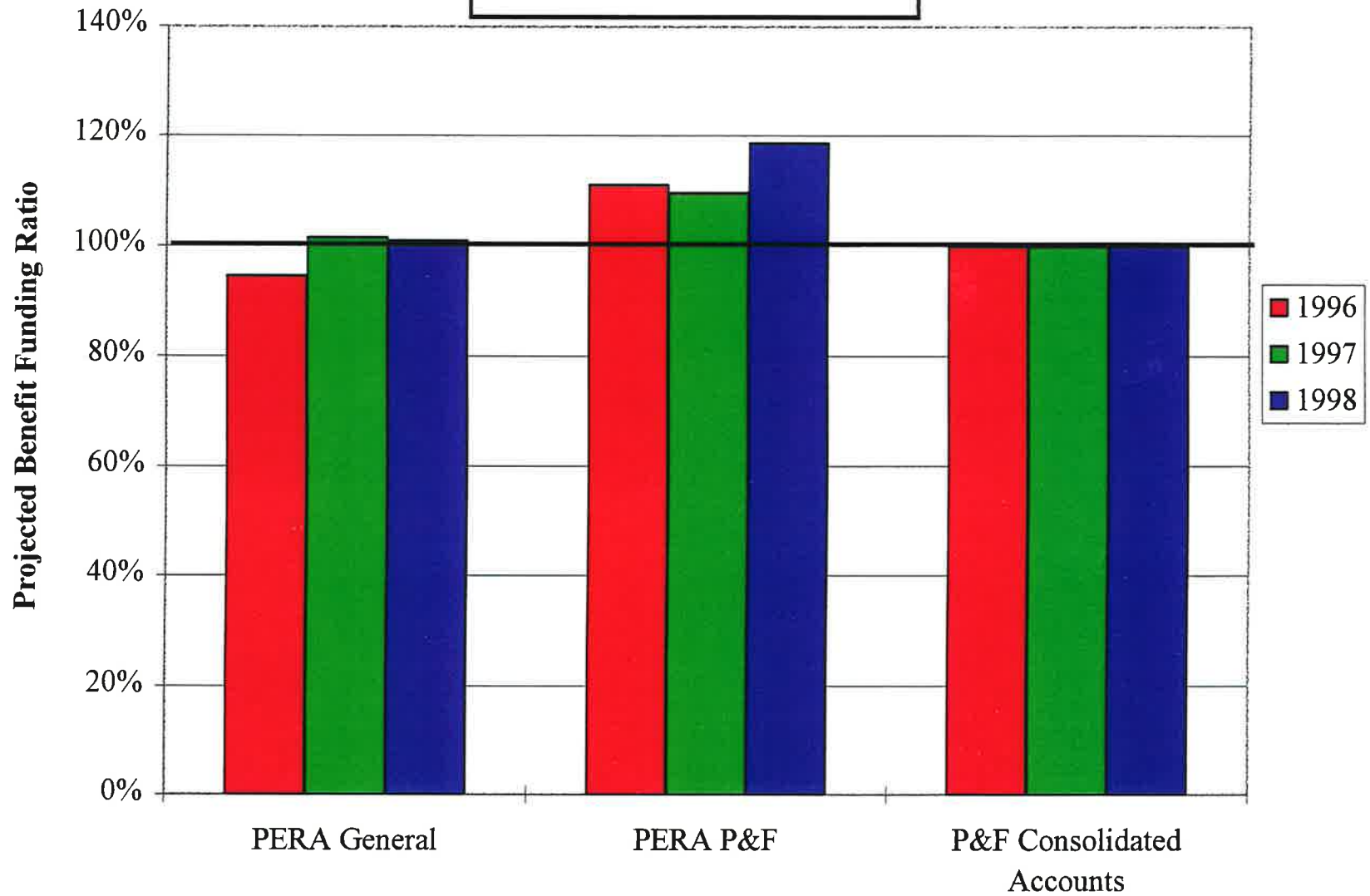
TABLE III-C: JULY 1, 1998 ACTUARIAL ASSUMPTIONS - CATEGORY 3
(Highlighted box indicates change from prior year.)

