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First Class City Teacher Retirement Funds Phase-Out/Consolidation Options

***Technical Advisory Group
Report to the Legislative
Commission on Pensions & Retirement***

March 16, 1993



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Summary of Findings

Purpose and Scope

This report is provided by the Technical Advisory Group as part of a study mandated by the 1993 Legislature to examine phase-out or consolidation options for the First Class City teacher retirement funds. We identify and analyze an array of fourteen distinct options relating to alternative plan structures, fund consolidations, management and financing arrangements, including the *status quo* as both an option and a baseline against which to assess others.

No recommendation is made in this report. The Technical Advisory Group intends simply to provide policymakers with the most thorough and objective information that can be obtained on the options identified as worthy of consideration. What follows is an attempt to synthesize the best empirical information and professional assessments of these options attainable given the time and resources available.

Fourteen options were identified and selected for assessment ranging from maintaining the current plan, funding and management arrangements, to total and immediate consolidation of the four teacher retirement plans in the state. Between these extremes lie twelve alternatives on a continuum of progressively more fundamental and sweeping plan/funding modifications. This report evaluates, along with fund elimination options, proposals that address concerns about cost effective administration and investment management, along with alternative funding scenarios driven partly by bonding opportunities to arbitrage downward the projected unfunded liabilities of several plans: An approach that could have significant positive impacts on the funding status of the Minneapolis and St. Paul funds in particular.

We break the options into 3 (overlapping) categories:

- 1) Administrative Efficiency Opportunities
- 2) Funding Change Opportunities
- 3) Actual Plan/Fund Modification Opportunities

Current Status

The "Current Status" section of the report lays out the situation faced by the teacher funds as a whole and separately. The major point to be drawn from our appraisal of the situation is

that Minnesota teacher retirement liabilities are, on the whole, very well funded. Ninety percent of the active teacher fund members are in adequately funded plans. There are serious ongoing deficiencies, however, in two local plans, Minneapolis (\$9,813,284 per year) and St. Paul (\$4,333,485 per year), in which approximately 10% of the active teachers and administrators participate. This point is worth emphasizing: If policymakers believe that funding is the primary issue of concern regarding teacher funds in the state, then the response should be focused as closely as possible on the genuine locus of the funding problem. It may be the case that consolidation of poorly funded plans with well-funded plans could expand the scope of the problem, rather than containing and resolving the issue of central concern.

Benefits do not appear to be the driving force behind the current funding problems. One summary way to compare benefits is to look at the **normal cost of retirements**. From this perspective, current benefits among the various plans are quite similar in terms of *total* cost. There are significant differences among the plans in terms of *specific* benefits, but from a total cost perspective there do not appear to be large, overall benefit disparities.

There are significant differences among the funds in terms of administrative costs, both as a percentage of payroll, and in terms of annual expenditures distributed by plan membership. Administrative costs range from 0.83% of annual payroll (Duluth) to 0.15% (TRA). This can be accounted for partly by economies of scale, but also appears to be driven by different division between internal/external service provision. In addition, fixed costs in the smaller plans have a smaller base against which to be distributed, and therefore, would, under any level of efficiency in operations from a variable cost perspective, probably always be higher.

Certainly, opportunities for long-run economies in administration exist. The issue for policymakers, however, is whether the potential savings are worth the transition costs, or possible member service and policy implications of any administrative consolidation.

Analysis of Options

Consolidation or phase-out of First Class City pension funds appears to be very costly under each scenario evaluated. These options are also more controversial, long-term and complex to implement than others considered.

Aside from the many policy considerations presented to policymakers by the options evaluated, there seem to be very few opportunities for actual plan or fund *consolidation* that do not also imply significant actuarial costs. Unless some of these issues can be resolved through legislation on plan consolidation provisions, it does not appear that reducing the number of funds creates economies in strict cost/benefit terms to the state or the employing jurisdictions. Some other superseding policy objective would be required to justify the fiscal impacts presented here. Issues that deal with some of these other dimensions are more

thoroughly addressed in the following section of the report.

Consolidation or phase-out of the three first class city funds is projected to be very costly. The new first year cost ranges from \$29 million for Option 8 to \$65 million under Option 13. The Commission actuary did not perform the valuations necessary to derive cost figures for Option 14, but it is safe to assume that the costs for this option would certainly exceed those for Option 13.

For other options that fall generally within the "Consolidation Opportunity" category, the first year costs are larger than we anticipated. The costs are most often due to differences in the assumed rates of return on pre/post-retirement assets, funded status of the plans, and diminishing active payroll to support closed plans as they approach the amortization target date. By far the most expensive options are #12 and #13. Allowing only actives to elect current or TRA benefits and SBI post-retirement adjustments (Option #12) raises first year costs from \$28.8 to \$55.8 million; a difference of \$27 million. Under Option #13, we extend to retirees the election on post-retirement benefits, which increases projected required contributions by \$9.2 million. Primary factors driving these results are:

- 1) Moving members from plans that are poorly funded into well-funded plans;
- 2) allowing the election of SBI or 13th check post-retirement increases; and,
- 3) the lower assumed post-retirement rate of return for the State TRA versus local fund rates.

Changes in funding arrangements, such as issuing taxable general obligation bonds to finance part of the unfunded liabilities of plans in need, and reallocation of current contribution amounts, present opportunities to improve the funded status of plans without additional costs to the state, employers, or employees. These benefits under these options rely more, however, on forecasted debt service costs and returns on assets.

Of the fourteen alternatives, there are only three where costs (as measured in terms of required contributions) are actually reduced - Options 2, 3, and 4.

Options #3 and #4 (affecting only MPLS-TRA and MERF) involve a "contribution lock-in, and G.O. bonding of unfunded liabilities. These are the only alternatives to current policy that the Advisory Group studied that show some promise of significantly reducing retirement obligations. Detail cash-flow projections are included in the appendix to this report which illustrate the actuarial effects under Options #3 and #4.

First-year "savings" under option #3 are estimated at \$5.4 million. Savings here, is measured against the current combined total deficiency for the relevant funds. A reduction in deficiencies is defined here from an actuarial perspective as "savings." From a strict fiscal and budgetary point of view, expenditures are not really reduced under Options #3 or #4.

The next option, adds to this scenario the issuance by the school district and city, taxable general obligation bonds to offset the unfunded liabilities of the MERF and MPLS-TRA funds. The text runs to date have been for sales of \$100 million each for the two funds. The spread between the rate of return on the assets obtained, and the rate of interest on the bonds creates an arbitrage opportunity. A large amount of assets are infused into the funds, and compound at a rate sufficient to double the effect of the contribution lock-in; savings are \$11.5 million the first year.

The effect of all this on MPLS-TRA can be understood as a reversal of the current situation, where insufficient assets come into the fund each year, and the loss is negatively compounded by the rate of return that could have been obtained. In this case, a significant share of that contribution insufficiency is corrected, such that the deficiency for MPLS-TRA goes from 6.80% to 2.23% with the lock-in and bond sales. The funding problem for MPLS-TRA is not resolved entirely under these projections, but if recent investment performance of the two funds (well in excess of assumed returns) can be sustained for even the next few years, the effect could be even more dramatic. Certain technical problems need to be resolved before either or both of these options could be implemented, and these are discussed further in the "Option-by-Option Analysis" section of the report.

Administrative costs are not significant in terms of overall funding requirements. Under virtually every option we studied, administrative savings were assumed liberally, but were never sufficient to offset much larger adverse actuarial impacts of consolidation options. Where administrative savings were not reversed by actuarial effects, they do not appear large enough to warrant the operational disruptions and up-front costs implied.

Administrative costs simply do not amount to much in the pensions context. The estimated administrative savings in the table for Options 2-5 are based upon analyses by MERF and MPLS-TRA. The amount saved by sharing certain administrative functions and office space is approximately 5%. For Options 6 and 7, affecting only the four teacher funds, we assumed 20% savings in administration, and 10% on investment costs. These are beyond the item-by-item projections for MERF and MPLS-TRA. We felt that a significant amount should be assumed given the more similar nature of the plans being managed. For the remaining options, we assumed a 10% savings in overall administrative costs. Larger memberships and greater geographic dispersion of employers/members, the scale of operations and systems, and the complexity of administrative arrangements could render these assumptions invalid, and in fact, cause *diseconomies*.

The administrative savings under Options 2 (\$300,000) are so minor that they could easily be eliminated by incorporating effects on overall fund and employer administrative costs that have *not* been included in this report. Administrative savings under Option #5 (\$608,000) are dwarfed by the actuarial costs of the proposal. While significant administrative "savings" occur under Option #6 (\$1,755,000) they are similarly wiped out by actuarial costs.

While members of the advisory group are by no means unanimous on this point, it appears that member services would either be enhanced or at least not substantially impaired in the long-run by most of the options we considered. Options 6 and 7, however, and perhaps 12 and 13, centralize administration of the plans, and in doing so, could limit member access to fund management and staff. Where problems such as member access, service levels, or potential technical/administrative issues appear, we have noted this in the "Option Impacts" and "Option-by-Option Analysis" sections of the report. There are significant transition issues and costs associated with consolidation of administrative functions. These are easily identified by the people who actually administer the current four funds. Putting monetary value on them, or defining timelines to implementation, are more difficult and speculative tasks.

Where plans are consolidated or phased-out, issues to be resolved are many and complex, particularly as regards election of benefits, asset transfer ratios, along with establishing base pensions, and financing post-retirement increases.

For any of the actual plan/fund consolidations, a common problem exists: How does a 13th check operate if a fund is closed to new members, and active members or retirees are either re-directed to another plan or allowed to elect another's benefits? The base of contributions, asset accumulation, and thus capacity to generate excess returns available for distribution, would be considerably reduced. In a closed fund, there would be no new actives, and therefore a shrinking pool of assets against which to draw 1% for distribution. Funding the 13th check becomes difficult without some other infusion of contributions to the fund. The issue also remains as to how the 13th check, which for many older retirees is now larger than their retirement benefit, would be converted into a base pension within the Post Fund.

Wherever there are benefit changes (except for #14, the "Best of All Plans" option), there are typically *both* winners and losers. This report attempts to show which group outweighs the other for each option. Where there is expected to be a significant number of members potentially affected either way, that information is presented. While none of the options seems to imply reductions for the majority of the affected members, any occurrence of reduced benefit (i.e., transfers of member assets at less than the *pro rata* share from their current fund) could be litigated by members if the plan selection was not optional. Where there appears to be potential for litigation, we have either marked the column with a negative sign or question mark.

Overview

The 1993 Legislature called for an interim study by the Legislative Commission on Pensions and Retirement on options available for phasing-out or consolidating teacher retirement funds in the State of Minnesota.

Laws 1993, Chapter 357, Section 9:

(a) The legislative commission on pensions and retirement shall study the options available for phasing-out or consolidating the first class city teacher retirement fund associations. The commission shall report its conclusions by February 1, 1994, to the chairs of the committee on governmental operations and reform of the senate, the committee on finance of the senate, the committee on governmental operations and gambling of the house of representatives, and the committee on ways and means of the house of representatives.

(b) The legislative commission on pensions and retirement shall establish a technical advisory group for the study composed of the commission staff, the directors of the first class city teacher retirement funds, a representative of the teacher bargaining unit of the respective school districts, a representative of each school district, and a representative of the department of finance. Each bargaining unit and school district shall notify the chair of its designation of a representative.

(c) The executive director of the teachers' retirement association and an employee representative to be selected by the board of the teachers retirement association must be members of the technical advisory group in paragraph (b). The board shall notify the chair of the legislative commission on pensions and retirement of its designation of an employee representative.

This report is provided by the Technical Advisory Group established under paragraph (b). We identify and analyze an array of fourteen distinct options relating to alternative plan structures, fund consolidations, management and financing arrangements, including the *status quo* as both an option and a baseline against which to assess others.

No recommendation is made in this report. The Technical Advisory Group intends simply to provide policymakers with the most thorough and objective information that can be obtained on the options identified as worthy of consideration. What follows is an attempt to synthesize

the best empirical information and professional assessments of these options attainable within the time available.

Individuals or organizations contributing to this effort may take positions for or against any one option or set of options presented: Indeed, their fiduciary and corporate responsibilities may oblige them to do so. However, it seems clear from the language and context of the mandating legislation that the Legislature is not soliciting any policy prescription from the Technical Advisory Group. Therefore, *as a group*, we interpret legislative intent narrowly, and take no position on any of the options described.

With respect to the *scope* of options identified for analysis, however, the group has chosen to explore a broader variety of consolidation/coordination options than those initially identified by Commission staff (See Appendix). Whereas most would understand the term to mean plan or fund *elimination*, our definition of "consolidation" includes regional administrative cooperative arrangements. Additionally, we examine alternatives to current funding of plans that involve administrative and asset management linkages between funds. We conclude that a broader definition of the problem and its possible solutions is warranted, since to focus exclusively on scenarios that close funds or plans might presuppose several things :

- 1) That the Legislature intends to move toward one, statewide, uniform retirement plan for all public school teachers and administrators (it has resolved that there are no economic or policy considerations that might warrant the maintenance of separate plans);

Whether or not one subscribes to them, there are valid arguments to be made that historical, economic and demographic considerations exist that lend support to the maintenance of separate plans for the first class city active and retired educators. Perceived inequities in the separate benefit schemes might, on closer inspection, really just be differences in the benefit mix or trade-offs preferred by one group versus another.

- 2) That remediation of the funding problems facing the Minneapolis and St. Paul funds can only be solved through their elimination, and alternatives that might secure more rational funding of the *separate* plans are not germane;

The recent adjustment of supplemental contribution rates and creation of authority for a state/employer lump-sum additional contribution seem to indicate legislative willingness to deal with funding needs as an issue distinct from the number of funds that exist. Would the Legislature even be deliberating "phase-out or consolidation options" if it were not for the funding problems? If funding issues are the primary impetus for this study, then it makes sense to explore options that address this core problem in conjunction with any consideration of interventions such as closing or combining funds and plans.

- 3) That intermediate arrangements promoting economies in the delivery of retirement benefits and member services are not to be considered, even though they might provide alternatives to options that are potentially more costly or controversial.

Likewise, while the Legislature has certainly expressed concern about administrative and investment cost differentials among funds, it has also taken actions that clearly intend resolution of these issues through interventions far short of consolidation, such as the "administrative assessment" imposed in the 1993 Session on first class city fund members.

For these reasons then, this report evaluates, along with fund elimination options, proposals that address concerns about cost effective administration and investment management, along with alternative funding scenarios driven partly by bonding opportunities to arbitrage downward the projected unfunded liabilities of several plans: An approach that could have significant positive impacts on the funding status of the Minneapolis and St. Paul funds in particular.

The Appendix to this report is devoted to methodological disclosure: That is, the process by which options were identified, analyzed, and evaluated. Certain criteria, assumptions and conventions were adopted in order to assure, wherever possible, uniform methods for estimating savings/costs, actuarial implications, funding, administrative and member service impacts associated with the options chosen for assessment. We feel it is incumbent upon the group to provide this information, and that its inspection can give the reader a clearer understanding as to how figures are derived and the empirical support for the conclusions that were reached. This level of detail, however, is not essential to the purpose of making policy, and we believe it is more appropriately located in the appendix for reference rather than the main body of the report.

The following page contains a listing of project participants, including the names of contributors and their affiliations.

Study on Minnesota Teacher Retirement Funds: Technical Advisory Group Participants

Ron Hackett, Chair	Team Leader, Education, Human Services, Compensation Issues, Department of Finance
Carol Adams	Saint Paul Federation of Teachers
Gary Austin	Executive Director, Teachers' Retirement Association
James Hacking	Executive Director and Chief Investment Officer, Minneapolis Employees' Retirement Fund
Vernell Jackels	President, Board of Trustees, Teachers' Retirement Association
Phillip Kapler	Executive Budget Officer, Minnesota Department of Finance
Karen Kilberg	Executive Director, Minneapolis Teachers' Retirement Fund Association
David Lutes	Risk Manager, Minneapolis Public Schools
Lawrence Martin	Executive Director, Legislative Commission on Pensions and Retirement
Norman A. Moen	Business Agent, Minneapolis Federation of Teachers
Paul Rigstad	Denfeld High School, Duluth Minnesota
J. Michael Stoffel	Executive Secretary, Duluth Teachers' Retirement Fund Association
Larry Shomion	Independent School District No. 625
Ron Sodberg	Superintendent's Office, Duluth Public School District No. 709
Eugene R. Waschbusch	Secretary/Treasurer, St. Paul TRFA

Description of Options

The fourteen options identified and selected for assessment range from maintaining the current plan, funding and management arrangements, to total and immediate consolidation of the four teacher retirement plans in the state. Between these extremes lie twelve alternatives on a continuum of progressively more fundamental and sweeping plan/funding modifications.

Of the options described below, those numbered 2 through 7 were developed independently by the Technical Advisory Group. The first subset of options fall in our first two categories (Administrative efficiency and funding changes), and require no actual elimination of plans or funds. Those numbered 8 through 14 are phase-out or consolidation options identified by LCPR staff (See Appendix, Lawrence Martin to LCPR, August 16, 1993). This second subset draws largely on historical experience with reconfiguration of public plans in Minnesota, and each involves the elimination of funds, plans, or both. Excluding the *No Change* scenario (Option #1 throughout), the policy options we present to the Legislature can be grouped into three (overlapping) categories or themes, as detailed below.

Administrative efficiency opportunities

Option Description

- 2 *Form a Minneapolis Pension Management Services Agency (MPLS-TRA & MERF only - Maintain current law benefits, boards, and directors.*
- 3 *Option #2 PLUS a State/employer total contribution "lock-in," along with a "Minneapolis Amortization Pool," whereby the current total combined level of support is maintained, but redirected where most needed.*
- 4 *Option #3 PLUS Taxable G.O. bond financing of unfunded liabilities for MERF, MPLS-TRA, St. Paul-TRA*
- 5 *Option #4 PLUS change post-retirement adjustment procedure to greater of current or SBI approach*
- 6 *Current law benefits, same boards/directors. Create a Teachers' Pension Management Services Agency, including MPLS-TRA, St. Paul-TRA, Duluth-TRA, State-TRA.*
- 7 *Option #6 PLUS Change Post-Retirement adjustment procedure for First Class TRA's to SBI approach - employer jurisdictions pay the cost*

Funding change opportunities

<u>Option</u>	<u>Description</u>
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- | | |
|----------|---|
| 3 | <i>Option #2 PLUS a State/employer total contribution "lock-in," along with a "Minneapolis Amortization Pool," whereby the current total combined level of support is maintained, but redirected where most needed.</i> |
| 4 | <i>Option #3 PLUS Taxable G.O. bond financing of unfunded liabilities for MERF, MPLS-TRA, St. Paul-TRA</i> |
| 5 | <i>Option #4 PLUS change post-retirement adjustment procedure to greater of current or SBI approach</i> |

Actual plan/fund modification opportunities

Option Description

- 5 *Option #4 PLUS change post-retirement adjustment procedure to greater of current or SBI approach*
- 7 *Option #6 PLUS Change Post-Retirement adjustment procedure for First Class TRA's to SBI approach - employer jurisdictions pay special amortization contribution*
- 8 *Current law benefits and administration. Close MPLS-TRA, St. Paul-TRA and Duluth-TRA. Redirect all future hires to State-TRA.*
- 9 *Option #8 PLUS Redirect all non-vested members of First Class TRA's to State-TRA.*
- 10 *Current law benefits and administration for BASIC members only. Consolidate COORDINATED plans into one within State-TRA.*
- 11 *Current law benefits. Consolidate administration into State-TRA. Eliminate current First Class boards/directors. Close First Class TRA plans to future hires.*
- 12 *Option #11 PLUS allow active First Class TRA members to elect current or State-TRA benefits*
- 13 *Option #12 PLUS First Class City retirees choose current or State-TRA Post-Retirement increase process for all future increases.*
- 14 *Total Consolidation. All active and retired members transfer to State-TRA administration. New plan benefits include greater of each among the merged plans.*

Current Status of Funds

On the following page is a chart giving summary statistics on the funds with which this study is concerned. This is not intended to be a comprehensive, side-by-side comparison of the funds, benefits, or features of the plans under administration. Rather, the variables identified are those considered most relevant to the purposes of this study. This data is provided in order to give policymakers contextual information, a quick reference to assess the relative scope and size of the funds, along with statistics on funded status and contribution sufficiency. Following the table are graphical presentations of significant information drawn from the same table for illustration of particular items. Figures are from the Pension Commission consulting actuary's valuations for the fiscal year ended June 30, 1993.