Fund	Family Composition (Male/Female)	Expenses (Admin. Only)	Bounceback Annuity Election (Male/Female)	Other
Public Employees (Chapter 353)	85%/65% married; no children	Prior year as % of payroll	30%/15% for 50% J&S 45%/15% for 100% J&S	None
Police and Fire (Chapter 353)	85%/65% married; no children	Prior year as % of payroll	40%/15% for 50% J&S 45%/15% for 100% J&S	None
Police and Fire Consolidation	85%/65% married; no children	Expenses paid outside the fund	40%/15% for 50% J&S 45%/15% for 100% J&S	None
State Employees (Chapter 352)	85%/85% married	Prior year as % of payroll	25%/ 5% for 50% J&S 45%/ 5% for 100% J&S	None
State Patrol (Chapter 352B)	100%/100% married; two children	Prior year as % of payroll	25%/ 5% for 50% J&S 25%/ 5% for 100% J&S	None
Correctional (Chapter 352)	85%/85% married	Prior year as % of payroll	25%/ 5% for 50% J&S 25%/ 5% for 100% J&S	None
Legislators (Chapter 3A)	85%/85% married; two children	Prior year as % of payroll	None	\$4,800 per diem income
Elective State Officers (Chapter 352C)	85%/85% married; two children	Prior year as % of payroll	None	No refunds after 8 years
Judges (Chapter 490)	Actual data	Prior year as % of payroll	None	No refunds
Teachers (Chapter 354)	85%/65% married; no children	Prior year as % of payroll	15%/10% for 50% J&S 0%/ 0% for 75% J&S 50%/10% for 100% J&S	None
Duluth Teachers (Chapter 354A)	80%/80% married	Prior year as % of payroll	30%/30% for 50% J&S 55%/20% for 100% J&S	None
St. Paul Teachers (Chapter 354A)	85%/60% married; two children	Prior year as % of payroll	15%/10% for 50% J&S 50%/10% for 100% J&S	None
Minneapolis Teachers (Chapter 354A)	80%/60% married	Prior year as % of payroll	15%/15% for 50% J&S 20%/ 5% for 75% J&S 40%/10% for 100% J&S	Benefit increase = (5 yr. return - 8.50%) x (1 - contribution deficiency)
Minneapolis Employees (Chapter 422A)	67%/67% married	Prior year increased by 4% as % of payroll	None	Investment expense amortized to a required date