Roughly 87% of the active members and payroll for all teacher retirement plans in Minnesota are in the statewide fund. Of the remaining 13%, 2% are in Duluth-TRA. Both of these funds are in good shape; the funded ratios (85% and 99% respectively) and contribution sufficiency rates (-.07% and +.08%) are healthy. This is an important point, since it implies that for about 90% of the teachers and school administrators in the state, the funding of their current benefit liabilities is not a serious issue. *We do not have a teacher retirement funding problem in Minnesota. We have funding problems within two local teacher funds.*

For the remaining 10%, the vital signs are not so good. Contribution deficiencies are significant: (6.80)% for MPLS-TRA, (3.31)% for St. Paul. The combined total *annual* dollar shortfall is \$14,147,000. Each year this condition is allowed to persist compounds the cost of resolving it in the future. Ever greater inter-generational shifts are required to sustain the plans: That is, one generation of taxpayers shifts its burden to another. In the case of St. Paul, the inter-generational transfer issue is the focus. With respect to the Minneapolis fund, the problem is even more critical. Recent legislation has enhanced projections, but MPLS-TRA's funded ratio remains only 57%. Unless something is done, assets will be depleted to zero and default will occur sometime shortly after the year 2030. In the meantime, ever more severe inter-generational transfer of unfunded liability obligations will continue.

Knowing the nature, source and scope of a problem is essential to developing a sound corrective policy. The nature and scope of the problem that led to this study can be defined rather clearly. Much of the background was provided in a 1992 study by the Advisory Committee on the Minneapolis Teachers' Retirement Fund Association. Most of the problems facing these funds are historical in nature, and occur when benefits were modified, but contributions were not - either through local or state inaction.

Benefits do not appear to be the driving force. Here, rather than become mired in a side-by-side comparison of all plan benefits, annuity options, assumptions and plan experience relative to those assumptions, we suggest one summary way to compare benefits is to look at the **normal cost of retirements**. This is provided in the following table (for ease of presentation, on *coordinated plans* only). When one takes into account the different post-retirement earnings assumptions, and average annual earnings, the normal costs cluster fairly close

together. This indicates that the current benefits among the various plans are quite similar in terms of *total* cost. There are significant differences among the plans in terms of *specific* benefits, but from a total cost perspective there do not appear to be large, overall benefit disparities.

Administrative costs, as can be seen from the table, are for all funds rather low as a percent of payroll. Another way to look at administrative cost is to distribute it over active and retired lives. Viewed on this scale (See figure below), one sees significant differences in per-member costs. This is largely due to two factors: 1) the plan populations differ considerably, hence the numerator drives the ratio; 2) fixed costs appear to be similar across funds (rental or leased space, systems and equipment costs, etc.). Certainly, opportunities for long-run economies in administration exist. The issue for policymakers, however, is whether the potential savings are worth the transition costs, or possible member service and policy implications of any administrative consolidation.

It should be noted here that the bar chart showing administrative costs per active member is used only as a means to present in a common relative metric. The chart should not be interpreted to mean that members are bearing the administrative costs, or that they have reason to be concerned about the differences. Administrative costs are assumed almost entirely by the employer units through their contributions on behalf of the employee - they are not borne by employees.

CURRENT STATUS OF FUNDS

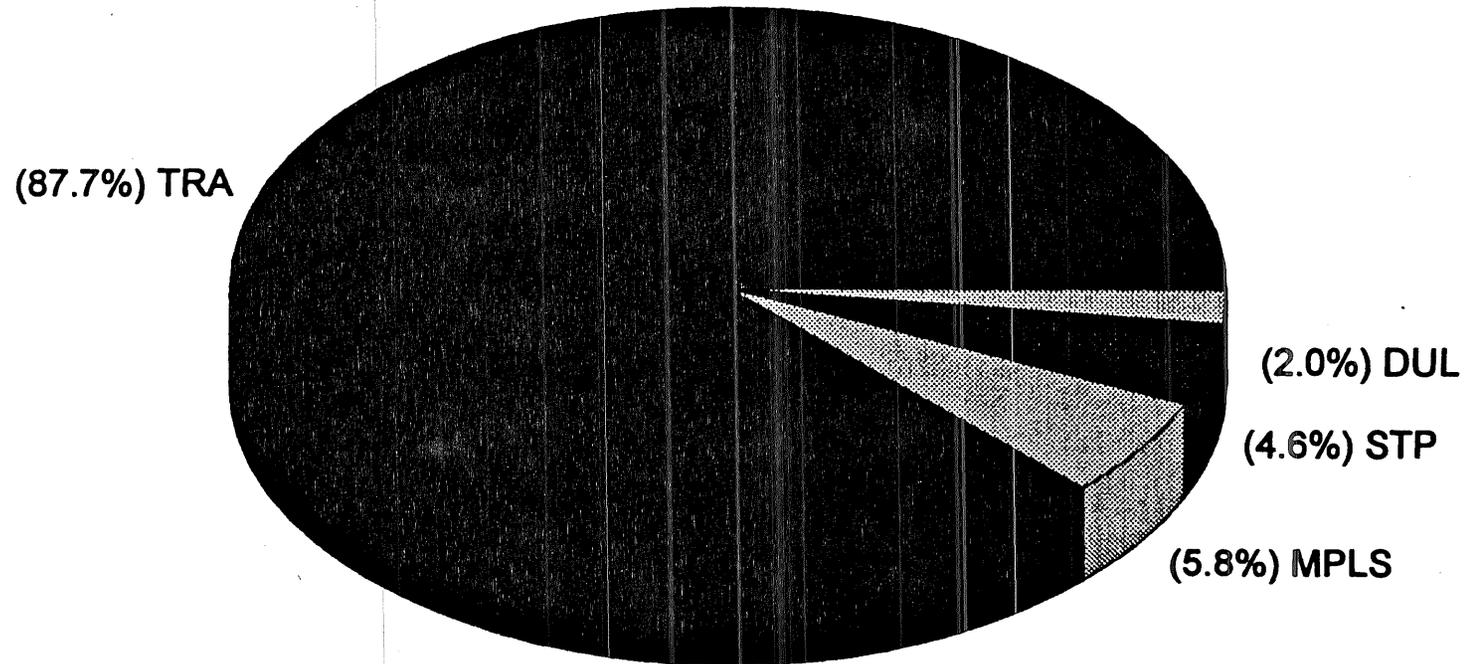
Based on Actuarial Valuations for
June 30, 1993

Fund	Payroll (\$'s In 000's)	% Total Teacher Fund Payroll	Avg Salary (Actual \$'s)	Active Members	% of Combined Active Members	Assets (\$'s In 000's)	Liabilities (\$'s In 000's)
State TRA	2,156,739	87.17%	33,044	65,268	87.66%	7,045,937	8,266,059
MPLS TRA	144,313	5.83%	33,585	4,297	5.77%	501,741	878,693
St. Paul TRA	130,921	5.29%	38,047	3,441	4.62%	393,168	571,059
Duluth TRA	42,160	1.70%	29,016	1,453	1.95%	130,857	132,700
MERF	89,200	na	38,432	2,321	na	888,587	1,172,908

Fund	Current Contrib Sufficiency/ (Deficiency)	Total Coord Normal Cost as % Payroll *	Coord Normal Cost Retirements Only *	Total Amort Cost	Admin Cost As a % of Payroll	Asset Mgmt External (E/ Some Internal (I)	Funded Ratio
State TRA	-0.07%	9.80%	7.89%	2.76%	0.15%	E	85.24%
MPLS TRA	-6.80%	9.32%	7.56%	12.74%	0.43%	I	57.10%
St. Paul TRA	-3.31%	8.88%	6.25%	6.63%	0.27%	E	68.65%
Duluth TRA	0.08%	9.67%	7.40%	0.21%	0.83%	I	98.61%
MERF	0.00%	18.68%	18.68%	23.49%	2.20%	E	75.76%

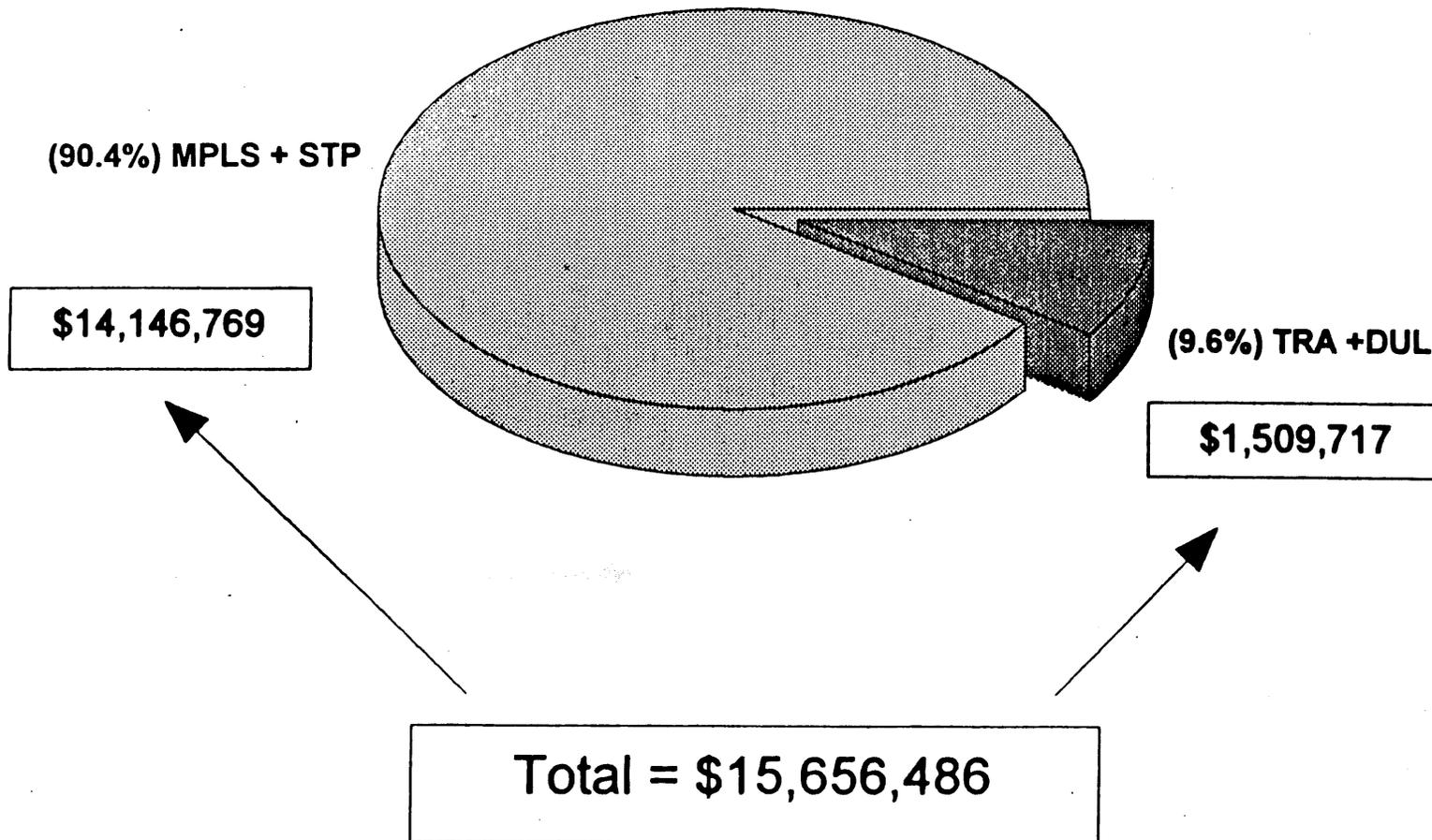
* Normal cost serves as a proxy for the value of benefits for current active members. However, differences in assumed rates of return for pre/post-retirement assets require some caution in interpreting these figures. Those rates are TRA 8.5/5.0, MPLSTRA - 8.5/6.5, SPTRA - 7.5/7.5, Duluth - 7.5/7.5, MERF 6.0/5.0

Distribution of Teacher Fund Active Members

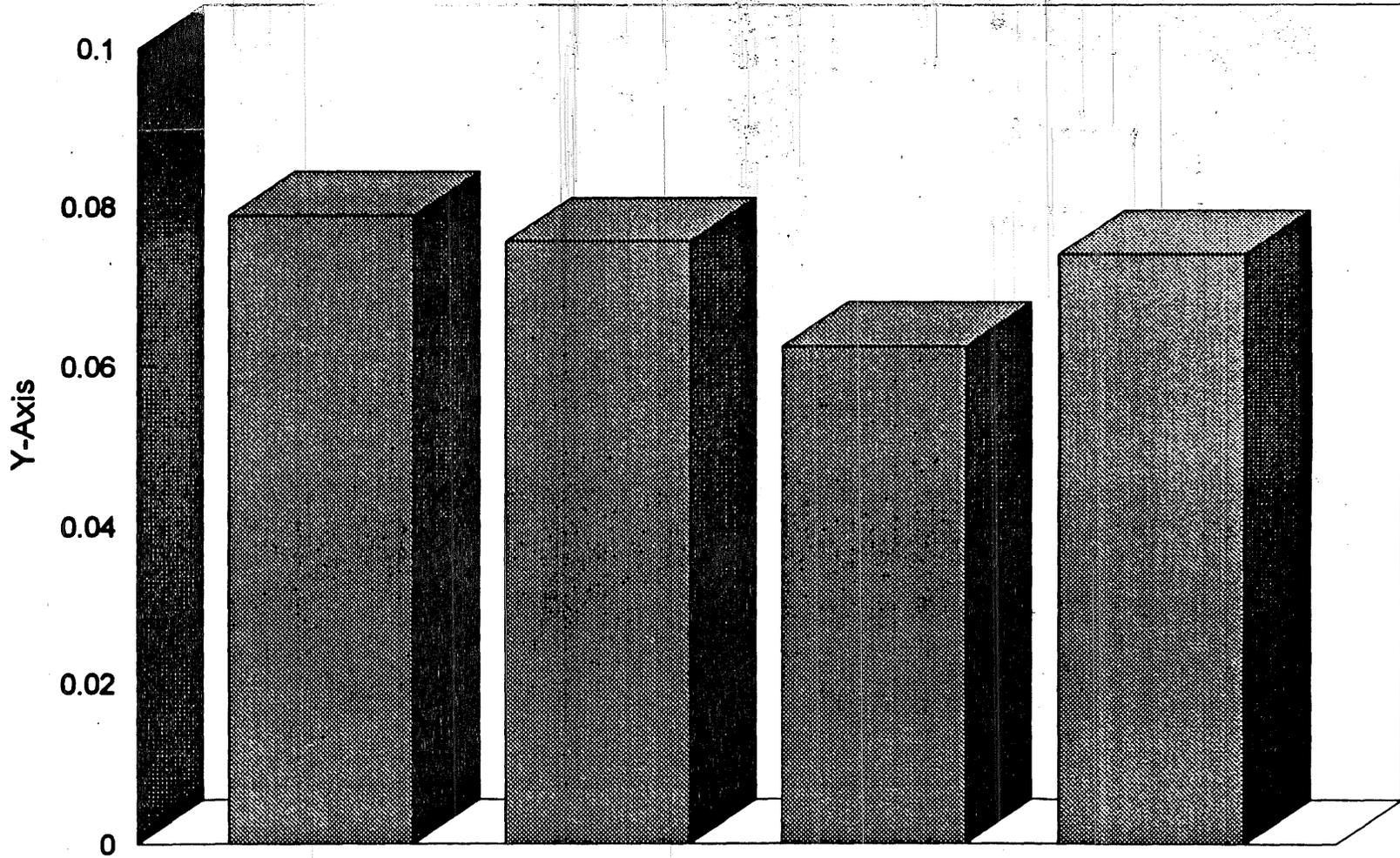


Annual Contribution Deficiency

Distribution of Combined Total



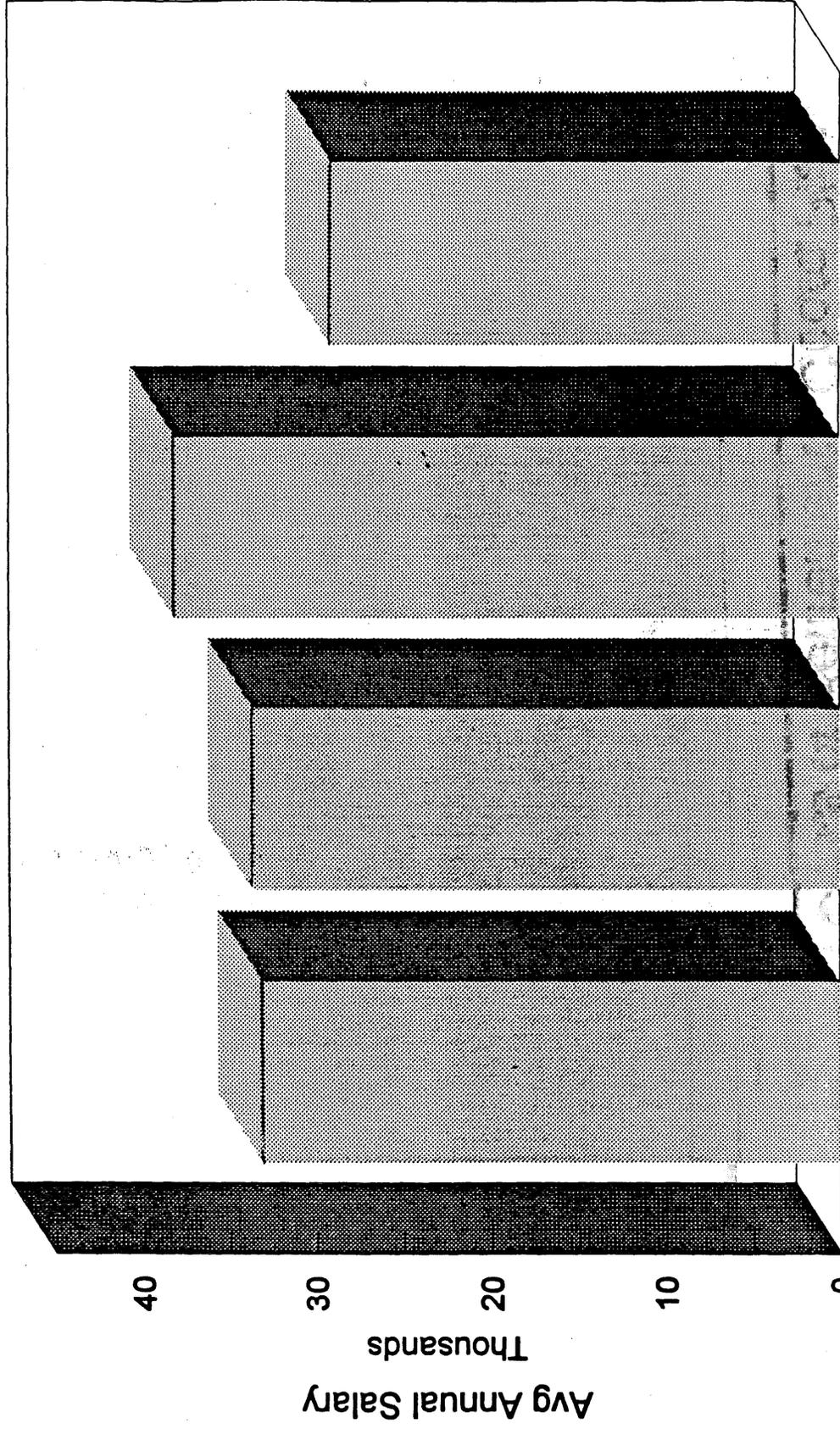
Normal Costs of Retirement - Coord Plans



X-Axis	TRA	MPLS	STP	DUL
	7.89%	7.56%	6.25%	7.40%

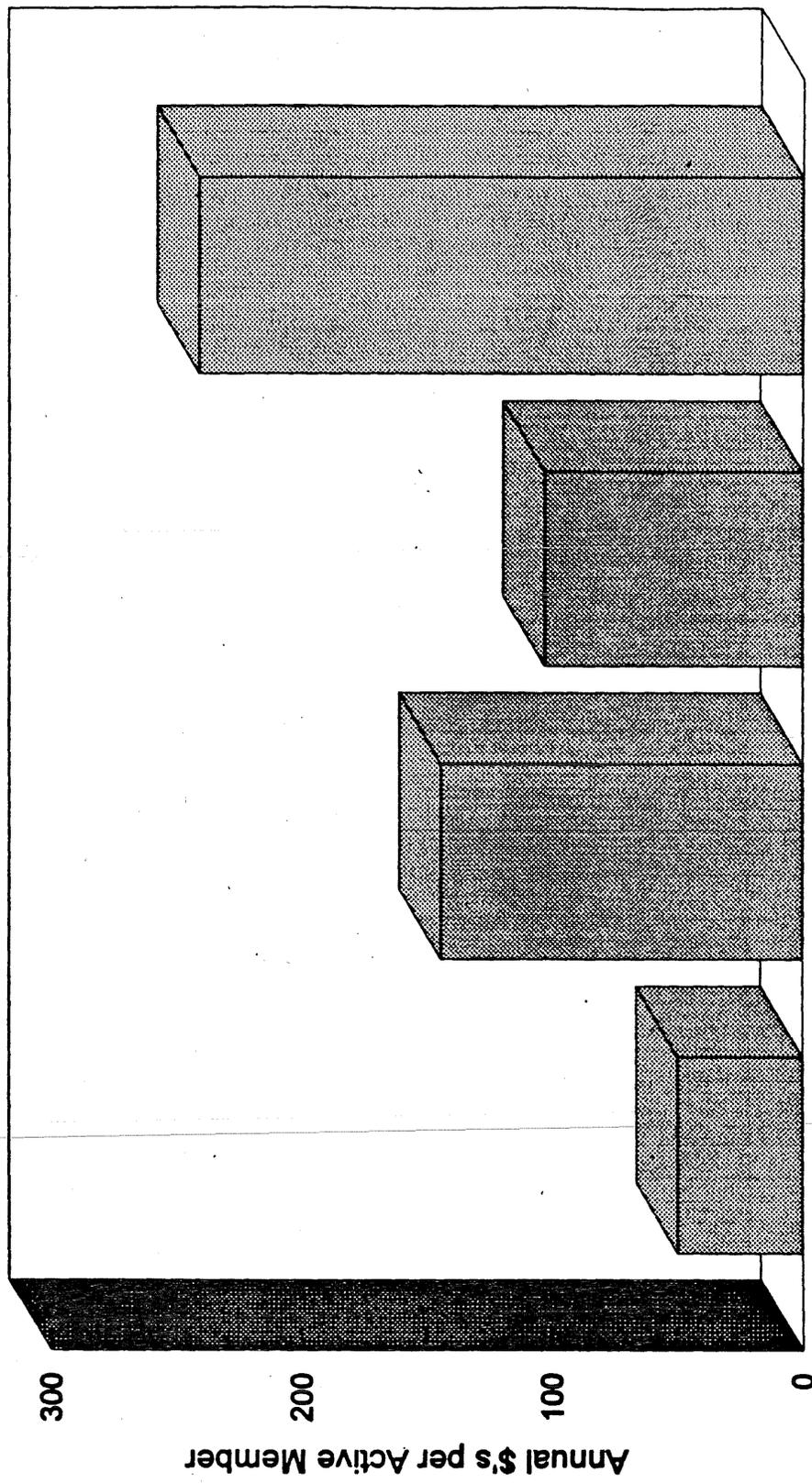
Average Salary

1993 Valuation (\$'s in 000's)



	TRA	MPLS	STP	DUL
	33,044	33,585	38,047	29,016

Administrative Cost / Active Members



X-Axis	TRA	MPLS	STP	DUL
Data A	50	144	103	241

Option Impacts

The following chart attempts to collapse our analyses of 14 options into one, tabular presentation. As a practical matter, this cannot be done without the exclusion or oversimplification of important fiscal, administrative and policy considerations. Nevertheless, this can serve as a point of departure toward discussion of the significant issues.

Most of the information in the following table is derived from the Option-by-Option Analysis section, and the Appendix to this report, which includes the actuarial analyses performed. The empirical analyses from actuaries, fund staff, and DOF, and separate option narratives later in the report provide the best professional judgement of participants as to each option's implications. To obtain the full benefit of the expertise and insights of these contributors, review of these sections is recommended.

A few notes about cost measurement are warranted. It should be mentioned here that costs, where measurable, are for the first year only, which for our purposes is the 1994 valuation year. Originally, we intended to determine the total present value cost through the amortization target date on each of these options, since from a fiscal policy perspective, this is the most useful perspective on cost or saving estimates. However, the nature of the options being studied, and the way valuations on plans are performed in Minnesota, creates distortions of the figures in the out years, such that aberrant output on required contributions and deficiencies resulted. The primary reasons are as follows:

- 1) The predominance of new members in plans affecting the results,
- 2) As we approach the amortization target date, the period within which unfunded liabilities must be met becomes increasingly compressed, artificially escalating costs/savings.
- 3) Lastly, statutory contribution levels were fixed at current levels, rather than adjusted to match required contributions from year to year. This contributes to a radical escalation of the required rate.

For these reasons, and at the advice of the Commission actuary, we focus on first-year impacts only, where the factors that would distort the output do not yet come into play.

For Options 2-5, detailed administrative cost projections were attempted. For the rest of the options, which involve only the four teacher funds, we decided to simply apply a percentage savings to total administrative costs in the future year. The methods by which funds classify and account for administrative expenditures varies significantly, as do the scope and types of plans they administer. Differences in internal and external investment arrangements, client services, geographic distribution, records management, etc, all contribute to multifarious operating and accounting complications that, when viewed within the overall cost picture, do

not factor significantly enough to require their itemization.

The LCPR consulting actuary performed the analyses necessary to evaluate the actuarial impacts of Options 1, 7, (by inference, #5), 8, 12 and 13. Options 9, 10, and 11 do not, in the judgement of the actuary, differ significantly from Option 8 in terms of actuarial implications. We have projected the Option 8 figures on those scenarios, though there are factors that could make the impacts of these options different from #8. In addition, the Commission actuary adds Options 1B for MERF and 3B for MPLS-TRA. These analyses assume a change in the assumed rate of return for MERF to 8.5%, which has the effect of "reallocating" about \$800,000 more in annual state and employer contributions to MPLS-TRA under Options #3 and #4. Though this change has not been incorporated into our analyses, it would *increase* the net savings estimated under these scenarios.

The estimated administrative savings in the table for Options 2-5 are based upon analyses by MERF and MPLS-TRA. The amount saved by sharing certain administrative functions and office space is approximately 5%. For Options 6 and 7, affecting only the four teacher funds, we assumed 20% savings in administration, and 10% on investment costs. These are beyond the item-by-item projections for MERF and MPLS-TRA. We felt that a significant amount should be assumed given the more similar nature of the plans being managed. For the remaining options, we assumed a 10% savings in overall administrative costs. Larger memberships and greater geographic dispersion of employers/members, the scale of operations and systems, and the complexity of administrative arrangements could render these assumptions invalid, and in fact, cause *diseconomies*.

As illustrated in the chart labeled "Summary of Option Impacts," even greater operational efficiency levels could have been assumed without any significant impact on total costs. Administrative costs simply do not amount to much in the pensions context.

Note that the figures for Options 1-5 apply to MPLS-TRA and MERF only, and the remaining options apply to the four teacher retirement funds, without MERF. Because the other funds are not affected by Options 1-5, they are, in effect, operating in FY-1994 under the *No Change* scenario. Actuarial analyses on the MERF/MPLS-TRA options were performed by the consulting actuaries retained by the boards.

Legend to the chart:

Option #, Category, Description

Self explanatory, except for Category. The symbols here indicate what basic group of options the one cited belongs to:

Administrative	A
Funding changes	F
Consolidation	C

Costs/(Savings) over Current Law.

This figure combines first-year impacts for all funds affected by the option, and nets out current, ongoing deficiencies from the final number.

Combined (Sufficiency)/deficiency

Shows the total (sufficiency)/deficiency for all relevant funds in the first-year, including current deficiencies, after implementation of the option.

Administration, Benefits

Significant number appear to gain	+
Significant number are adversely affected	-
Impact appears to be neutral	/
Impact uncertain	?

Litigation

Possible Litigation.	
high probability	-
low probability	+
uncertain	?

Unresolved Issues

Fiscal, statutory, actuarial or policy issues	x
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SUMMARY OF OPTION IMPACTS

Costs, Administration, Benefits

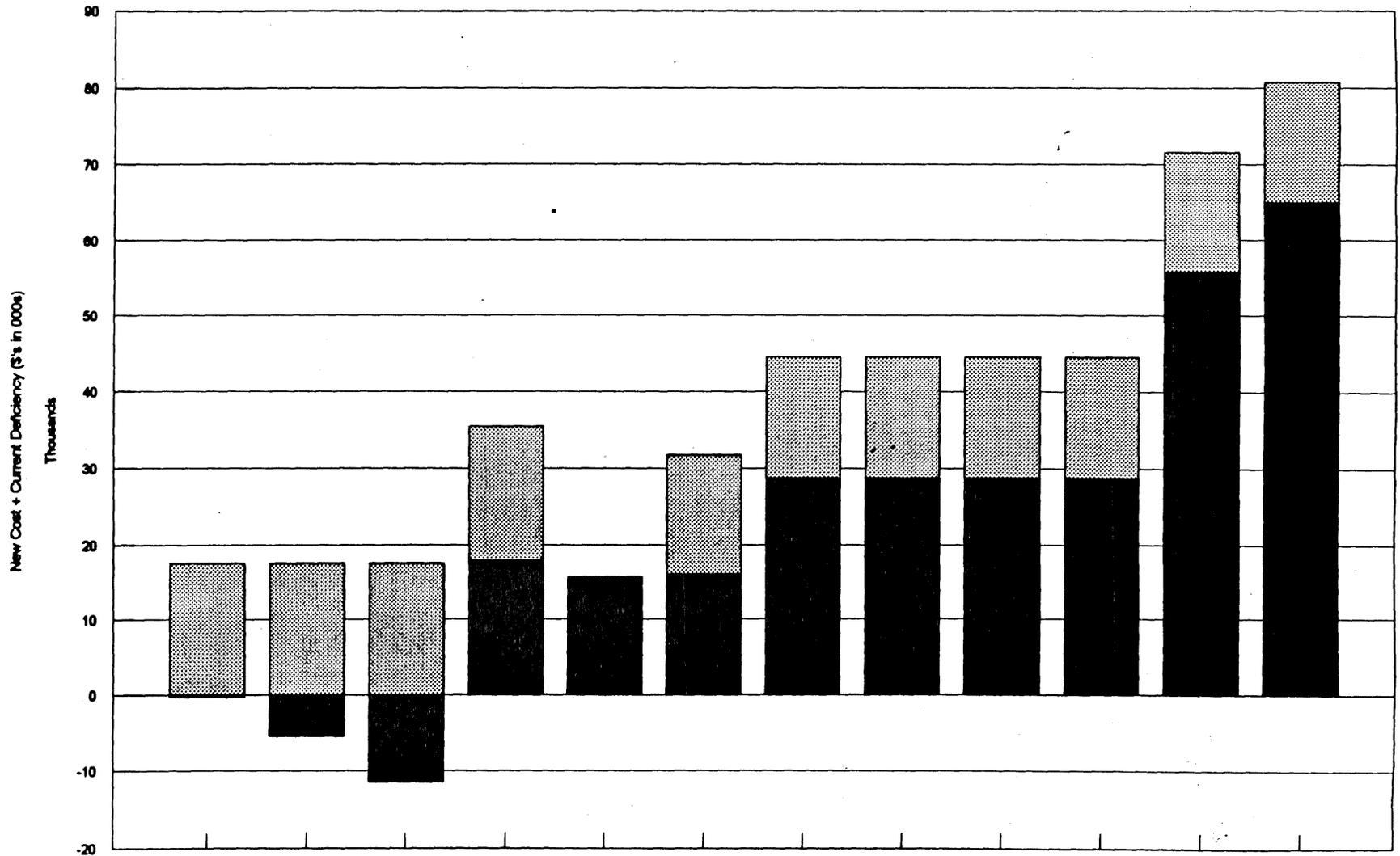
A = Administrative Change Opportunity
 F = Funding Change Opportunity
 C = Consolidation of Fund or Plan

Option # / Category	Description	Actuarial Effects (\$'s in 000's)		Administration Effects			Benefits, Legal, Other		
		First Year Required Contrib Over/(Under) Current Required	Combined Deficiency/ (Sufficiency)	Costs	Issues	Services	Benefit Changes	Litigation	Unresolved Issues
1	na Current Law - No Change	0	17,594	-	?	+	/	/	x
2	AF Current Boards & Benefits MPLS Pension Servs Agency	(298)	17,296	+	-	/	/	+	
3	AF Option 2 w/ Employer/ State Contrib Lock-in	(5,410)	12,184	+	-	/	/	/	x
4	AF Option 3 PLUS Taxable G.O. Bonding	(11,457)	6,137	+	-	/	/	/	x
5	AFC Option 4 PLUS Change Post-ret adjust. to greater of Current or SBI	17,933	35,527	-	-	/	+	/	x
1-A	na Current Law - No Change Teacher Funds Only	0	15,726	-	?	+	/	/	x
6	A Current Law Bens/Boards Teacher Pension Mgmt Agency	15,726	0	+	-	-	/	/	
7	AC Option 6 PLUS Change post-ret adj to SBI Locals pay Cost	16,058	31,784	+	-	-	+	/	
8	C Close MPLS, ST. Paul, Duluth Redirect all future hires to State TRA	28,801	44,527	?	/	/	/	/	
9	C Option 8, PLUS Redirect All current non-vested	28,801	44,527	?	-	/	/	-	x
10	C Current Law Bens/Admin for Basic Consolidate Coord. members in State TRA	28,801	44,527	?	-	/	+,-	?	x
11	C Current Law Benefits Consolidate Administration into TRA Close First Class to new hires	28,801	44,527	+	-	/	+,-	/	
12	C Option 11, PLUS Allow actives in First Class to elect current or State TRA Benefits	55,812	71,538	+	?	?	+	-	x
13	C Option 12, PLUS First Class retirees elect current or State TRA Post-Ret increase formula	65,020	80,746	+	?	?	+	?	x
14	C Total Consolidation - All active & retired to STATE TRA. New Plan includes the provisions of the merged plans.	Not Avail	Not Avail	+	+	-	+	+	

MPLS-TRA & MERF ONLY

TEACHER RETIREMENT FUNDS ONLY

Combined Actuarial Impacts - New Cost and Current Deficiencies Options 2 - 5 & 6 - 13



X-Axis	2	3	4	5	6	7	8	9	10	11	12	13
New Cost - 1st year only	(298)	(5,410)	(11,457)	17,933	15,728	16,058	28,801	28,801	28,801	28,801	55,812	65,020
Current Annual Deficiency	\$17,594	\$17,594	\$17,594	\$17,594	0	15,728	15,728	15,728	15,728	15,728	15,728	15,728

For a thorough discussion of the issues and underlying factors driving the costs/savings presented in the table above, refer to the next section of the report. The remainder of this section is devoted more to general discussion of the fiscal implications of the options by category.

Consolidation or phase-out of the three first class city funds is projected to be very costly. The new first year cost ranges from \$29 million for Option 8 to \$65 million under Option 13. The Commission actuary did not perform the valuations necessary to derive cost figures for Option 14, but it is safe to assume that the costs for this option would certainly exceed those for Option 13..

Of the fourteen alternatives, there are only three where costs (as measured in terms of required contributions) are actually reduced - Options 2, 3, and 4. The administrative savings under Options 2 (\$300,000) are so minor that they could easily be eliminated by incorporating effects on overall fund and employer administrative costs that have *not* been included in this report. Administrative savings under Option #5 (\$608,000) are dwarfed by the actuarial costs of the proposal. While significant administrative "savings" occur under Option #6 (\$1,755,000) they are similarly wiped out by actuarial costs.

Options #3 and #4 (affecting only MPLS-TRA and MERF) are the only alternatives to current policy that could be expected to significantly reduce retirement obligations. Detail cash-flow projections are included in the appendix to this report which illustrate the actuarial effects under Options #3 and #4 in greater detail.

In the first case, an "amortization pool" is established, which "locks-in" the FY-1993 employer/state contribution levels, redirecting available state and employer contributions from the MERF Fund to the MPLS-TRA. The active membership of MERF is shrinking and recent investment performance has considerably exceeded assumed returns: Consequently, annual amortization costs are declining. These impacts, along with plan assumption changes contemplated by the fund, could free up resources, such that a potential reallocation from MERF to MPLS-TRA of \$4 million is available in FY-1995. This increases until about the year 2013, when the amount available caps out at \$32 million per year (i.e., no required contribution by the employers or the state). MERF changes include moving from a 6.0% to 7.0% rate of return, and modifying the funding formula in statute to assure that as amortization costs decline, the state share goes down in the same proportion as that of employing units.

First-year "savings" under option #3 are estimated at \$5.4 million. Savings here, is measured against the current combined total deficiency for the relevant funds. A reduction in deficiencies is defined here from an actuarial perspective as "savings." From a strict fiscal and budgetary point of view, expenditures are not really reduced under Options #3 or #4.

The next option, adds to this scenario the issuance by the school district and city, taxable

general obligation bonds to offset the unfunded liabilities of the MERF and MPLS-TRA funds. The text runs to date have been for sales of \$100 million each for the two funds. The spread between the rate of return on the assets obtained, and the rate of interest on the bonds creates an arbitrage opportunity. A large amount of assets are infused into the funds, and compound at a rate sufficient to double the effect of the contribution lock-in; savings are \$11.5 million the first year.

The effect of all this on MPLS-TRA can be understood as a reversal of the current situation, where insufficient assets come into the fund each year, and the loss is negatively compounded by the rate of return that could have been obtained. In this case, a significant share of that contribution insufficiency is corrected, such that the deficiency for MPLS-TRA goes from 6.80% to 2.23% with the lock-in and bond sales. The funding problem is not resolved entirely, but if recent investment performance of the two funds (well in excess of assumed returns) can be sustained for even the next few years, the effect could be even more dramatic. Certain technical problems need to be resolved before either or both of these options could be implemented, and these are discussed further in the next section of the report.