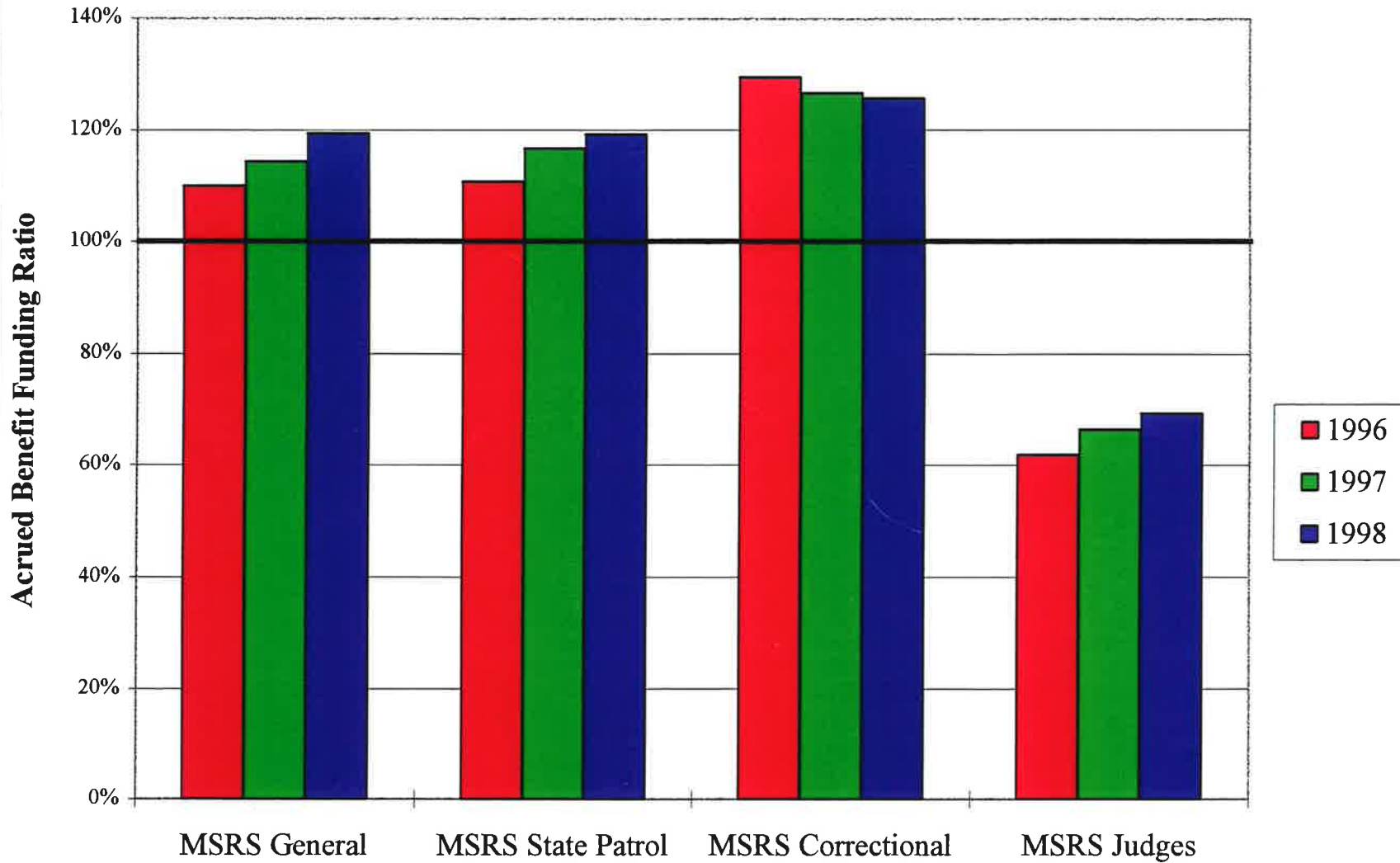
FUNDING RATIOS PERA



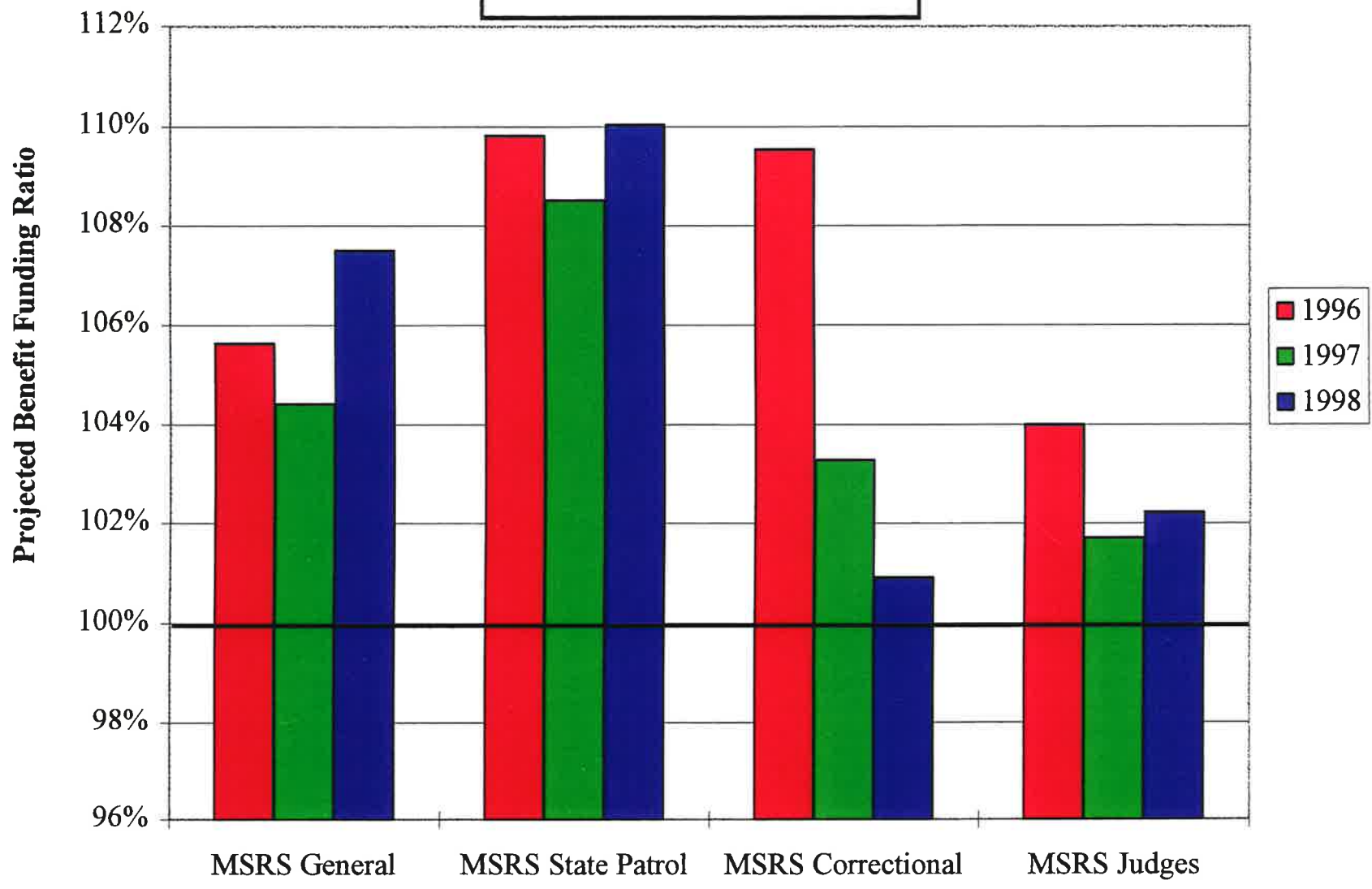
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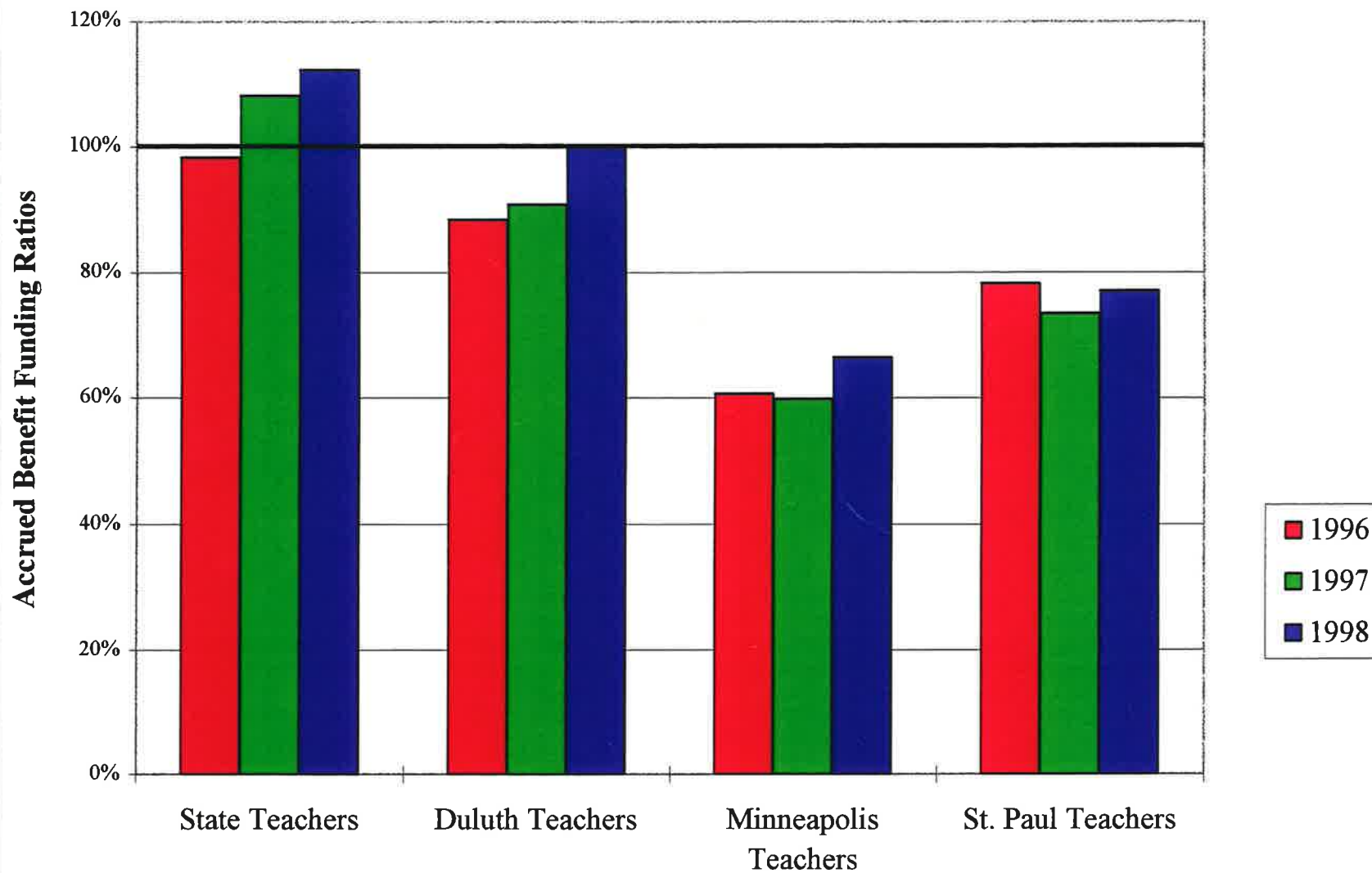
FUNDING RATIOS MSRS