The options that fall under our "Administrative Efficiency" category do not generate significant savings, and this was expected. Unless something dramatic happens on the investment, funding, benefits or assumptions side of the equation, the effect appears to be minimal. It should be noted here that the up-front costs of the administrative consolidation scenarios has not been taken into account, but only the long-term "guesstimated" savings. Additionally, the logistics of maintaining service records, providing members information, maintaining salary data, etc., for a new, consolidated, or split administration (these effects are present in Options 6 - 10) has implications for employer units in terms of administrative costs impacts. Complete and uniform information was not available for these costs/savings, and they are therefore not reflected in any of the figures in the above table.

For those options that fall generally within the "Consolidation Opportunity" category, the first year costs are larger than we anticipated. The costs are most often due to differences in the assumed rates of return on pre/post-retirement assets, funded status of the plans, and diminishing active payroll to support closed plans as they approach the amortization target date. By far the most expensive options are #12 and #13. Allowing only actives to elect current or TRA benefits and SBI post-retirement adjustments (Option #12) raises first year costs from \$28.8 to \$55.8 million; a difference of \$27 million. Under Option #13, we extend to retirees the election on post-retirement benefits, which increases projected required contributions by \$9.2 million. Primary factors driving these results are:

- 1) Moving members from plans that are poorly funded into well-funded plans;
- 2) allowing the election of SBI or 13th check post-retirement increases; and,
- 3) the lower assumed post-retirement rate of return for the State TRA versus local fund rates.

Virtually all active members of the Minneapolis, St. Paul and Duluth plans would be better off under the State post-retirement adjustment. For *retired* members, the more costly method depends on length of service credit and years in retirement. Generally, retirees in the early years are better off under the SBI post increase formula - those who have been retired longer fare better under the 13th check.

For any of the actual plan/fund consolidations, a common problem exists: How does a 13th check operate if a fund is closed to new members, and active members or retirees are either re-directed to another plan or allowed to elect another's benefits? The base of contributions, asset accumulation, and thus capacity to generate excess returns available for distribution, would be considerably reduced. In a closed fund, there would be no new actives, and therefore a shrinking pool of assets against which to draw 1% for distribution. Funding the 13th check becomes difficult without some other infusion of contributions to the fund. The issue also remains as to how the 13th check, which for many older retirees is now larger than their retirement benefit, would be converted into a base pension within the Post Fund.

While members of the advisory group are by no means unanimous on this point, it appears that member services would either be enhanced or at least not substantially impaired in the long-run by most of the options we considered. Options 6 and 7, however, and perhaps 12 and 13, centralize administration of the plans, and in doing so, could limit member access to fund management and staff. Where problems such as member access, service levels, or potential technical/administrative issues appear, we have noted same in the table above. The "Administrative Issues" column in the table is not informative by itself. A negative sign in this column indicates that there are questions about how future plan administrative functions would be arranged and performed with respect to member and employer unit needs. For obtain clarification these issues, the reader should refer to the individual option analysis in the following section.

Wherever there are benefit changes (except for #14, the "Best of All Plans" option), there are typically *both* winners and losers. Our summary table attempts to show which group outweighs the other for each option. Where there is expected to be a significant number of members potentially affected either way, both positive and negative signs are found. While none of the options seems to imply reductions for the majority of the affected members, any occurrence of reduced benefit (i.e., transfers of member assets at less than the *pro rata* share from their current fund) could be litigated by members if the plan selection was not optional. Where there appears to be potential for litigation, we have either marked the column with a negative sign or question mark.

Aside from the many policy considerations these options present to policymakers, there seem to be very few opportunities for actual plan or fund consolidation that do not also imply significant actuarial costs. Unless some of these issues can be resolved through legislation on plan consolidation provisions, it does not appear that reducing the number of funds creates economies in strict cost/benefit terms to the state or the employing jurisdictions. Some other superseding policy objective would be required to justify the fiscal impacts presented here.

Issues that deal with some of these other dimensions are more thoroughly addressed in the following section of the report.

Option-by-Option Analysis

Option #2 - Form a Minneapolis Pension Management Services Agency
(MPLS & MERF - Maintain current law benefits , boards and directors.

Assumptions

Current Law Benefits and Funding - no change.

Administration

In order to manage the operation effectively, the staffs would have to be physically located together, which would require new office space that could accommodate the new combined staffs. Depending on existing lease agreements, this could be a costly move. The impacts to member service and employers would be minimal since the existing personnel and operating systems would not change. The location of the staff would have to change, so retirees would need to be informed of the new address and phone numbers. The same would also be true for the employers. The largest impact to timing of any such move would be the exit clauses in existing lease agreements.

Administration, outside of start-up complications and costs, would not be adversely affected.

Benefit Impact

None

Funding/Investment of Assets

Savings of approximately \$200,000/yr. by combining investment management contracts.

Estimating Savings

There would be a very marginal change in total plan costs. Total consolidated savings for the two funds would be about \$300,000 per year. These would occur as a result of economies in system usage and maintenance costs, and investment management.

Statutory Changes

Minor housekeeping language might be required. No significant changes to statute.

Overall Assessment

While the costs of implementing are probably not large, neither are the savings projected. Since the plans and their benefits are different, the assets need to be held and accounted for separately, plan records must be maintained separately, and reporting must be done individually. Member and employer questions are unique to the plan and employing

organization, and segregation and maintenance of staff specializing in one plan would be necessary to avoid confusion and assure adequate member services.

Option #3 - Option #2 PLUS a State/Employer Lock-in, along with a Minneapolis Amortization Pool

Assumptions

- o Employer/state contribution "lock-in" generates \$32 million for reallocation from MERF to MPLS-TRA.
- o Administrative savings of 5%, same as Option #2, are still in effect.
- o Investment returns are assumed to be 9.5%, for bond assets projections (now 6.0% in statute). 7.0% statutory rate is proposed for fund valuation purposes.

Administration

- o Same as #2 above.

Benefit Impacts

- o No change in plan benefits for either fund.

Funding/Investment of Assets

- o A significant reduction in the contribution deficiency of the MPLS-TRA occurs by implementing this option. Actuarial analyses indicate that the use of the excess contributions over MERF's required contributions to reduce MPLS-TRA contribution deficiency brings the deficiency down from 6.80% to 2.90%.

Estimating Savings

Technically, there are no "net savings," since the reduction in contributions is merely being reallocated to another fund. The state and employers continue to pay the same amount. However, this assumes that current statutory rates for the MPLS-TRA are sustainable. A 6.80% deficiency cannot be maintained in statute, and at some point, contributions to the fund must come in line with actuarial requirements. Technically, then, the "savings" here are really a reduction to current underfunding - from a long-term perspective, it could be maintained that they are really the same thing.

Statutory Changes

Requires creation of a "Minneapolis Retirements Amortization Pool," and the authority to shift excess contributions from MERF to the pool, and then to MPLS-TRA. Also requires change to interest rate assumption in statute, and formula governing state amortization aid.

- o M.S. 422A, 475, 356

Overall Assessment

Moving excess contributions from MERF and allocating them to the teacher fund is a

relatively painless way to make a substantial improvement in the funded status of the teacher fund. It is painless in a pure fiscal sense, in that it requires no new expenditure, and does not modify plans or benefits. While there is no actual reduction to the total contributions going to the two funds involved, there is a reduction in the contribution deficiency for MPLS-TRA, and that implies long-run reductions in costs.

Option #4 - Option #3 PLUS Taxable G.O. Bond Financing of Unfunded Liabilities for MERF, MPLS-TRA, St. Paul-TRA

Assumptions

Same as above, plus the following:

- o The City and the School District each sell \$100,000,000 in taxable G.O. bonds, term of 15 years. The bond proceeds are transferred to the retirement funds, and increase the assets of the funds by the same amount.
- o The rate of return on bond proceed assets is 9.5%
- o The interest on the bonds is 7.5% (Hence a 2% spread between cost and return)
- o Excess assets that accumulate in the MERF Fund (amortization costs diminish as we approach 2020), are assumed to transfer to the MPLS-TRA on July 1, 2020. This is, in effect, an additional "balloon payment" to the MPLS-TRA fund that is included as a receivable among the total assets of the fund.
- o The interest assumption for the MERF active fund is increased from 6.0% to 7.0%.
- o A floating cap on amortization payments equal to 70% of total amortization payments required after reduction by 2.5% of payroll and \$3.9 million.

Administration

- o Plan and fund administration is combined as in Option #3
- o Savings in ongoing operating costs are 5% over Option #1
- o Debt service payments for the bonds are assumed by the employer jurisdictions.

Benefit Impacts

- o No change in plan benefits for either MERF or MPLS-TRA.

Funding/Investment of Assets

- o Required contributions to the MERF and MPLS-TRA funds are reduced by the bond sale, by a greater amount than the increased total cost to the employer due to the debt service requirement of about \$8,000,000 for each.
- o However, contribution, or total support levels for the combined funds are "locked-in," as for scenario #3. The effect is a reallocation of the excess MERF contribution to MPLS-TRA.
- o Bonding capacity of the jurisdictions in question is a key consideration, as are the combined costs of pension contributions and debt service.

Estimating Savings

- o The estimated first-year "savings" due to this proposal are significant, and have the effect of reducing the current MPLS-TRA contribution deficiency from -6.80% to -2.23%, and improving the funded ratio from 57% in FY-1993 to 75% by 2020.

- o The amount expected to be "saved" in the first year is \$11.4 million. This represents the reduction to the actuarial required contributions. Rather than call it savings, perhaps it should be called *reduced indebtedness*, since funds are not, in any budgetary sense, freed up for spending on other activities. It should be noted that the saving estimate here is preliminary. First-year savings are based on FY-1994 actuarial data, though bonds could not be sold at least until 1995.

Statutory Changes

- o Will require statutory changes. Uncertain at this writing exactly what the scope of statutory change would be. Plan assumption changes and bond-related changes are being researched by the respective funds.
- o Affected statutes are M.S. 422A, 475, 356

Overall Assessment

This idea is not original to the Advisory Group, and it is not untested. Several jurisdictions in other places in the country have sold bonds (one city in excess of \$400 million) to finance the unfunded liabilities of their plans in recent months. Unusually low interest rates have created a rare opportunity to take advantage of this kind of spread between rates on taxable bonds and returns in equity markets. Interest rates are climbing upward, however, and most economists feel that they troughed within the last six months. The window of opportunity on this option appears to be quite narrow. If the Legislature wishes to authorize such a sale, action would have to take place in the 1994 Session.

This option offers a rather painless way to leverage down the unfunded liabilities of the MERF and MPLS-TRA funds, and offers an opportunity to help correct funding problems without changing the administration or configuration of plans or funds in the state.

Issues that require resolution include:

- o Is the assumed rate of returns on the bonds realistic in an environment where most funds are revising downward, not increasing their interest assumptions.
- o How does the "balloon" of excess assets in the MERF Fund translate into positive actuarial impacts in the MPLS-TRA Fund? In addition, how are excess assets *intended* for transfers to MPLS-TRA *assured* to go there 15 years hence.
- o Is it possible to factor the funding status and required contribution rate improvements into fund valuations without statutory changes to plan assumptions? The funding improvements shown to date indicate significant positive impacts, but are not official valuations against which the Legislature assesses contribution rate adequacy.

Option #5 - Option #4 PLUS change post-retirement adjustment procedure to greater of current or SBI approach

Assumptions

- o MERF employer and state contributions are locked-in at \$32 million/yr. with the excess of \$32 million over required contributions transferred each year through 2020 to help lower the unfunded liabilities of other first class city funds
- o MTRFA, MERF, and/or STPRFA receive additional assets from a \$100 million or more G.O. bond sale
- o Election is made regarding post-retirement procedure to use
- o New base pension is established for MTRFA, SPTRFA, and DTRFA if SBI approach is elected

Benefit Impacts

- o First class city benefits remain the same with the exception of the new post-retirement adjustment

Funding/Investment of Assets

- o Increased cost for higher post-retirement adjustment (See Appendix - M&R Analysis)
- o Reduction in MTRFA and SPTRFA contribution deficiencies due to additional funding
- o Employer and state contributions do not decrease

Estimating Savings

- o Lock-in provides no immediate savings but provides potential future savings
- o MTRFA and SPTRFA funding deficiencies are further decreased by bond assets
- o Savings due to SBI management of post-fund assets

Statutory Changes

- o Authority to shift excess contributions from MERF to other funds
- o Bonding authority?
- o New post-retirement adjustment
- o Pro-rata clause in 354A repealed

Overall Assessment

- o Provides funding needed by MTRFA and SPTRFA
- o SBI post fund must be 100% funded, which would drain active funds
- o Active members would subsidize post-retirement increase of retirees
- o Normal cost for actives will increase since actuary will assume 5% post-retirement earnings
- o New base retirement must be created for current retirees or they will be adversely affected.

Option #6 - Current law benefits, same boards/directors. Create a Teachers' Pension Management Services Agency, including MPLS-TRA, St. Paul-TRA, Duluth-TRA, State-TRA.

Assumptions

Functions remaining with the individual funds include:

- o Investments-portfolio management
- o Investment accounting
- o General ledgers, accounting/finance
- o audits
- o member files
- o counseling and benefit calculations
- o annual financial reports
- o legal services

Services provided by service agency

- o data processing
- o individual account records management
- o benefit payments to members
- o actuarial services
- o annual statements to members
- o employer unit payroll reporting

Assumptions based qualitatively on professional judgment only

Administration

Feasibility

TRA would logically become the service agency. Investments remain with individual funds since they are largely driven by the post retirement increases unique to each fund

This option has some practical and administrative difficulties. Many of them center around governing control over the service bureau. Decisions by the service bureau will impact functions managed by the First Class City Funds. Service quality may be negatively impacted because delivery of services is fragmented between two administrative structures

Member Services

Individual funds would do counseling and benefit calculations, while the service agency would coordinate specific account questions, benefit payments and annual statements. The employer unit would work with service the agency and would conform to the service

agency's reporting requirements

Reporting and records management Assuming these processes are currently PC driven, shifting these responsibilities to the service agency could be accomplished. These processes would be separate and distinct functions of the service agency. To incorporate the reporting and records management into TRA's computer system would be a major systems development effort (2 year minimum) with considerable start-up costs. Total administrative costs of the three First Class City Funds is less than \$2 million annually. Any cost savings would take at least several years to materialize. Hard dollar figures are difficult to estimate as computer compatibility among the systems has not been studied.

Cost Savings

This option offers little in the way of cost savings, especially in the short-term. Responsibilities left with the individual funds would require the retention of most of their entire current staff complement. State TRA would need to add systems staff and/or hire outside consultants to develop the necessary system modifications. Additional accounting staff will also likely be necessary. The initial learning curve for State TRA staff to administer First Class City rules and administrative practices would be extreme.

Benefit Impacts

No changes

Funding

No change from current problems

Net Savings

(See M & R projections dated 2-2-94 - Appendix)

Statutory Changes Required

Uniformity in payroll reporting requirements and administrative policies would have to be followed. Incompatibility of service credit definitions would need to be addressed (Minneapolis on calendar year basis with 125 day standard while State TRA on fiscal year basis with 170 day standard)

Overall Assessment

Only modest cost savings will result and only in the long-term from the shared actuarial, data processing, and other shared administrative functions. Individual funds retain autonomy without responsibility for the collection, recording, and distribution of member contributions and other data. Considerable difficulty could ensue when sharing data among funds and the service agency due to current hardware/software differences.

Lines of accountability and responsibility are blurred. Some of the functions overlap at times. Who has final authority in the event of disputes? (Example: What power would First

Class City Boards have over the policies and practices of the service agency?) Potentially significant start-up costs exist for school districts to re-program historical membership data.

Option #7 - Option #6 PLUS Change Post-Retirement adjustment procedure for First Class TRA's to SBI approach / employer jurisdictions pay the cost

Assumptions

Functions remaining with the individual funds

- o counseling and benefit calculations
- o member files
- o audits
- o annual financial reports
- o legal services

Services provided by service agency

- o investments administered by SBI
- o accounting/finance (non-investment)
- o data processing/records management
- o actuarial services
- o annual statements to members
- o employer unit payroll reporting
- o benefit payments

Administration

Feasibility issues are several, and significant. TRA would become the service agency with SBI administering the investment of the assets. This option has some practical and administrative difficulties many of which center around governing control over the service bureau. Decisions by the service bureau will impact functions managed by the First Class City Funds. Service quality is likely to be negatively impacted because delivery of services is fragmented between two administrative structures

Member Services

- o Individual funds would do counseling and benefit calculations
- o Service agency would coordinate specific account questions, benefit payments and annual statements
- o Employer unit to work with service agency and conform to the service agency's reporting requirements

Reporting and Records Management

- o Assuming these processes are currently PC driven, shifting these responsibilities to the service agency could be accomplished
- o These processes would be separate and distinct functions of the service agency
- o To incorporate the reporting and records management into TRA's computer system would be a major systems development effort (2 year minimum) with considerable start-up costs. Total administrative costs of the three First Class City

Funds is less than \$2 million annually. Any cost savings would take at least several years to materialize. Hard dollar figures are difficult to estimate as computer compatibility among the systems has not been studied.

Cost Savings

- o This option offers little in the way of cost savings, especially short-term
- o Responsibilities left with the individual funds would require the retention of almost their entire current staff complement
- o State TRA would need to add systems staff and/or hire outside consultants to develop the necessary system modifications. Additional accounting staff will also be necessary. Extreme initial learning curve for State TRA staff to administer First Class City rules and administrative practices.
- o Investment implementation and transition costs for securities trades would depend on the degree of compatibility among the various investment portfolios

Benefit Impacts

- o New base pension level of benefits transferred at 5% to MPRIF (total annual benefits received)
- o Post-retirement adjustments same as TRA (no election contemplated)
- o This option carries significant actuarial cost implications

Funding/Assets

- o Significant adverse impact on funded status for First Class City Funds; to be determined by LCPR actuary (See Appendix)
- o Substantial increase in both normal cost and amortization contribution requirements
- o Investment management control transferred to SBI; some economies of scale in these investment-related costs
- o May be transaction and liquidation costs, along with other commissions and fees to liquidate non-conforming assets

Net Savings

- o LCPR will determine actuarial effect and cost (See Appendix)
- o Effect on administrative costs are modest and only result in the long-term from the shared actuarial, data processing, and other shared administrative functions
- o Some cost savings in investment management fees likely

Statutory Changes

- o Will need post-fund formula and concept in statute for First Class City Members
- o Could be a benefit take-away for some retirees and older active members due to 13th check calculation rewarding longevity
- o Conflict with 354A.09, 356.615, and 356.001, subd.3

Overall Assessment

- o Negative impact on funded status and contribution rates of active First Class City members
- o Significant financial burden on employer unit and local taxpayers
- o Responsibility of individual First Class City Boards reduced to administrative oversight
- o Most, but not all, retirees will be pleased
- o Savings likely on investment related costs
- o Only minimal administrative cost savings from service bureau concept
- o Potential for significant start-up costs for school districts to reprogram historical membership data.
- o Potential for litigation from active members

This Option is similar to the MERF experience of 1969 when SBI took control of MERF assets. To fully fund retiree benefits, MERF had to transfer substantial amounts of assets to SBI which nearly depleted remaining assets relating to active members. Such a transfer for Minneapolis TRA would nearly exhaust all assets, leaving no money for their actives. Local bonding authority would be necessary for Minneapolis TRA to make future Post Fund transfers. Similar bonding would be necessary for the St. Paul fund probably within 5 years.

Option #8 - Current law benefits and administration. Close MPLS-TRA, St. Paul-TRA and Duluth-TRA. Redirect all future hires to State-TRA.

Assumptions

Functions remaining with individual funds:

- o Investments - portfolio management
- o Investment accounting
- o General Ledgers
- o Audits and Actuarial Services
- o Member files
- o Counseling and benefit calculations
- o Separate entities -separate annual reports
- o Legal services

Administration

- o State TRA costs gradually increase as membership base expands
- o First Class City school districts will need to adapt to TRA reporting standards and report to two retirement systems
- o First Class City administrations retain separate legal and reporting entity status
- o Variable costs of the First Class Funds will decline as active membership base contracts
- o Fixed costs of the First Class Funds remain

Benefit Impacts

- o All new first class city hires will have TRA coordinated benefits.
- o Existing first class city retirees and future retirees will retain 13th check; amount of 13th check will likely fall due to declining asset base unless some other infusion of assets occurs.

Funding

- o Employer additional for First Class City Funds will increase due to declining covered payroll
- o State TRA Employer Additional rate may decrease with expanding new membership base

Net Savings

- o (See Appendix - M&R projections dated 2-2-94)

Statutory

- o Possible change in composition of TRA Board
- o Full funding of First Class City Plans by 2020 target date will require additional employer and/or state contributions

Overall Assessment

Minor administrative cost savings occur as decline of First Class City Funds administrative costs will be mostly offset by increasing state TRA costs. Potentially large employer/state contribution increases may be required to meet full funding objectives by 2020. Retirees and older members in First Class City will be concerned over likelihood of reduced 13th checks.

First Class City school districts will have a one-time start-up cost in redesigning processes to conform with TRA reporting requirements and will need to deal with reporting employees to two separate retirement systems on a on-going basis.

Remaining active First Class City members may be apprehensive over concerns of funding and whether promised benefits will be available when they retire. Consolidation takes the longest amount of time to accomplish under this scenario.

Option #9 - Option #8 PLUS Redirect all non-vested members of First Class TRA's to State-TRA.

Assumptions

Functions remaining with individual funds:

- o Investments - portfolio management
- o Investment accounting
- o General Ledgers
- o Audits and Actuarial Services
- o Member files
- o Counseling and benefit calculations
- o Separate entities -separate annual reports
- o Legal services

Administration

- o State TRA costs increase more rapidly than under option 8 as membership base immediately increases with the one-time transfer on non-vested members and on-going new hires
- o First Class City school districts will need to adapt to TRA reporting standards and report to two retirement systems
- o First Class City administrations retain separate legal and reporting entity status
- o Variable costs of the First Class Funds will decline as active membership falls more rapidly than under option 8
- o Fixed costs of the First Class Funds remain

Benefit Impacts

- o All new first class city hires and non-vested members will have TRA coordinated benefits upon vesting
- o Existing First Class city retirees and future retirees will retain 13th check; amount of 13th check will fall more precipitously than under option 8 due to further erosion of active membership base
- o Option involves transfer of assets from the First Class City Funds to State TRA. Calculation of liability for each member transferred may not be mutually agreeable. Transfer amount will impact remaining assets of the First Class City Funds, thereby affecting remaining unfunded liability and asset base on which 13th check is calculated

Funding

- o Employer additional for First Class City Funds will increase more rapidly than under option 8 due to smaller amount of covered payroll. Will leave the employer and/or state to fund a larger deficit by 2020
- o State TRA Employer Additional will decrease more than under option 8 due to larger influx of new members
- o Transfer of assets from First Class City Funds to State TRA will decrease asset base. This will impact 13th check calculation, other post-retirement adjustments and possibly investment strategy.
- o Multiple methods of actuarial calculations of the liability to the TRA Fund associated with non-vested members.
- o To fund a transfer, First Class City Funds may have to liquidate assets at inopportune times to meet SBI requirements of types of assets transferrable.

Net Savings

- o (See Appendix - M&R projections dated 2-2-94)

Statutory Changes

- o Pro-rata clause in 354A.09 and 356.001, subd. 3 protects fund members from losing their pro-rata share of fund assets
- o Possible representation on TRA Board/SBI Investment Advisory Council
- o May violate 356.615

Overall Assessment

Minor administrative cost savings occur as the decline of First Class City Funds administrative costs will be mostly offset by increasing state TRA costs. SBI economies of scale are not utilized because TRA does not have investment control; First Class City investment management fees are spread over a smaller group of active members. The potential exists for large employer/state contributions to meet full funding objectives by 2020. Retirees and older members in First Class City will be concerned over likelihood of reduced 13th checks and other post-retirement adjustments. First Class City school districts will have a one-time start-up cost in redesigning processes to conform with TRA reporting requirements and will need to deal with reporting employees to two separate retirement systems on a on-going basis.

Active First Class City members will be apprehensive over concerns of funding and whether promised benefits will be available when they retire. Calculation of liability and transfer of assets could be performed using different actuarial assumptions with separate pro/con arguments relating to each. A significant unresolved issue is whether transfers of assets for non-vested members are to be done at the funding level of TRA, first class city plan, or fully funded level? Either way, there are adverse impacts. There is genuine potential for litigation by active members, and the consolidation process would be quite lengthy.

Option #10 -Current law benefits and administration for BASIC members only. Consolidate COORDINATED plans into one within State-TRA.

Assumptions

Functions remaining with individual funds:

- o Investments- portfolio management
- o Investment accounting
- o General Ledgers
- o Audits and Actuarial Services
- o Member files
- o Counseling and benefit calculations
- o Separate entities -separate annual reports
- o Legal services

Administration

- o State TRA costs increase more rapidly than under option 9 as membership base immediately increases with the one-time transfer on non-vested members, coordinated members and on-going new hires
- o First Class City school districts will need to adapt to TRA reporting standards and report to two retirement systems
- o First Class City administrations retain separate legal and reporting entity status
- o Variable costs of the First Class Funds will decline as active membership falls more rapidly than under option 9
- o Fixed costs of the First Class Funds remain
- o Some differences exist among State TRA Coordinated benefits and First Class City Coordinated benefits:
 - (a) disability
 - (b) St. Paul: Joint & Survivor benefits
 - (c) Duluth- different tiers of coordinated members

Benefit Impacts

- o All new first class city hires and non-vested members will have TRA coordinated benefits upon vesting. Some current First Class City coordinated members may lose some benefit provisions by transferring to State TRA. TRA will experience difficulty administering different coordinated plans.
- o Existing First Class city retirees and future retirees will retain 13th check; amount of 13th check will fall more precipitously than under option 9 due to greater erosion of active membership base
- o Option involves transfer of assets from the First Class City Funds to State TRA. Calculation of liability for each member transferred may not be mutually agreeable. Transfer amount will impact remaining assets of the First Class City Funds thereby affecting remaining unfunded liability and asset base on which 13th check is calculated

Funding

- o Employer additional for First Class City Funds will increase more rapidly than under option 9 due to smaller amount of covered payroll. Will leave the employer and/or state to fund a larger deficit by 2020
- o State TRA Employer Additional will decrease more than under option 9 due to larger influx of new members
- o Transfer of assets from First Class City Funds to State TRA will decrease asset base. This will impact 13th check calculation, other post-retirement adjustments and possibly investment strategy.
- o Multiple methods of actuarial calculations the liability to the TRA Fund associated with non-vested members.
- o To fund a transfer, First Class City Funds may have to liquidate assets at inopportune times to meet SBI requirements of types of assets transferrable.

Net Savings

(See Appendix - M & R projections dated 2-2-94)

Statutory Changes

- o Pro-rata clause in 354A.09 and 356 protects fund members from losing their pro-rata share of fund assets
- o Possible representation on TRA Board/SBI Investment Advisory Council
- o May violate 356.615

Overall Assessment

- o Minor administrative cost savings as decline of First Class City Funds administrative costs will be mostly offset by increasing state TRA costs. SBI economies of scale are not utilized because TRA does not have investment control; First Class City investment management fees are spread over a smaller group of active members
- o Potential large employer/state contributions to meet full funding objectives by 2020
- o Retirees and older members in First Class City will be concerned over likelihood of reduced 13th checks and other post-retirement increases
- o First Class City school districts will have a one-time start-up cost in redesigning processes to conform with TRA reporting requirements and will need to deal with reporting employees to two separate retirement systems on an on-going basis.
- o Active First Class City members will be apprehensive over concerns of funding and whether promised benefits will be available when they retire
- o Calculation of liability and transfer of assets could be performed using different actuarial assumptions with separate pro/con arguments relating to each.
- o Transfer of assets to be done at the funding level of TRA, first class city plan, or fully funded?
- o Potential for litigation by active members
- o Lengthy consolidation process

Option #11 - Current law benefits. Consolidate administration into State-TRA. Eliminate current First Class boards/directors. Close First Class TRA plans to future hires.

Assumptions:

Functions remaining with first class city funds - none

Functions with statewide agency

- o Immediate transfer of all administrative functions to TRA
- o Immediate transfer of Investments to SBI as a separate sub account
- o Separate benefit structure for first class city plans active and retired
- o 13th check and other post retirement adjustments continue

Administration

Feasibility

- o TRA would administer first class city funds as a separate pension fund
- o SBI would invest first class city fund assets

Member Services

- o Member counseling in schools and other local services may be reduced
- o Benefit information packets are prepared by TRA

Reporting and Record Management

- o Data records be reformatted to conform to TRA standards
- o Separate accounting and record keeping and audit
- o Separate actuarial reports

Cost Savings

- o TRA costs increase as first class city plans cease
- o Terminating leases and contracts may be expensive
- o Additional space will be needed by TRA for additional staff

Benefit Impacts

- o New first class city employees join TRA
- o Current first class city retirement benefits remain intact for both basic and coordinated

Funding/Assets

- o Normal contributions remain constant
- o Employer additional will increase due to declining active member contributions to fund future promised benefits
- o Investments may of necessity be targeted to address anticipated cash flow problems
- o Investment management by SBI must be concerned with meeting "TRIGGER" for payment of 13th check
- o Assets must be segregated by SBI to determine amount available for 13th check
- o Assets rejected by SBI must be transferred to local employer

Net Savings

- o Minor administrative cost savings
- o Major start up costs in redesigning EDP formats and historical information to conform to TRA data base
- o Potential large employer/state supplemental contribution increase
- o Increased TRA staff that will offset reduction in First class city staffs
- o Investment of assets must be separate from current SBI funds causing increased SBI expenses
- o Creating a 3rd classification of teachers and benefits in first class city schools (PERA, TRA, First Class City Fund) will increase costs by approximately \$10,000 per school district per year
- o Special member administrative assessment will be removed

Statutory Changes

- o Seats on TRA Board
- o Pro-rata distribution clause of 354A repealed
- o Full funding by 2020 target data be met by requiring additional employer/state contribution
- o Seats on SBI Investment Advisory Committee
- o Statutory guarantee of current level of member benefits at a minimum
- o Statutory mandated administrative charge to be removed
- o Employee and employer referendum to approve consolidation established

Overall Assessment

- o Retirees (older) will be apprehensive over lower assets and lower post retirement increases
- o Active members will be apprehensive over insufficient assets for their future benefits unless an increased employer/state additional contribution accompanies closing the first class city
- o Satellite offices in Minneapolis and Duluth will be requested increasing administrative expenses

Option #12 - Option #11 PLUS allow active First Class TRA members to elect current or State-TRA benefits

Assumption

Functions remaining with first class city funds - none

Functions with statewide agency

- o Immediate transfer of all administrative functions to TRA
- o Separate benefit structure for first class city plans active members who choose first class city plan and all current retirees
- o 13th check and other post retirement adjustments continue for current retirees

Administration

- o TRA would administer first class city funds as separate pension funds
- o SBI would invest first class city fund assets

Member Services

- o Member counseling in schools and other local services may be reduced
- o Benefit information packets are prepared by TRA

Reporting and Record Management

- o Data records be reformatted to conform to TRA standards
- o Terminating leases and contracts may be expensive
- o Additional space will be needed by TRA for additional staff

Benefit Impacts

- o New first class city employees must join TRA and existing active members may choose to join TRA
- o Current first class city retirement benefits remain intact for both basic and coordinated members who stay in local plan
- o 13th check or post retirement adjustments will be diminished due to declining assets

Funding/Assets

- o Normal contributions remain constant
- o Employer additional will increase due to declining active member contributions to fund future promised benefits
- o Investments may of necessity be targeted to address anticipated cash flow problems
- o Investment management by SBI must be concerned with meeting "TRIGGER" for payment of 13th check
- o Assets must be segregated by SBI to determine amount available for 13th Check
- o Assets rejected by SBI must be transferred to local employer
- o Employer additional cost increases as post assumption goes from 8.5% to 5.0%.

Net Savings

- o Minor administrative cost savings
- o Major start up costs in redesigning EDP formats and historical information to conform to TRA data base
- o Potential large employer/state supplemental contribution increase
- o Increased TRA staff that will offset reduction in First class city staffs
- o Investment of assets must be separate from current SBI funds causing increased SBI expenses
- o Creating a 3rd classification of teachers and benefits in first class city schools (PERA, TRA, First Class City Fund) will increase costs by approximately \$10,000 per school district per year
- o Special member administrative assessment will be removed

Statutory Changes

- o Seat on TRA Board from each former first class city fund
- o Pro-Rata distribution clause of 354A repealed
- o Full funding by 2020 target date be met by requiring additional employer/state contribution
- o Seats on SBI Investment Advisory Committee
- o Statutory guarantee of current level of member benefits at a minimum
- o Statutory mandated administrative charge to be removed
- o Statutory provisions for member election to TRA or current plan
- o Employee and employer referendum to approve consolidation

Overall Assessment

- o Retirees (older) will be apprehensive over lower assets and lower post retirement increases
- o Active members will be apprehensive over insufficient assets for their future benefits unless an increased employer/state additional contribution accompanies closing the first class city funds
- o Satellite offices in Minneapolis and Duluth will be requested increasing administrative expenses
- o Transfer of assets to TRA for those who elect TRA at what funding ratio (first class city plan or TRA must be decided
- o Members may request more than one chance to elect local or TRA benefit plan (PERA consolidation accounts allow 3)
- o Members may request a statutory guarantee of current level of benefits
- o No consolidation unless local approval by both member referendum and employer agreement
- o Potential for litigation

Option #13 - Option #12 PLUS First Class City retirees choose current or State-TRA Post-Retirement increase process for all future increases.

Assumptions

Functions remaining with first class city funds - none

Functions with state wide agency

- o Immediate transfer of all administrative functions to TRA
- o Immediate transfer of Investments to SBI as a separate sub account
- o Separate benefit structure for first class city plans active who choose first class city plan and all retired
- o Immediate transfer of retiree required assets to SBI at 100% funding for those choosing SBI and active member assets to SBI at TRA funding ratio
- o 13th check and other post retirement adjustments continue for those who choose local plan

Funding/Assets

- o Normal contributions remain constant
- o Employer additional will increase due to declining active contribution to fund future promised benefits
- o Investments may of necessity be targeted to address anticipated cash flow problems
- o Investment management by SBI must be concerned with meeting "TRIGGER" for payment of local post retirement adjustment for those retirees who choose to remain with local benefit structure

Net Savings

- o Minor administrative cost savings
- o Major start up costs in redesigning EDP formats and historical information to conform to TRA data base
- o Potential large employer/state supplemental contribution increase
- o Increased TRA staff that will offset reduction in First class city staffs
- o Investment of assets must be separate from current SBI funds causing increased SBI expenses
- o Creating a 3rd classification of teachers and benefits in first class city schools (PERA, TRA, First Class City Fund) will increase costs by approximately \$10,000 per school district per year
- o Special member administrative assessment will be removed
- o Assets must be segregated by SBI to determine amount available for post retirement increase (13th check)
- o Assets rejected by SBI must be transferred to local employer
- o Employer additional cost increases as post retirement interest assumption decreases from 8.5% to 5.0%

Statutory Changes

- o Seat on TRA Board from each former first class city fund
- o Pro-Rata distribution clause of 354A repealed
- o Full funding by 2020 target date be met by requiring additional employer/state contribution
- o Seats on SBI Investment Advisory Committee
- o Statutory guarantee of current level of member benefits at a minimum
- o Statutory mandated administrative charge to be removed
- o Statutory provisions for member election to TRA or current plan
- o Employee and employer referendum to approve consolidation

Overall Assessment

- o Assets of those who elect SBI must be transferred at 5% earnings assumption
- o Post Fund must be 100% funded, therefore, transfer of assets to post fund remove a higher proportion of assets more than the pro-rata distribution allows
- o Active members choosing TRA benefit structure may have insufficient assets to fully transfer assets under pro-rata distribution
- o Remaining members may refuse to subsidize transferring retirees and instigate litigation
- o ISD #625 on hook to supplement shortages after transfer
- o Normal costs for actives will increase as actuary will assume 5% post earnings even though some may not want the SBI post fund
- o Difficulty of advising retirees on selection options and gains and losses potential
- o New base retirement must be created for retirees or longer term retirees will be adversely affected
- o Retirees who chose to annuitize 13th check will be adversely affected
- o Insufficient assets to accomplish transfers to SBI Post Fund or TRA active plan cannot be appropriated from TRA plan under MS 356.615 without potential litigation

Option #14 - Total Consolidation. *All active and retired members transfer to State-TRA administration. New plan benefits include greater of each among the merged plans.*

Assumption

- o New base pension will be established for MTRFA, SPTRFA, DTRFA, and TRA retirees
- o All retiree reserves and transfers calculated using 5% interest assumption
- o All active members will pay normal basic or coordinated contribution rates
- o Employer supplemental contribution rate would increase due to impact on new plan of additional liabilities, higher benefits
- o All active members will obtain the best features available in any of the plans at time of consolidation, (i.e. best early retirement feature, best disability coverage, etc.)

Administration

- o TRA would logically become the successor fund
- o SBI would manage all combined assets collectively
- o TRA provides all counseling services including satellite office in Duluth, etc.
- o TRA supplies all benefit calculations, payments and statements
- o All member records would be transferred to TRA
- o Employer units would work with TRA and conform to their reporting requirements
- o Potential costs to terminate contracts, lease arrangements, etc.
- o TRA estimates at least a 2 yr. transition period at considerable expense for transfer of member records
- o TRA would need to add systems staff and/or hire outside consultants to develop the necessary systems changes as well as add additional accounting positions

Benefit Impacts

- o Successor plan comprised of best features, best formulas in all former plans
- o Increased cost of higher benefits to be determined by M & R

Funding and Investment of Assets

- o Employee contributions determined based on new plan normal cost
- o Employer/State normal contributions remain constant
- o Funding ratio would drop due to transfer of assets to MPRIF for all current retirees
- o Investment management may become more efficient as assets are combined into

SBI managed accounts

- o May be transaction costs, liquidation costs, commissions and fees to liquidate non-conforming assets or real estate

Statutory Changes Required

- o Eliminate Chapters 354A, 354
- o Create new Chapter 354C

Overall Assessment

- o Would provide for uniform pension benefits and options
- o Potential for legal challenges is minimal
- o Regional offices could be established to serve members outside the metro area. Those offices could be established as teacher retirement fund satellite offices, or as regional member service centers for all statewide retirement systems.
- o Costs would be very high to implement. Timelines to full implementation could take years.