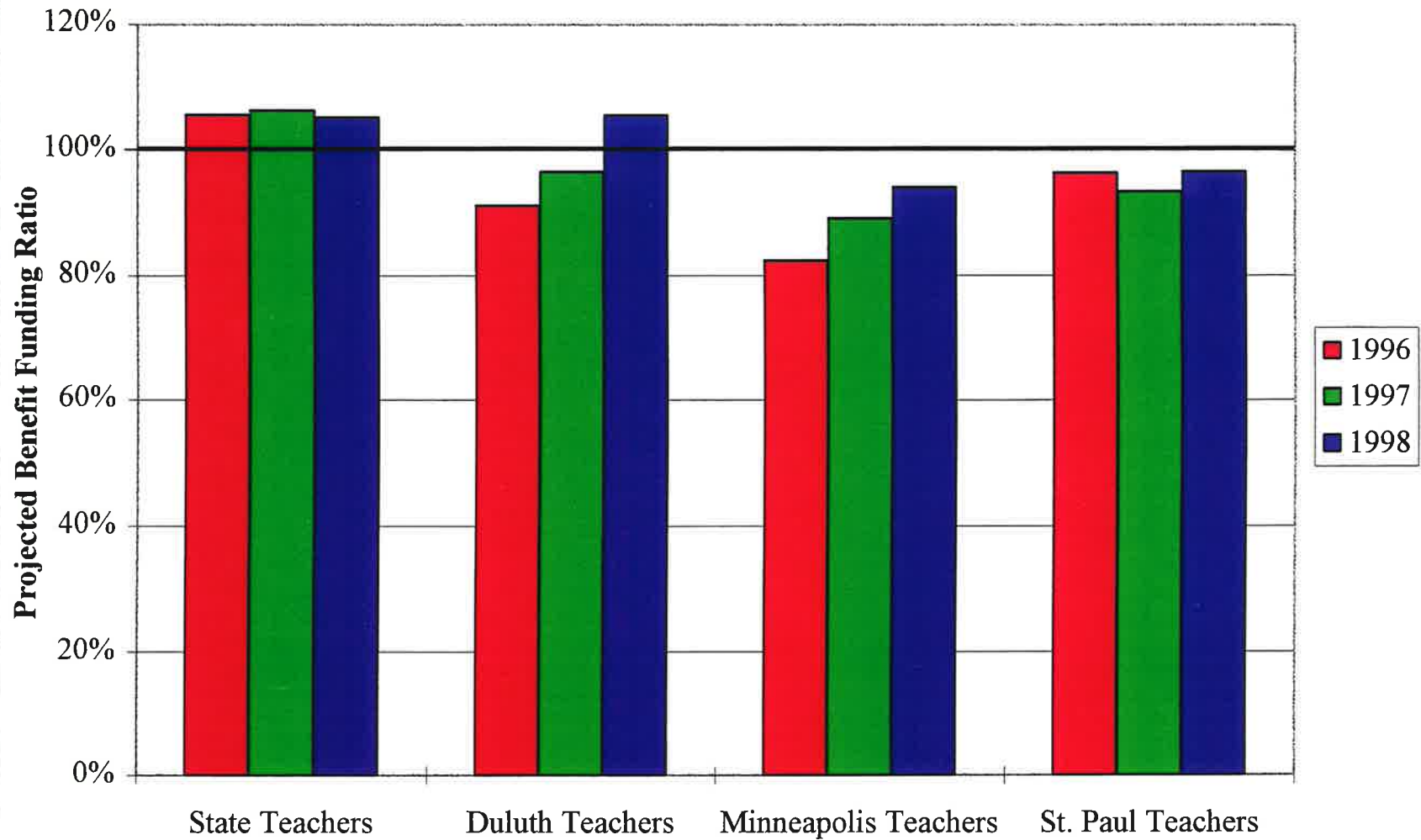
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