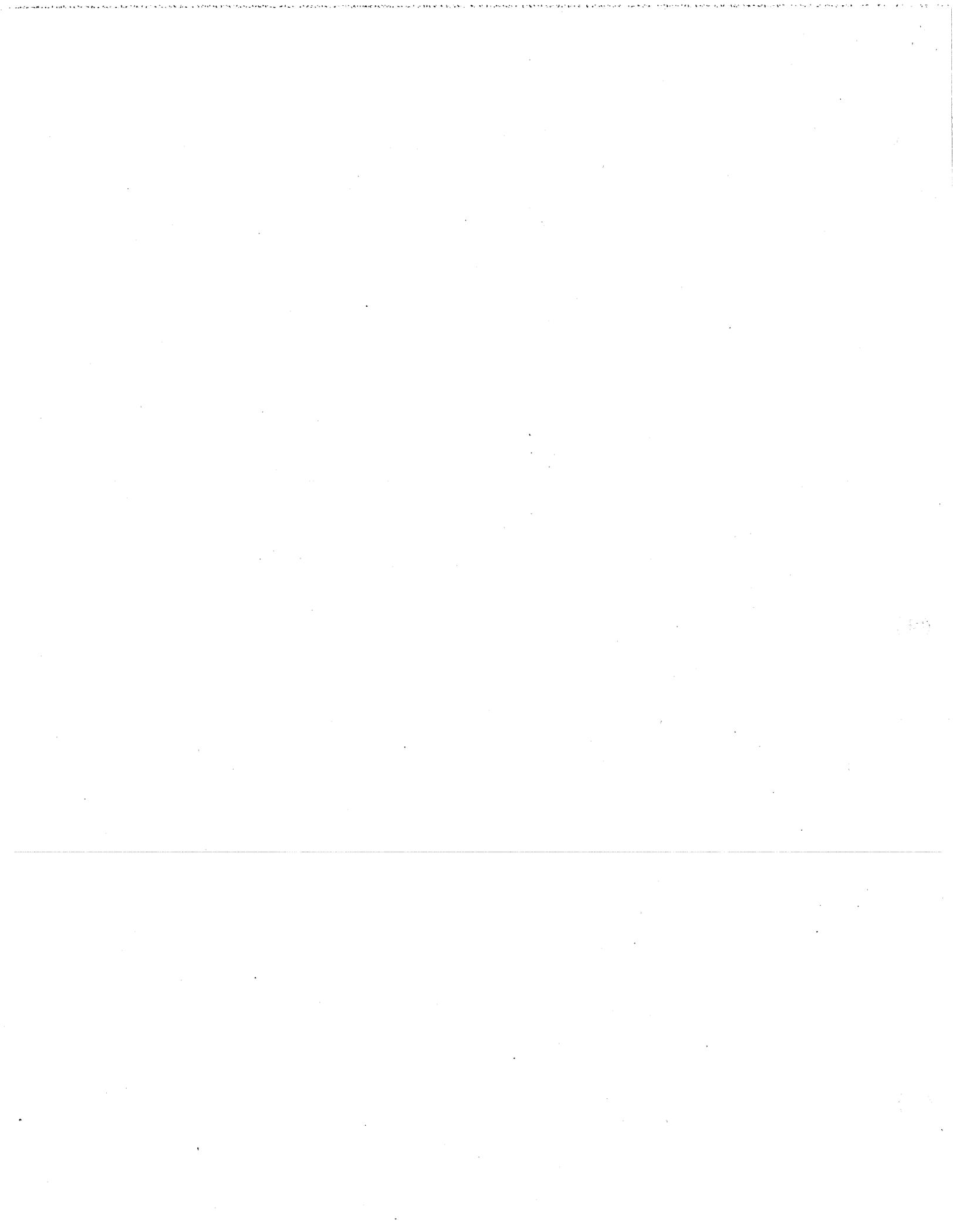
This is the "safest" option from a litigation standpoint. It would represent the best of all worlds for current members of all funds and no one could allege a reduction in promised benefits. Though we do not have actuarial projections on this option, it clearly would be more costly than Options #13, which has a first-year effect on required contributions beyond current law deficiencies of \$65 million (total teacher fund deficiencies of approximately \$81 million).

Appendix

Exhibits:

- A-1 Memo - Lawrence Martin to Ron Hackett - Appointment of Technical Advisory Group (Aug. 23, 1993)
- A-2 Memo - Lawrence Martin, Exec. Dir., LCPR, to the Commission (Aug. 16, 1993)
- A-3 Actuarial Analyses on Consolidation Options for First Class City Retirement Funds - Thomas Custis, Milliman & Robertson, Inc. (Feb. 1, 1994)
- A-4 Consolidation Study 1994. Tables converting Milliman & Robertson actuarial analyses on various options into dollar costs. P. Kapler, MN Dept. of Finance (March 3, 1994)
- A-5 Analyses on G.O. Bonding Option for MERF - Dan Peterson, Gabriel, Roeder, Smith & Co., to James Hacking (Jan. 4, 1994)
- A-6 Analyses on G.O. Bonding Options for MPLS-TRA - Mark Meyer, William Mercer, Inc., (Feb. 17, 1994)

**A-1 Memo - Lawrence Martin to Ron Hackett -
Appointment of Technical Advisory Group
(Aug. 23, 1993)**





HOUSE

Mindy Greiling
Bob Johnson, Vice Chair
Phyllis Kahn, Secretary
Gerald Knickerbocker
Leo Reding

SENATE

Steven Morse
Lawrence Pogemiller
Phil Riveness, Chair
Leroy Stumpf
Roy Terwilliger

August 23, 1993

55 State Office Building
St. Paul, Minnesota 55155-1201
Telephone (612) 296-2750
FAX (612) 296-1321
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Lawrence A. Martin, Exec. Dir.
Edward Burek, Deputy Dir.
Jean A. Liebgott, Adm. Sec.

Mr. Ron Hackett
Executive Budget Officer Team Leader
Education and Taxes
Budget Services Division
Department of Finance
Fourth Floor, Centennial Office Building
St. Paul, MN 55155

Re: Service on Technical Advisory Group

Dear Mr. Hackett:

On behalf of the Legislative Commission on Pensions and Retirement, this communication is to express the pleasure of the Commission members that you will be serving as the representative of the Department of Finance on the technical advisory group for the Commission's First Class City Teacher Retirement Fund Association Phase-Out-Consolidation Options Study mandated by Laws 1993, Chapter 357, Section 9.

Senator Phil Riveness, Chair of the Commission, is requesting that you serve as chair of the technical advisory group. Senator Riveness requested that the technical advisory group meet at least twice before December, 1993, when the Commission again intends to resume its work on the mandated study. He requested that the technical advisory group augment the background information summarized in the August 16, 1993, Commission staff memorandum on the topic (copy attached) and provide reactions and additional policy analysis of the consolidation or phase-out options also outlined in that memorandum, as well as a continuation of the status quo situation or a continuation of the status quo situation with additional state government oversight. Senator Riveness directed the Commission staff to support the work of the technical advisory group.

As of the date of this letter, four of the fourteen members of the technical advisory group remain to be appointed. Attached is a list of technical advisory group membership as it is currently known, for your information.

I will keep you informed as the remaining members of the technical advisory group are designated by their respective entities.

The Commission staff will provide staffing services for the technical advisory group, including meeting room arrangements in the State Office Building and duplicating services. Please contact me or my secretary, Jean Liebgott, to arrange the initial meeting of the technical advisory group.

If you have any questions about the function of the technical advisory group, please contact me.

Sincerely,



Lawrence A. Martin
Executive Director

cc: Senator Phil Riveness
Dan Larson

LAM:jl



Laws 1993, Chapter 357, Section 9

Study of First Class City Teacher Retirement Fund Associations Phase-out and Consolidation Options

Designated Membership of Technical Advisory Group For Study

Duluth Teachers Retirement Fund Association Executive Secretary	J. Michael Stoffel
Minneapolis Teachers Retirement Fund Association Executive Director	Karen Kilberg
St. Paul Teachers Retirement Fund Association Executive Secretary	Eugene Waschbusch
Duluth Federation of Teachers Representative	No Appointment as of 8/18/93
Minneapolis Federation of Teachers Representative	Norman Moen
St. Paul Federation of Teachers Representative	No Appointment as of 8/18/93
Independent School District No. 709 Representative	No Appointment as of 8/18/93
Special School District No. 1 Representative	David Lutes
Independent School District No. 625 Representative	No Appointment as of 8/18/93
Teacher Retirement Association Executive Director	Gary Austin
Teachers Retirement Association Member Representative	Vernell Jackels
Department of Finance Representative	Ron Hackett
Commission Staff	Lawrence A. Martin Edward Burek

**Designated Membership of Technical Advisory Group
Study of First Class City Teacher Retirement Fund Associations
Phase-out and Consolidation Options**

J. Michael Stoffel (218) 722-2894
Executive Secretary
Duluth Teachers Retirement Fund Association
22 East 1st Street
Duluth, MN 55802

Karen Kilberg (612) 338-7865
Executive Director
Minneapolis Teachers Retirement Fund Association
815 Peavey Building
730 2nd Avenue South
Minneapolis, MN 55402

Eguene R. Waschbusch (612) 642-2550
Secretary/Treasurer
St. Paul Teachers Retirement Fund Association
1619 Dayton Avenue - Room 309
St. Paul, MN 55104

Norman A. Moen (612) 529-9621
Business Agent
Minneapolis Federation of Teachers
1300 Plymouth Avenue North
Minneapolis, MN 55411

David Lutes (612) 627-2010
Risk Manager
Minneapolis Public Schools
807 Northeast Broadway
Minneapolis, MN 55413-2398

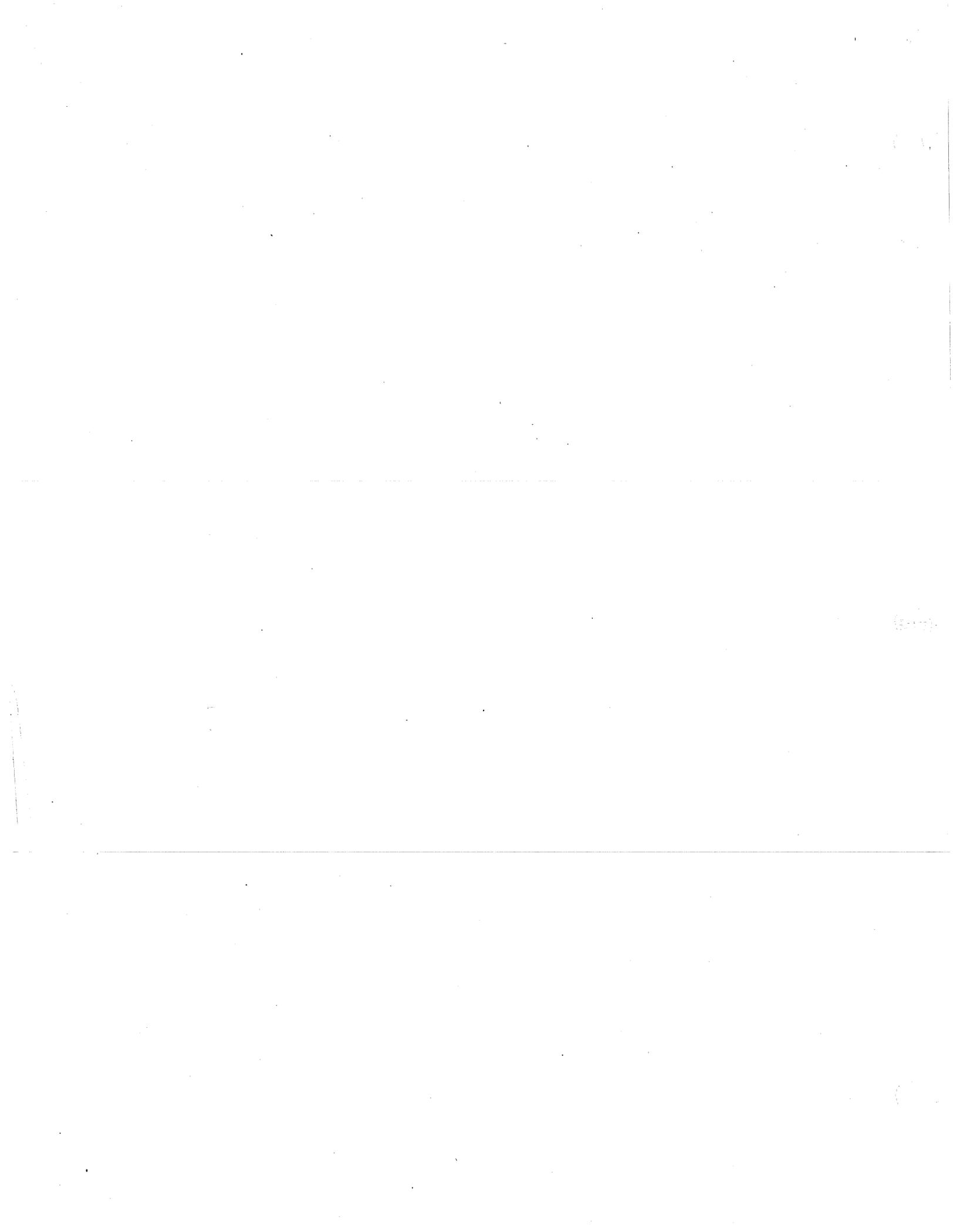
Gary Austin (612) 296-2409
Executive Director
Teachers Retirement Association
17 West Exchange - Suite 500
St. Paul, MN 55102

Vernell Jackels
Board of Trustees
Teachers Retirement Association
763 Glen Lane
Winona, MN 55987

No Appointment as of 8/23/93

Duluth Federation of Teachers Representative
St. Paul Federation of Teachers Representative
Independent School District No. 709 Representative
Independent School District No. 625 Representative

**A-2 Memo - Lawrence Martin, Exec. Dir., LCPR, to
the Commission (Aug. 16, 1993)**





TO: Members of the Legislative Commission on Pensions and Retirement
FROM: Lawrence A. Martin, Executive Director *LAM*
RE: Commission Interim Study - First Class City Teacher Retirement Fund Association
Phase-Out and Consolidation Options: Background on First Class City Teacher
Retirement Funds and Survey of Types of Phase-Outs and Consolidations
DATE: August 16, 1993

Introduction

Laws 1993, Chapter 357, Section 9, requires the Legislative Commission on Pensions and Retirement to study the options available for phasing-out or consolidating the first class city teacher retirement fund associations and sets February 1, 1994, as the due date for the Commission to report its conclusions to the relevant legislative committees. To assist the Commission in this study, the Legislature mandated the establishment of a technical advisory group. The composition of that advisory group is indicated in a separate document accompanying this memorandum.

This memorandum attempts to present general background information on the history, structure and funding of the first class city teacher retirement fund associations, to summarize the funded condition of the three retirement fund associations and the impact of the 1993 funding improvements, and to survey the types of membership phase-outs and plan or fund consolidations that have been used in making other structural changes in Minnesota public pension plan coverage or may have future application.

Background on First Class City Teacher Retirement Funds

A. Creation and Organization

After police officers and firefighters in some of the larger cities in the state, teachers were the first group of public employees in Minnesota to achieve public pension coverage. The establishment of retirement funds for teachers in cities with a population greater than 10,000 (first, second, or third class cities) was authorized by the Legislature in 1909 (Laws 1909, Chapter 343, Section 1). The teacher retirement fund association legislation was implemented in Duluth, Minneapolis, and St. Paul in 1910. A statewide teachers retirement plan, the Teachers Insurance and Retirement Fund, was created by legislative enactment in 1915, and was replaced by the Teachers Retirement Association in 1931. No city other than Duluth, Minneapolis and St. Paul ever implemented the local teachers retirement fund association authorization law. Creation of new teacher retirement fund associations beyond the initial three associations was prohibited in 1969.

Creation of a local teachers retirement fund association required approval by the city council of the respective city. Under the 1909 legislation, the local teacher retirement fund association was a general corporation (now a nonprofit corporation) under Minnesota law and had considerable latitude to frame their own benefit plans, subject to certain specified benefit limits and to an employer funding limit of one-tenth of one mill on the assessed taxable property of the applicable city. The tax levy limit was reset during the period 1917-1921, with the limit applicable to Minneapolis increasing from one-tenth of one mill, to two-tenths of one mill, to 1.5 mills. Since 1921, there have been other changes in the tax levy limits. In 1975, the general teacher retirement fund association tax levy authority was eliminated.

The local teacher retirement fund associations, as Minnesota nonprofit corporations, have articles of incorporation as their primary governing documents which are supplemented by corporate bylaws. Significant changes in the form of amendments to their articles of incorporation require approval at an annual corporate membership meeting. Regular operational governance is conducted by the board of the teachers retirement fund association and the activities of each teacher retirement fund association are handled by an executive secretary or an executive director and a separate administrative staff. For the St. Paul Teachers Retirement Fund Association, the position of executive secretary is combined with the board positions of secretary and treasurer and the SiPTRFA executive secretary is required to be an elected member of the board. For the other two teachers retirement fund associations, the executive secretary or executive director is not required to be a member of the teachers retirement fund association board.

B. Membership and Coverage.

The primary group covered by the three teacher retirement fund associations are the teaching and certificated administrative personnel of the school district. A small number of Independent School District No. 709 (Duluth) teachers are apparently covered by the statewide Teachers Retirement Association (TRA), because they were employees of unorganized districts that consolidated into Independent School District No. 709 (Duluth) in the early or mid-1960's and were permitted to retain their TRA coverage. Other school district administrative personnel in the three school districts who do not require state Department of Education certification are covered by another Minnesota general employee public pension plan, the Public Employees Retirement Association (PERA) for Independent School District No. 625 (St. Paul) and for Independent School District No. 709 (Duluth) and either Minneapolis Employees Retirement Fund (MERF) for pre-July 1, 1979 hirees or PERA for post-June 30, 1979 hirees in the case of Special School District No. 1 (Minneapolis).

The administrative staffs of the teacher retirement fund associations also are included in the membership of the respective retirement fund association.

Membership in the teacher retirement fund associations is mandatory for eligible personnel. The Duluth Teachers Retirement Fund Association additionally has operated a tax sheltered savings plan since 1964, with voluntary participation limited to those DTRFA members who are teachers.

C. Pension Plan and Retirement Benefits

The pension plans for the three first class city teacher retirement fund associations are contained in a combination of general statutes, special laws, articles of incorporation provisions, and corporate bylaw provisions.

Initially the three first class city teacher retirement funds provided a specified annual retirement annuity amount for teachers retiring after meeting the fund's relatively long service vesting requirement (\$333.33 with 20 years of service for DTRFA and MTRFA and \$360.00 with 25 years of service for StPTRFA).

At some point after 1918, the DTRFA shifted from this specified dollar amount retirement annuity plan to a defined contribution plan, usually referred to as a money purchase plan, and continued using the defined contribution plan until 1971, when it converted to a defined benefit plan, utilizing a final average salary (high five) and a percentage benefit accrual factor. Following a referendum of its membership held for that purpose, DTRFA coordinated with Social Security on a total membership basis in 1957, with the appropriate adjustment to its defined contribution plan contribution amounts. In 1981, a second coordinated benefit program paralleling the statewide TRA Coordinated Program benefit plan was added as an alternative for DTRFA members who were employed before July 1, 1981. DTRFA members who were employed after July 1, 1981 have the second coordinated benefit plan, referred to as the New Law Coordinated program, as their sole benefit coverage. The DTRFA New Law Coordinated Program continues to substantially replicate the TRA Coordinated Program.

In 1924, MTRFA reformulated its benefit plan, shifting from the initial specific dollar amount retirement annuity plan to a defined contribution (money purchase) plan. In 1946, the prior MTRFA money purchase plan was replaced by the "\$2 bill and annuity" plan, with a portion of a retiree's ultimate retirement annuity calculated on a defined benefit basis and supported by city contributions (the \$2 bill, or an annuity of \$2 per month per year of service credit) and a portion calculated on a defined contribution (money purchase) basis from the accumulated member contributions and accumulated interest on those contributions. In 1953, a defined benefit or formula plan was established as an alternative to the MTRFA "\$2 bill and annuity" plan. In 1978, MTRFA coordinated with Social Security on a split membership basis, leaving a MTRFA Basic Program for pre-1978 hirees who did not elect Social Security coverage in the MTRFA Social Security referendum and creating a MTRFA Coordinated Program for pre-1978 hirees who elected Social Security coverage in the referendum and for all post-1978 hirees. The MTRFA Coordinated Program substantially replicates the TRA Coordinated program.

The StPTRFA retained its specific dollar amount retirement annuity plan with periodic upgrades until 1955, when it replaced that plan with a redesigned defined benefit plan utilizing a final average salary (high five) and a percentage benefit accrual factor. In 1978, StPTRFA coordinated with Social Security on a split membership basis, leaving the StPTRFA Basic Program for pre-1978 hirees who did not elect Social Security coverage in the StPTRFA Social Security referendum and creating a StPTRFA Coordinated Program for pre-1978 hirees who elected Social Security coverage in the referendum and for all post-1978 hirees. The StPTRFA Coordinated Program substantially replicates the TRA Coordinated Program.

D. Funding and Contributions

The three local teacher retirement fund associations have not been required by law to be funded on an actuarial basis and initial contribution requirements were set without reference to actuarial results. Until 1975, the various local teacher retirement fund associations were delegated the authority to establish their own benefit plans and levels, subject only to city council approval before the creation of school districts separate from the city and then subject only to both city council and school board approval after the creation of separate school districts. Also before 1975, the three local teacher retirement fund associations were empowered to set the applicable member contribution rates and, subject to certain maximums and subject to local budgetary discretion, to set the applicable employer contribution rates. Regular actuarial valuation work for the three local teacher pension funds was not required until 1969, with the passage of general legislation requiring regular actuarial work to be prepared for the three local teacher retirement funds.

In 1967, with the initial passage of a state sales tax, when the state's employer contribution to the statewide Teachers Retirement Association (TRA) was shifted from a statewide property tax levy (on all taxable property outside the first class cities) to direct state general fund financing, the state also began to directly participate in the funding of the first class city teacher retirement funds. The initial 1969 state funding of the first class city teacher retirement funds was the proportional amount of the funding provided to TRA, calculated as a dollar amount per member. The balance of the amount needed to meet the established employer contributions to each first class city teacher retirement fund remained to be raised from property taxes that were levied by the respective school district.

In 1969, the formula for the open and standing state general fund appropriation to the first class city teacher retirement fund associations was modified, shifting it from the average dollar amount per member of the state funding provided to TRA to the average percentage of payroll amount of the state funding provided to fund TRA or to fund TRA Coordinated Program employer Social Security contributions. The balance of any required employer contributions to the first class city teacher retirement fund associations remained payable from property taxes levied by the respective school district.

In 1975, legislation intended as a property tax relief measure was enacted that abolished the authority for Special School District Number 1 (Minneapolis), Independent School District Number 625 (St. Paul) and Independent School District Number 709 (Duluth) to levy local property taxes for their respective first class city teacher retirement fund associations, provided that the state would bear the total responsibility for funding the employer contribution requirement of the first class city teacher retirement fund associations, and established the required first class city teacher retirement fund association employer contribution rates. Authority of the three first class city teacher retirement funds to make benefit changes wholly locally was modified in 1975, thereafter requiring legislative approval before a benefit change could be adopted. The 1975 legislation, sponsored with respect to this provision by several legislators, including Speaker of the House Martin O. Sabo, did not increase the prior level of state support for the first class city teacher retirement fund associations, pending a future legislative resolution of a substantial pending MTRFA retirement benefit increase proposal that was also suspended by the legislation. That MTRFA retirement benefit increase proposal was ultimately approved by the Legislature in 1976. Additional benefit changes in the first class city teacher retirement fund association benefit plans were an issue before the Legislature until 1978.

In 1979, the prior formula approach to first class city teacher retirement fund associations state employer contributions was discontinued, the state funding of all teacher retirement plans was increased modestly, and the state aid for these plans was specified for each teacher retirement fund association and each retirement (basic or coordinated) program as a percentage of covered payroll. The state funded employer contribution rate for the MTRFA Basic Program was established in 1979 as 13.35 percent of covered payroll and for the MTRFA Coordinated Program was established in 1979 as 4.5 percent of covered payroll. The comparable figures for STPRFA were 12.63 percent and 4.5 percent. For DTRFA, which totally coordinated in 1957, the state funded employer contribution rate was set at 5.79 percent. These state contribution rates continued until 1993.

In 1984, the state funded employer contribution to the statewide TRA was increased by 1.43 percent of covered payroll, but there was no corresponding increase in the funding of the first class city teacher retirement fund associations.

Under 1985 legislation, the responsibility for the payment of employer teachers retirement plan contributions and employer Social Security contributions for TRA and the first class city teacher retirement fund associations was shifted from direct state general fund financing to the employing

units, effective for the July 1, 1986 - June 30, 1987 fiscal year. The responsibility shift was accompanied by the creation of a special teacher retirement plan and employer Social Security (FICA) contribution state aid formula, based on the historical retirement costs per pupil. The aid for a base year (the year two years previous) is inflated to account for teacher salary increases and employer Social Security contribution rate increases. The 1987 fiscal year special state aid formula provided employer retirement financing was sufficient to cover the same percentage increase in per pupil retirement costs in each district, with the school district being required to pay from other revenue sources any retirement costs not covered by the aid as the result of higher compensation levels than the average, or salary increases beyond the aid inflation factor, or higher staff to pupil ratios than the average.

By virtue of 1987 legislation, the special teacher retirement plan and employer Social Security contribution state aid formula was eliminated and the revenue for that special state aid was folded into the general school aid formula. For the 1988 - 1989 school year and subsequent years, the three school districts with a first class city teacher retirement fund association have the responsibility to meet the applicable statutory teacher retirement employer contribution rate to the appropriate teacher retirement plan and to Social Security from the various revenue sources of the school district, including the general school aid program. For the Duluth, Minneapolis and St. Paul school districts, until 1993, the teacher retirement employer contribution is not directly payable from a separate property tax levy. In 1993, the restriction on property tax levies for teacher retirement was relaxed for Special School District No. 1.

In 1992, an additional employer contribution for the MTRFA and StPTRFA coordinated programs of one percent was established, effective July 1, 1993. Also Special School District No. 1 (Minneapolis) and Independent School District No. 625 (St. Paul) were obligated to continue to make the additional employer contribution for MTRFA or StPTRFA Basic Program members who retired after July 1, 1993. The 1992 employer contribution increases were not accompanied by an increase in state aid, but were payable from existing school district revenues.

In 1993, the net MTRFA and StPTRFA employer contribution rates were increased. The MTRFA Coordinated Program employer contribution rate was changed from one percent of pay to one half of one percent for the 1993-1994 school year and was increased by an additional 3.14 percent for subsequent school years. The MTRFA Basic Program employer contribution rate was reduced by 1.21 percent of pay for the 1994-1995 school year and thereafter. The combined changes in MTRFA employer additional contribution rates, when fully implemented for the 1994-1995 school year, will result in a 3.64 percent of pay employer additional contribution on behalf of all MTRFA members, identical to that of the statewide TRA. Additionally, a special state aid amount to MTRFA of \$2.5 million in 1994 (increasing by the rate of increase in the general education revenue formula thereafter) was established to match equal additional funding provided jointly by Special School District No. 1 (Minneapolis) and the City of Minneapolis. Special School District No. 1 is permitted to levy real estate taxes for this matching funding. Members of MTRFA are also required to make an additional member payment to offset a portion of the administrative expenses of MTRFA that are proportionally greater than those of the statewide TRA.

The net StPTRFA employer contribution rates were also increased in 1993. The StPTRFA Coordinated Program employer contribution rate was changed from one percent of pay to one-half of one percent for the 1993-1994 school year, was increased by one percent of pay for the 1994-1995 school year, and was additionally increased by 2.14 percent for future school years beginning with the 1995-1996 school year. The StPTRFA Basic Program Employer contribution rate was reduced by almost one percent of pay for the 1995-1996 school year and thereafter. The combined changes in the StPTRFA employer additional contribution rates, when fully implemented for the 1995-1996 school year, will result in a 3.64 percent of pay employer additional contribution on behalf of all StPTRFA members, identical to that of the statewide TRA. An additional direct state aid to StPTRFA of \$500,000 in 1994 (increasing by the rate of increase in the general education revenue formula thereafter) was also implemented. Members of StPTRFA, like members of MTRFA, are also required to make an additional member payment to offset a portion of the administrative expenses of StPTRFA that are proportionally greater than those of the statewide TRA.

The Current Funded Condition of the Teacher Retirement Funds and The Impact of 1993 Funding Improvements

The most recent actuarial valuations of the four Minnesota teacher retirement funds were as of July 1, 1992. Actuarial valuations of the four pension plans as of July 1, 1993, are currently being prepared by the actuarial firm retained by the Commission, Milliman & Robertson, Inc., and are expected to be available in December, 1993.

The following summarizes the July 1, 1992 actuarial valuation results for the statewide Teachers Retirement Association (TRA) and the three first class city teacher retirement fund associations (DTRFA, MTRFA, and StPTRFA):

	TRA	DTRFA	MTRFA	StPTRFA
Membership				
Active Members	65,557	1,558	3,635	3,336
Retirees	17,863	675	2,356	1,176
Disabilitants	297	12	44	33
Survivors	1,049	41	196	148
Deferreds	3,548	85	625	60
Inactives	15,447	315	134	231
Total	103,761	2,886	5,990	5,684
Funded Status				
Actuarial Accr. Liab.	\$7,662,522,000	\$124,140,000	\$840,840,000	\$533,865,000
Assets	6,324,733,000	116,492,000	457,978,000	355,998,000
Unfunded Act. Accr. Liab.	\$1,337,789,000	\$7,648,000	\$382,862,000	\$177,867,000
Funding Ratio	82.54%	93.84%	54.47%	66.68%
Financing Adequacy				
Covered Payroll	\$2,112,401,000	\$44,429,000	\$145,767,000	\$122,767,000
Benefits Payable	\$227,067,000	\$5,458,000	\$39,484,000	\$24,083,000
Normal Cost				
Normal Cost	9.73% \$205,618,000	9.12% \$4,052,000	12.81% \$18,669,000	12.11% \$14,869,000
Expenses	0.40 8,450,000	1.48 658,000	2.16 3,153,000	0.75 921,000
Amortization	3.00 63,372,000	0.82 264,000	12.46 18,163,000	6.88 8,446,000
Actuarial Requirements	13.13% \$277,440,000	11.42% \$5,074,000	27.43% \$39,985,000	19.74% \$24,236,000
Member Contributions				
Member Contributions	4.54% \$95,950,000	4.50% \$1,999,000	6.64% \$9,671,000	6.33% \$7,776,000
Employer Contributions	8.18 172,842,000	5.79 2,572,000	9.22 13,440,000	8.76 10,755,000
Total Support	12.72% \$268,792,000	10.29% \$4,571,000	15.86% \$23,119,000	15.09% \$18,531,000
Actuarial Requirements				
Actuarial Requirements	13.13% \$277,440,000	11.42% \$5,074,000	27.43% \$39,985,000	19.74% \$24,236,000
Total Support	12.72% 268,792,000	10.29 4,571,000	15.86 23,119,000	15.09 18,531,000
Deficiency (Sufficiency)	0.41% \$8,648,000	1.13% \$503,000	11.57% \$16,866,000	4.65% \$5,705,000

The July 1, 1992, actuarial valuation results were prepared before the passage of Laws 1993, Chapter 357, the 1993 legislation increasing the financial support of the Minneapolis Teachers Retirement Fund Association and the St. Paul Teachers Retirement Fund Association. To attempt to capture the impact of that legislation, including its scheduled phase-ins, and to reflect the ever changing shift between the Basic and Coordinated programs, the Commission staff prepared the following comparison of the funding requirements and the financial support of MTRFA and StPTRFA projected for the period 1993-1995 with the most recent (1992) valuation results:

Minneapolis Teachers Retirement Fund Association

	1992	1993	1994	1995
Covered Payroll\1	\$145,767,000	\$155,242,000	\$165,333,000	\$176,080,000
Normal Cost\2				
Normal Cost\2	12.81% \$18,669,000	12.46% \$19,343,000	12.11% \$20,026,000	11.77% \$20,716,000
Expenses	2.16 3,153,000	2.16 3,353,000	2.16 3,571,000	2.16 3,803,000
Amortization	12.46 18,163,000	12.46 19,343,000	12.46 20,600,000	12.46 21,940,000
Total Actuarial Requirement	27.43% \$39,985,000	27.08% \$42,039,000	26.73% \$44,197,000	26.39% \$46,459,000
Member Contribution\3				
Member Contribution\3	6.64% \$9,679,000	6.43% \$9,988,000	6.23% \$10,307,000	6.03% \$10,625,000
Employer Contribution\4	9.22 13,440,000	8.93 13,864,000	9.87 16,325,000	9.67 17,034,000
Special State Aid\5	0.00 0	1.61 2,500,000	1.56 2,575,000	1.51 2,652,000
Municipal Contribution	0.00 0	0.81 1,250,000	0.78 1,288,000	0.76 1,326,000
School District Contribution	0.00 0	0.80 1,250,000	0.78 1,287,000	0.74 1,326,000
Expenses Assessment\6	0.00 0	0.44 685,000	0.44 730,000	0.44 777,000
Total Contribution	15.86% \$23,119,000	19.02% \$29,537,000	19.66% \$32,512,000	19.15% \$33,740,000
Actuarial Requirement				
Actuarial Requirement	27.43% \$39,985,000	27.08% \$42,039,000	26.73% \$44,197,000	26.39% \$46,459,000
Total Contribution	15.86 23,119,000	19.02 29,537,000	19.66 32,512,000	19.15 33,740,000
Deficiency	11.57% \$16,866,000	8.06% \$12,502,000	7.07% \$11,685,000	7.24% \$12,719,000

St. Paul Teachers Retirement Fund Association

	1992	1993	1994	1995
Covered Payroll\1	\$122,767,000	\$130,747,000	\$139,246,000	\$148,297,000
Normal Cost\2	12.11% \$14,869,000	11.96% \$15,632,000	11.78% \$16,406,000	11.62% \$17,227,000
Expenses	0.75 921,000	0.75 961,000	0.75 1,045,000	0.75 1,113,000
Amortization	6.88 8,446,000	6.88 8,995,000	6.88 9,580,000	6.88 10,203,000
Total Actuarial Requirement	19.74% \$24,236,000	19.59% \$25,608,000	19.41% \$27,031,000	19.25% \$28,543,000
Member Contribution\3	6.33% \$7,776,000	6.24% \$8,164,000	6.15% \$8,558,000	6.05% \$8,974,000
Employer Contribution\4	8.76 10,755,000	8.80 11,503,000	9.12 12,696,000	9.69 14,372,000
Special State Aid\5	0.00 0	0.38 500,000	0.37 515,000	0.36 530,000
Municipal Contribution	0.00 0	0.00 0	0.00 0	0.00 0
School District Contribution	0.00 0	0.00 0	0.00 0	0.00 0
Expenses Assessment\6	0.00 0	0.16 212,000	0.16 226,000	0.16 241,000
Total Contribution	15.09% \$18,531,000	15.58% \$20,379,000	15.80% \$21,995,000	16.26% \$24,117,000
Actuarial Requirement	19.74% \$24,236,000	19.59% \$25,608,000	19.41% \$27,031,000	19.25% \$28,543,000
Total Contribution	15.09 18,531,000	15.58 20,379,000	15.80 21,995,000	16.26 24,117,000
Deficiency	4.65% \$5,705,000	4.01% \$5,229,000	3.61% \$5,036,000	2.99% \$4,426,000

- \1 Covered payroll is assumed to increase at the rate of 6.5 percent annually, the current total payroll growth actuarial assumption.
- \2 Normal cost is a blend of the 1992 normal costs for the Basic and Coordinated programs, based on changing program membership and covered payroll derived from the 1988-1992 program covered payroll proportions, as follows:

	<u>MTRFA</u>		<u>StPTRFA</u>	
	<u>Basic Program Payroll Proportion</u>	<u>Coordinated Program Payroll Proportion</u>	<u>Basic Program Payroll Proportion</u>	<u>Coordinated Program Payroll Proportion</u>
1992	53.35%	46.65%	52.40%	47.60%
1993	48.35	51.65	49.71	50.39
1994	43.35	56.65	47.02	52.98
1995	38.35	61.65	44.33	55.67

- \3 Member Contribution is also a blend of the current member contribution rates for a changing covered payroll for the Basic and Coordinated programs as outlined in footnote \2.
- \4 Employer contribution reflects the rates set forth in Laws 1993, Chapters 357, for a blend of program covered payrolls as outlined in footnote \2.
- \5 Special State Aid for MTRFA assumes full matching contributions by the City of Minneapolis and Special School District No. 1 and an annual rate of increase of three percent. Special State Aid for StPTRFA assumes an annual rate of increase of three percent.
- \6 Expense assessment is based on Commission Staff estimate that accompanied Laws 1993, Chapter 357, when it was recommended by the Commission.

Options for Potential Pension Consolidations and Related Structural Changes

a. In General

Minnesota, with the second largest number of public employee pension plans of the 50 states, has had some considerable prior experience in consolidating pension plans, funds or administrations or in making related structural changes. As a result, several different ways to undertake pension consolidations or to effect similar structural changes can be identified from that prior Minnesota experience.

The various potential pension consolidation and related options identified by the Commission staff are as follows:

Phase-Outs

1. a phase-out of retirement plan coverage by redirecting new hires after a designated date to a different existing or newly created retirement plan;
2. a phase-out of retirement plan coverage by redirecting new hires after a designated date and a total consolidation of the non-vested portion of the current plan membership;
3. a phase-out of retirement plan coverage by redirecting new hires after a designated date and a total consolidation of an existing retirement program within the plan;

Partial Consolidations

4. a consolidation of administrative functions into a new plan administrative structure or transfer to an existing plan administrative structure;
5. a consolidation of administrative functions and access to the successor plan benefit plan provisions for active members only;
6. a consolidation of administrative functions into a new or existing plan administrative structure and a replacement of existing benefit plan coverage with different or adapted benefit plan coverage for active and retired member; and

Total Consolidations

7. a complete replacement of the existing administrative structure, benefit plan, and retirement fund by a new or an existing administrative structure, benefit plan, and retirement fund.

The following subsections attempt to describe each consolidation or related option in greater detail, identify the policy basis, goal, or justification for the option, identify the likely actuarial cost and funding implications, and indicate any other policy issues arising in connection with the option.

b. Redirected New Hiree Phase-Out of Retirement Program

Description. The option involves changing a retirement system from an open group pension plan to a closed group pension plan, with all new potential members after a designated date redirected to a different pension plan. The pension plan for new hires could be a pension plan newly created for the purpose or could be an existing pension plan. By plan membership attrition, the prior pension plan will eventually cease to function.

Policy Basis Goal or Justification. The option balances the goal of achieving a structural change in public pension coverage with an actual or perceived need to avoid descriptions in existing workforces and the resulting political and related complications. The period of time over which the structural change may be accomplished would be considerable. The structural change involves no actual or potential benefit diminution for any existing public employee.