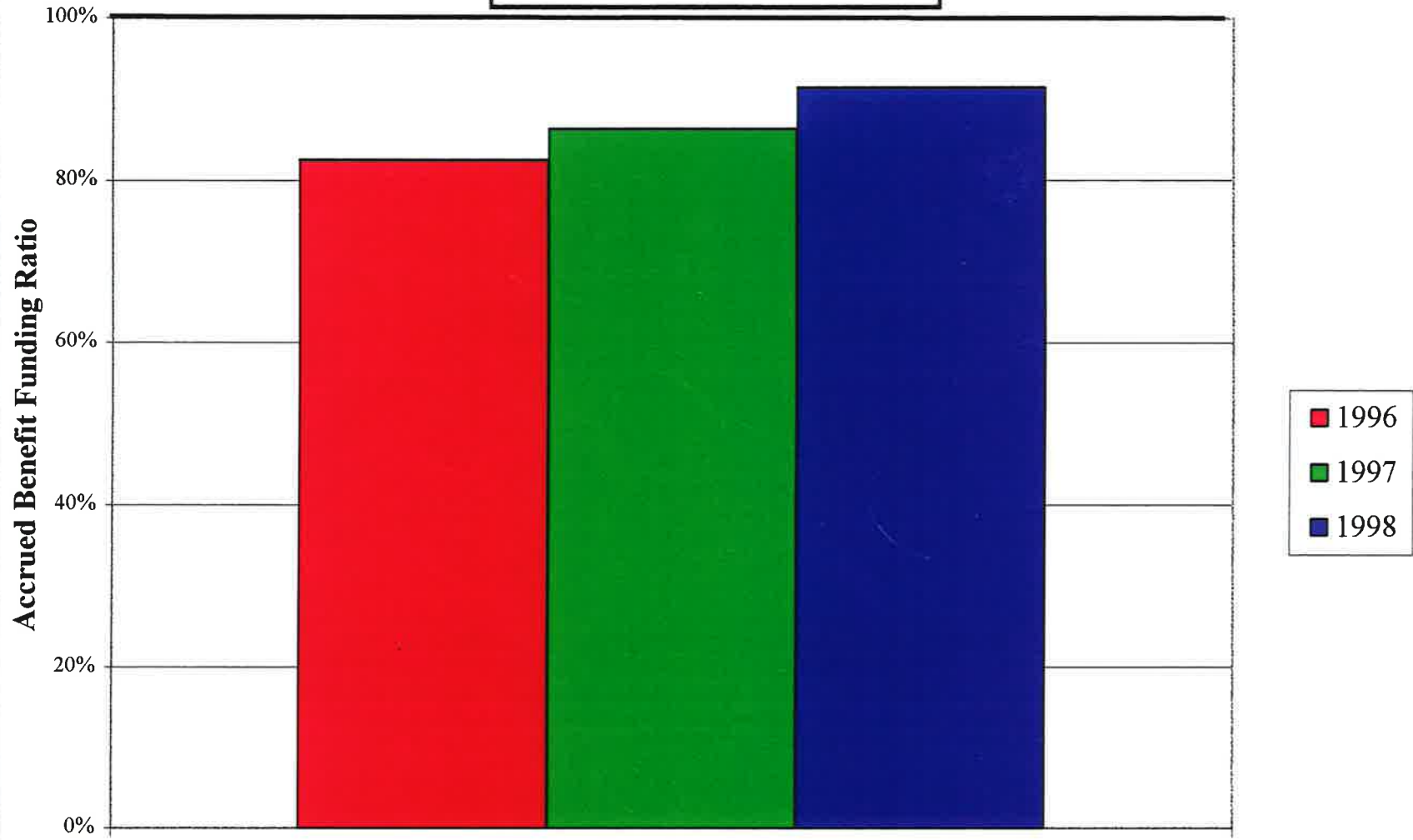
FUNDING RATIOS TEACHER PLANS



FUNDING RATIOS TEACHER PLANS

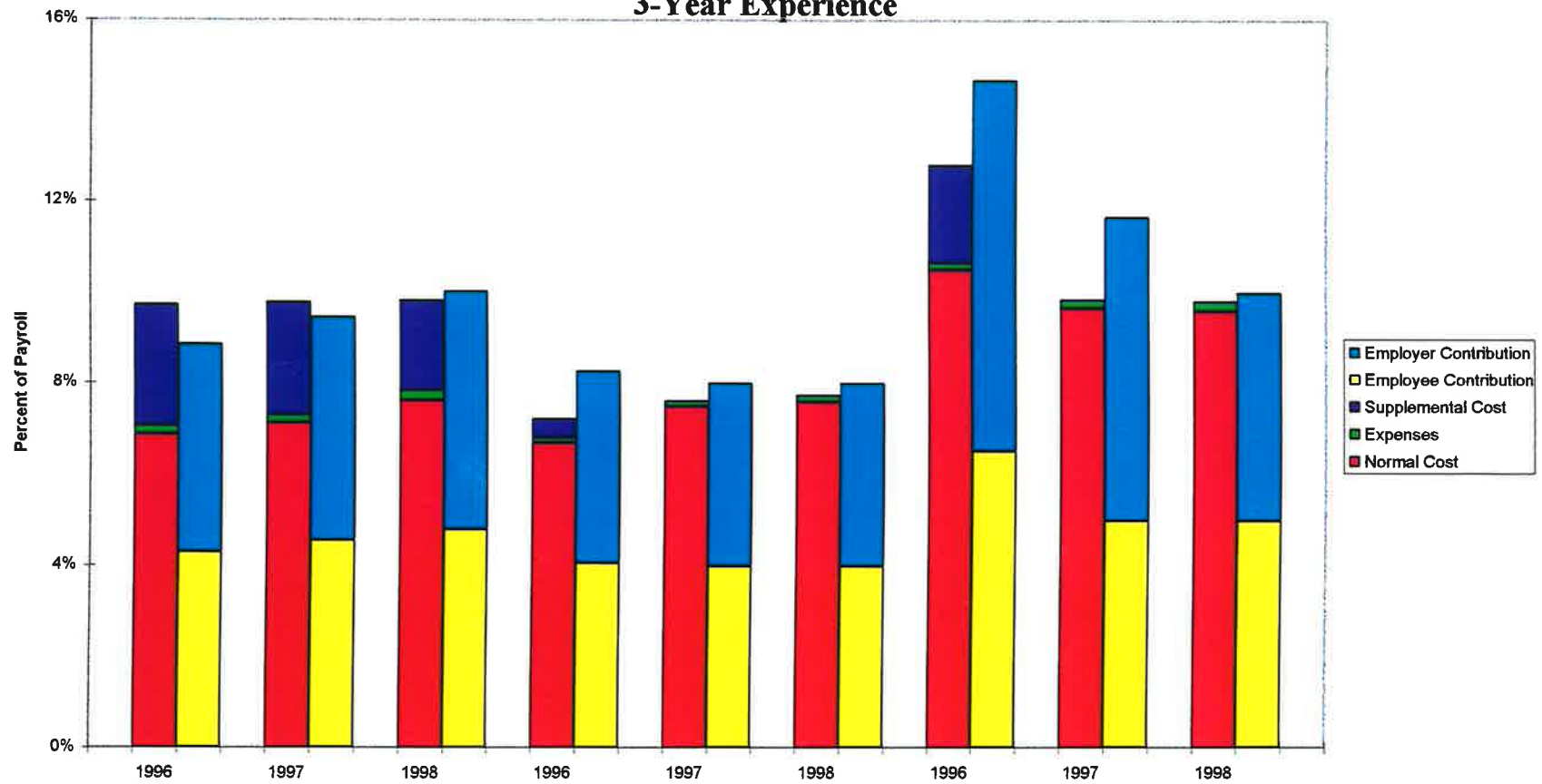


FUNDING RATIOS MERF



MERF

Statewide Funds 3-Year Experience

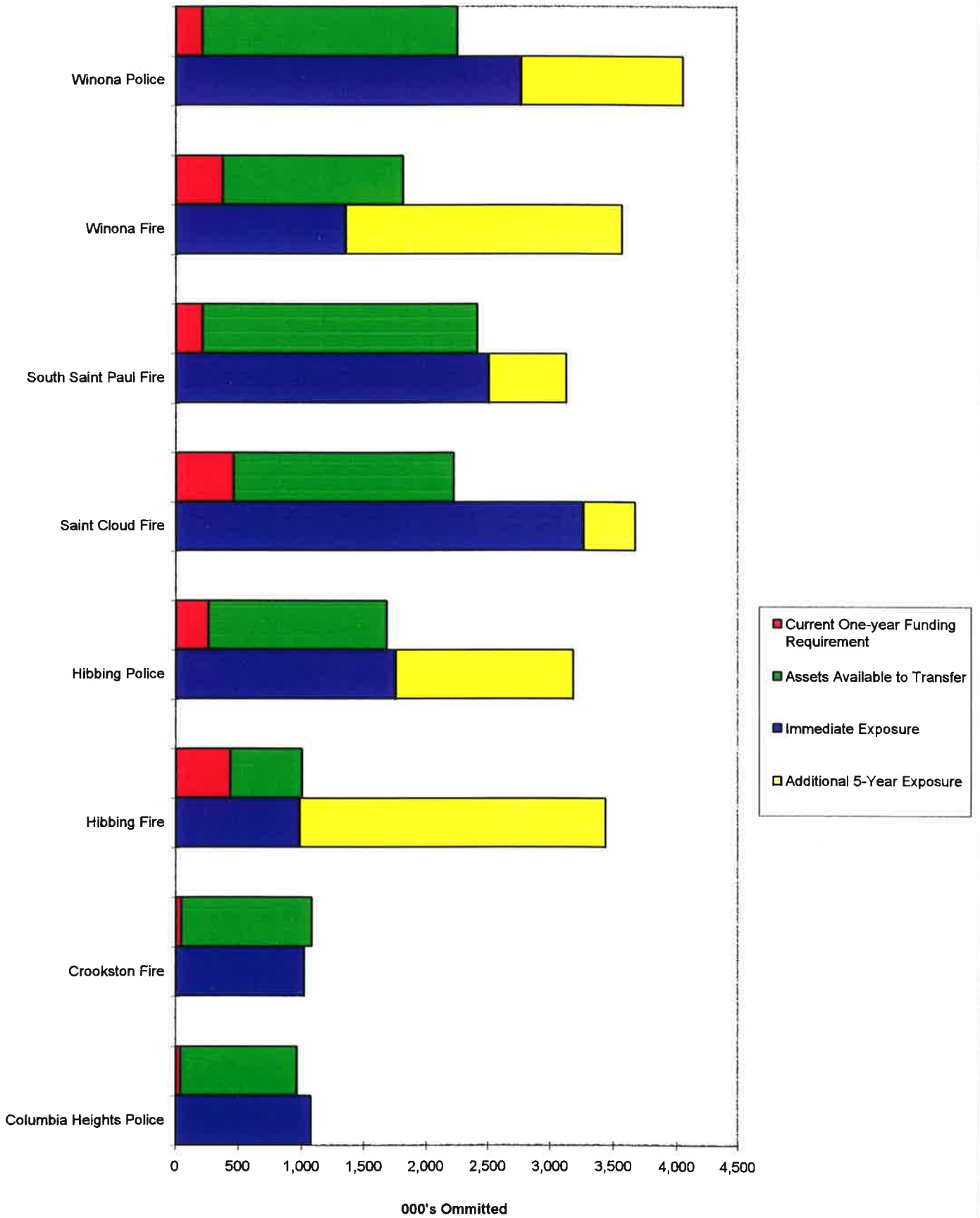


P.E.R.A.

State Employees

Teachers

**Consolidated Funds
Funding Status C or D**



Minnesota Legislative Commission on Pensions and Retirement

Impact of Proposed Change in Actuarial Funding Methodology*

July 1, 1998 Valuation Results

	Teacher's			
	Current Method And Assumptions	New Method Old Assumptions	Current Method New Assumptions	New Method New Assumptions
Normal Cost	9.60%	9.60%	9.30%	9.30%
Supp. Contrib. Rate	0.00%	-1.43%	0.00%	-1.25%
Admin. Expenses	0.22%	0.22%	0.22%	0.22%
Total Required Contrib.	9.82%	8.39%	9.52%	8.27%
Statutory Contribution	10.00%	10.00%	10.00%	10.00%
Sufficiency/(Deficiency)	0.18%	1.61%	0.48%	1.73%

	State Employees			
	Current Method And Assumptions	New Method Old Assumptions	Current Method New Assumptions	New Method New Assumptions
Normal Cost	7.58%	7.58%	8.37%	8.37%
Supp. Contrib. Rate	0.00%	-1.25%	0.00%	-2.01%
Admin. Expenses	0.15%	0.15%	0.15%	0.15%
Total Required Contrib.	7.73%	6.48%	8.52%	6.51%
Statutory Contribution	8.00%	8.00%	8.00%	8.00%
Sufficiency/(Deficiency)	0.27%	1.52%	-0.52%	1.49%

*Proposed funding method change is to recognize any unfunded actuarial accrued liability by way of a thirty year amortization of the negative amount.

Current law provides for no recognition for plans other than the protective service plans, but amortization to a fixed date (2020) for those plans.