New hiree phase-outs have been used on a number of occasions in Minnesota to accomplish structural changes in public pension coverage. The approach was used in connection with the various local police and paid firefighter relief associations, first by special legislation during the period 1969-1979, and ultimately by general legislation in 1980, with coverage redirected to the Public Employees Police and Fire Fund (PERA-P&F). The approach was used in 1969 with respect to the St. Paul Bureau of Health Relief Association, with coverage redirected to the Public Employees Retirement Association (PERA). It also was used in 1973 in connection with the Supreme Court Justices Retirement Plan, the District Court Judges Retirement Plan, and the Probate and County Court Judges Retirement Plan, with coverage redirected to the newly created Uniform Judicial Retirement Plan.

Actuarial Cost and Funding Implications. In the main, a new hiree phase-out does not involve any discernible actuarial cost impact for either the pension plan scheduled to be closed to new members or the pension plan to which new members are redirected. In Minnesota, public pension plan actuarial cost figures are determined on a closed group basis rather than an open group basis, meaning that the actuarial liability and most actuarial cost figures are determined based on the current plan membership rather than assuming any future changes in plan membership. Hence, the disposition of new members largely will not affect the current actuarial valuation results. The one exception to this closed group actuarial costing technique is the determination of the required amortization contribution for eliminating the calculated unfunded actuarial accrued liability,

where the amortization contribution is calculated as a level percentage of an increasing total covered payroll for all statewide and major Minnesota public pension plans other than the Minneapolis Employees Retirement Fund (MERF). Currently, the total covered payroll is assumed to increase at the rate of 6.5 percent annually. The elimination of new entrants will potentially disrupt the total covered payroll increase over time, at least in the long run.

Additionally, if new hirees are markedly different in their demographic characteristics than the current plan membership of the receiving plan, and the number of new hirees is significant, the phase-out can be expected to have an impact on the likely future recognized normal cost of the receiving plan. The general rule is that the older a plan member is at entry, the higher is the normal cost for that pension plan under the entry age normal cost actuarial method.

Where a retirement plan is not well funded at the time of becoming a closed plan, the phase-out will have long term funding implications for the plan. The closing of the retirement fund will substantially fix the actuarial liability of the fund, will reduce and ultimately eliminate the cash flow related to active members, and will necessitate that the fund be substantially fully funded (unfunded actuarial accrued liability amortized) within the remaining lifetime of the plan's current membership. If the retirement plan to which new members are redirected has a different contribution structure than the former retirement plan, the phase-out will have an immediate financial implication for the employing unit or units. If the successor retirement plan has a greater employer contribution rate, the phase-out will expose the employing unit to a greater required outlay for retirement benefits, which will grow over time as the attrition in the former retirement plan membership runs full course. If that higher employer contribution relates to the level of unfunded actuarial accrued liability in the former retirement plan, rather than the level of normal cost, the adverse financial impact on the employer following the phase-out will occur in order to fund the accumulated pension debt of plan participants other than its employees and of other employing units.

Other Policy Issues. Closing a pension plan by phasing-out new hirees into another pension plan will frequently have certain employee group morale and collective bargaining unit impacts. The future elections of retirement plan board of trustee members will involve an ever decreasing number of plan participants. To the extent that the collective bargaining unit representatives are typically closely involved in local retirement plan activities, the creation of a group with mixed pension coverage in the bargaining unit will change the relationship and that change may spill over into other bargaining unit activities.

c. Phase-Out With Total Consolidation of Non-Vested Plan Membership.

Description. The option involves the phase-out described in the prior subsection and a total consolidation of the plan administration, benefit coverage, and liabilities and assets for all retirement plan members who have not yet gained sufficient service credit to vest for an eventual retirement benefit. In effect, this option simply makes the designated effective date for the phase-out retroactive to include all current short service pension plan members.

Policy Basis, Goal, or Justification. The option has the same goal as the phase-out described in the prior subsection, but speeds up the timing of that ultimate structural change by including all plan participants who do not have sufficient service credit to qualify for a deferred retirement annuity. While the retroactive phase-out will cause some disruption in an existing workforce and will cause some complications, the disruptions are unlikely to result in any successful future litigation because the affected plan membership have not yet acquired vested pension rights.

This option has not been used in Minnesota, although other pension benefit changes for non-vested pension plan members have occurred in Minnesota.

Actuarial Cost and Funding Implications. This option essentially has the same actuarial cost and other funding implications as the phase-out option described immediately previous to this option. The additional considerations involve the extent of assets transferred with the non-vested plan participants and how that amount compares with the actuarial liability in the successor plan resulting from that plan granting these participants full service credit for that prior service. The general rule for younger and short service plan participants is that the participant's accumulated member contributions and credited interest exceed the actual present value for any earned retirement benefits other than a refund, so if the asset transfer is based on actual accumulated contributions (member or member and employer) plus credited interest rather than present value calculations, the retroactive phase-out may benefit the successor retirement plan. Conversely, any benefit to the successor retirement plan will come at the expense of the phased-out retirement

plan. The actuarial accrued liability absorbed by the successor retirement plan will be a function of its benefit plan and how it compares to the benefit plan of the phased-out retirement plan.

Other Policy Issues. This combination option of a phase-out and a total consolidation of non-vested plan participants will have the same group morale and related potential adverse impacts as outlined for the previous option. Also, since retirement fund assets may be transferred, there may be an adverse impact on the funds as an investment program, because it would cause a negative cash flow for the investment program, would drain any current liquid assets, and may cause a premature or forced sale of some current investments.

d. Phase-Out With Total Consolidation of An Existing Retirement Program Description.

Description. The option also involves a phase-out as outlined in the prior two options, combined with a total consolidation of the plan administrations, benefit coverage, and liabilities and assets for the retirement plan participants in one of the plan's component retirement programs, typically the most recently adopted retirement program. As with the previous combination phase-out and consolidation option, this option becomes a question of the timing of the phase-out, with the total consolidation functioning to make the specified phase-out date retroactive to an earlier date when the first plan participants entered the affected retirement program.

Policy Basis, Goal or Justification. The option attempts to gain the same structural shift as a phase-out if that structural change would have occurred at the time that the affected retirement program was created. The combination option essentially would be a correction of a prior policy mistake in authorizing the creation of a new retirement program within a retirement plan, especially when that retirement program duplicates or substantially replicates in a local retirement plan the benefit plan of a retirement program of a statewide retirement plan.

There is a precedent for the option, with the phase-out of post-1979 new hires in Minneapolis into the Public Employees Retirement Association (PERA) and the consolidation of the Minneapolis Employees Retirement Fund (MERF) coordinated program, previously established in 1977, into PERA by the 1979 Legislature. The virtual duplication of benefit plan provisions between the MERF coordinated program and the PERA coordinated program made the consolidation a logical and easily understood action in an attempt to reduce the structural complexity of Minnesota public pension plans and to accomplish that structural change in as timely a fashion as possible. The MERF phase-out and coordinated program consolidation was done at the request of the City of Minneapolis, when its previous sponsorship of a total consolidation of MERF into PERA ran into substantial political controversy.

Actuarial Cost and Funding Implications. This combination option has the same type of actuarial cost and funding implications as the prior combination option, with the difference being one of potential scale rather than type. With the total consolidation of a retirement program rather than the non-vested plan participants, a greater number of individuals and greater amounts of affected assets and liabilities may be involved.

Other Policy Issues. Structural changes tend to involve disruptions among plan participants and participating employing units. Phase-outs attempt to reduce those disruptions, but speeding up the phase-out through a consolidation of a portion of the retirement plan will create those disruptions. The retirement plan primarily exists to support a public employer's personnel system by assisting in the recruitment of new personnel, the retention of existing personnel, and the out-transitioning of personnel at the actual or anticipated conclusion of their productive work years. With retirement plan structural changes, even if they gain the advantages of better retirement coverage, more understandable plan structures, and more efficient plan administration, the support provided by the modified retirement coverage to the public employer's personnel system may falter or may be put in question.

e. Consolidation of Administrative Functions.

Description. The option involves the transfer of the administrative functions concerning a retirement plan from one retirement system to another retirement system, however leaving the benefit plan and the retirement fund associated with the retirement plan unaffected and separate. Thus, the successor retirement system would stand in the place of the current retirement plan's governing board and administration and would perform the functions of paying pension benefits, collecting contributions and performing the various other ministerial and related administrative functions, but the liabilities and assets related to the retirement plan would remain in a distinct fund separate from the fund of the administering system and the retirement plan participants would continue to accrue benefit credit under the original benefit plan. The successor retirement

system could be an existing retirement system or could be a composite of prior retirement system administrations or a wholly new retirement system administration. Any prior retirement system administration would be eliminated by virtue of the administrative consolidation.

Policy Basis, Goal or Justification. Consolidations limited to plan administration only represent an attempt to gain administrative efficiencies, any available economies of scale, and any resulting administrative expense savings. It also can represent an attempt to reduce the potential for future misinterpretations of the intent of applicable law, to reduce the potential for future inappropriate investment practices, or to reduce the potential for other future administrative difficulties. The creation, retention or elimination of retirement administrative entities, as distinct from pension benefit plans or pension funds and financing mechanisms, should be a function of responsiveness, effectiveness, efficiency, and economy. The existence of a potentially more responsive, more effective, more efficient, or more economical administrative structure, or the demonstration of a current lack of responsiveness, current inefficiency, current ineffectiveness, or current lack of economy should be a sufficient justification for a change of a retirement administrative structure, just as it would for any other governmental structure.

There is precedent in Minnesota for administrative consolidations. These include the 1969 shift of administrative responsibilities regarding the State Patrol Retirement Fund from its separate board to the Minnesota State Retirement System (MSRS), the 1973 shift of administrative responsibilities regarding the various judicial retirement plans from the State Auditor to MSRS, the 1974 shifts of administrative responsibilities regarding the Legislators Retirement Plan and the Elective State Officers Retirement Plan from the State Auditor to MSRS, and the 1990 shift of administrative responsibilities regarding the State University and Community College Supplemental Retirement Plan from the Teachers Retirement Association to the State University Board and the State Community College Board.

Actuarial Cost and Funding Implications. If the choice of the successor retirement administration for economy reasons was made correctly, the administrative consolidation will reduce the total actuarial cost requirement of the affected retirement plan. The actuary currently assumes that the future year's administrative expense requirement will be the same percentage of covered payroll as the prior year's administrative expense was of the applicable covered payroll figure.

Other Policy Issues. An administrative consolidation would involve a transfer of the responsibility for the investment of the retirement fund assets from the prior administrative entity to the successor administrative entity. Where the prior investment practices do not conform with the investment authority of the successor administrative entity, the administrative consolidation would obligate the successor to manage the nonconforming investments or would require the immediate liquidation of the nonconforming investments, potentially at a loss. An administrative consolidation could require the elimination of the prior administrative structure if it does serve any other administrative function. The prior administrative structure, especially if it includes an elected or otherwise representative board, will be viewed as the tangible indicator of group identity, and its elimination will likely face strenuous objections despite any demonstrated lack of economy, inefficiency, or ineffectiveness.

f. Administrative and Partial Benefit Plan Consolidation Description

Description. The option would involve an administrative consolidation as described in the previous subsection and would additionally provide for a shift in the benefit plan for the active membership of the affected retirement plan from the prior benefit plan to the applicable benefit plan of the successor retirement plan. The shift could be elective on the part of the active membership or could be mandatory. The retired membership of the affected retirement plan would continue to receive benefits under the prior benefit plan. A separate fund for the affected retirement plan would be maintained for actuarial and accounting purposes, but the investment of plan assets could be commingled with those of the successor pension plan for investment management purposes. The successor retirement plan could be an existing retirement plan or a retirement plan created specifically for that purpose.

Policy Basis, Goal, or Justification. In addition to gaining the advantages attendant to an administrative consolidation, the option would simplify the benefit plan coverage for some or all of the affected retirement plan participants. If the affected retirement plan and the successor retirement plan cover the same type of public employees or substantially similar types of public employees, the partial benefit plan consolidation would equalize the benefit plan coverage for the totality. If the successor retirement plan has benefit plan advantages over the affected retirement plan, the active members of the affected retirement plan would gain those benefit plan advantages. The simplification of benefit plan coverage will be an advantage to plan participants

if there is employment mobility between the public employers previously covered by one or the other of the two retirement plans. If the two benefit plans differ significantly, active members can be provided with the option to elect between the two benefit plans in order to avoid the problems accompanying any actual or perceived benefit diminution.

There is substantial precedent in Minnesota for this option. The option is essentially similar to the manner in which local police or salaried firefighter relief associations consolidate into the Public Employees Police and Fire Fund (PERA-P&F) under Minnesota Statutes, chapter 353A. As of August 13, 1993, 25 local police or salaried firefighter relief associations have consolidated into PERA-P&F, and the consolidation into PERA-P&F of eight additional local police or salaried firefighter relief associations is pending. The local police or salaried firefighter relief association consolidation procedure is voluntary on the part of each relief association and the benefit plan consolidation is elective on the part of each active member.

Actuarial Cost and Funding Implications. The consolidation option can produce administrative expense savings, which will reduce the total actuarial cost requirement attributable to the plan participants of the affected retirement plan and will hence strengthen its actuarial funding. The partial benefit plan consolidation will have additional actuarial cost and funding implications as a result of the benefit plan shifts. To the extent that the benefit plan of the successor retirement plan provides a more substantial pension benefit than that of the affected retirement plan and that benefit improvement effect is not counterbalanced by any offsetting pension benefit reductions, the option will increase the actuarial cost requirement attributable to this group of plan participants. If the affected retirement plan and the successor retirement plan utilize different actuarial assumptions, especially major economic actuarial assumptions (i.e. interest, individual salary increase, and total payroll growth), the partial benefit plan consolidation will have an actuarial cost impact. The direction (plus or minus) and extent of that impact will depend on the particular retirement plans involved in the consolidation option and would require actuarial determination.

Other Policy Issues. With a more complex consolidation, a greater degree of consequent disruption can be expected and a more substantial adverse reaction by affected retirement plan participants anticipated. In addition to employee morale problems, potential litigation could result from plan members who determine that the consolidation resulted in a benefit diminution. If the plan member elected the benefit plan change, the potential for successful litigation will be minimal, assuming that there was adequate pre-election benefit counseling. If the benefit plan change was mandatory, but was accompanied by some countervailing benefit improvements, chances of successfully defending the mandatory change in any resulting litigation improve.

g. Administrative and Total Benefit Plan Consolidation

Description. The consolidation option would add to the administrative consolidation and partial benefit plan consolidation described in the previous subsection a shift in the benefit plan coverage for retirees and benefit recipients from the affected retirement plan to the successor retirement plan. The consolidation option would leave a separate retirement fund for the affected retirement plan membership for actuarial and accounting purposes, thereby leaving the participating employers in the affected pension plan as the ultimate guarantors of the payment of pension benefits to the applicable members.

Policy Basis, Goal, or Justification. The consolidation option would be intended to simplify the structure of pension coverage in the state, simplify the variations in benefit plan coverage for identical or substantially comparable groups of public employees, and achieve administrative cost savings and efficiencies. The option would reduce the number of retirement systems in operation, gain economies of scale in administration, and would rationalize benefit coverage for broadly comparable groups of public employees.

The precedent for this option is the local police and salaried firefighters relief association consolidation law, Minnesota Statutes, Chapter 353A. This option precisely duplicates that consolidation law, while the previously discussed option substantially duplicated the consolidation law.

Actuarial Cost and Funding Implications. This consolidation option has essentially the same actuarial cost and funding implications as the prior option, with the additional potential actuarial liability impacts from including benefit recipients as well as active members in the voluntary or mandated benefit plan shift.

Other Policy Issues. The remaining policy issues beyond actuarial cost and funding implications would be substantially similar for this option as for the prior option. Because the option involves benefit recipients, who could be less accommodating to change due to advanced age or more limited financial circumstances, this option would increase the administrative problems of conducting adequate pre-election benefit counseling if the benefit change was voluntary or would increase the potential for litigation if the benefit changes were mandatory.

h. Total Consolidation

Description. The option is the total incorporation of the administrative responsibilities, benefit plan, and funding mechanism of one retirement plan into another retirement plan. It adds to the option discussed previously the pooling of actuarial liabilities and assets of the affected retirement plan with the successor retirement plan, whether that retirement plan is newly created from the component parts of other retirement plans or whether that retirement plan is pre-existing. As a consequence, the public employers participating in the affected retirement plan would become jointly liable for the successor retirement plan's actuarial liabilities with all other participating public employers, as well as jointly credited with the successor retirement plan's assets.

Policy Basis, Goal, or Justification. If appropriate, the consolidation option accomplishes, at an advanced date, an outcome that arguably should have occurred at some earlier date. Most of Minnesota's numerous public employee pension plans are a result of the initial establishment of pension coverage for a subgroup of a total type of public employees and the subsequent establishment of more comprehensive pension coverage for that type of public employees that grandparented in the predecessor pension plans rather than supplanting them. The current Minnesota public pension structure reflects an initial policy of gaining some pension coverage for all public employees, rather than a policy of gaining more uniform, equitable, comprehensive, and rational pension coverage for all public employees. Total consolidations attempt to gain that more uniform, equitable, comprehensive, and rational overall public pension system in a state.

The consolidation option also would eliminate a substantial potential for unwarranted nonconforming practices (administrative, benefit plan, and funding), if not the potential for outright mismanagement, waste, and abuse.

There is precedent for total consolidations in Minnesota. These are the 1967 consolidations of the Attorney General Retirement Plan and the State Auditor Retirement Plan into the Elective State Officers Retirement Plan, the 1969 consolidation of the State Police Retirement Plan into the State Patrol Retirement Plan, the 1973 consolidations of the Supreme Court Justices Retirement Plan, the District Court Judges Retirement Plan, and the Probate and County Court Judges Retirement Plan into the Uniform Judicial Retirement Plan, the 1973 consolidation of the St. Paul Bureau of Health Relief Association in the Public Employees Retirement Association (PERA), the 1973 consolidation of the Cloquet Firefighters Relief Association into PERA-P&F, the 1973 consolidation of the salaried firefighters division of the Fridley Firefighters Relief Association into PERA-P&F, the 1978 consolidation of the Metropolitan-Transit Commission-Transit Operating Division Retirement Plan into the Minnesota State Retirement System (MSRS), the 1978 consolidation of the University of Minnesota Police Retirement Plan into PERA-P&F, the 1978 consolidation of the Brooklyn Center Police Relief Association into PERA-P&F, the 1980 consolidation of the Supreme Court Clerk Retirement Plan into the MSRS Unclassified State Employees Retirement Program, and the 1985 consolidation of the Moorhead Police Relief Association and the Moorhead Firefighters Relief Association into PERA-P&F.

Actuarial Cost and Funding Implications. A total consolidation has substantial actuarial cost and funding implications. Usually, consolidations occur when the affected retirement plan has a less generous benefit plan than the successor retirement plan or has a substantially comparable benefit plan. If the consolidation results in a benefit increase for the plan participants of the affected retirement plan, that will increase the actuarial cost related to those plan participants, although it will not necessarily cause an increase in the actuarial cost of the successor retirement plan unless the plan participants of the affected retirement plan have substantially different demographic characteristics than the successor retirement plan, unless the affected retirement plan is substantially less well funded than the successor retirement plan, or unless the affected retirement plan uses substantially different actuarial assumptions than the successor retirement plan.

Other Policy Issues. A total consolidation will have many or all of the additional policy issues attributable to other consolidation options. Additionally, if the affected retirement plan has foreseeable cash flow problems, the total consolidation will provide new access to a larger pool of available assets and will likely eliminate the immediate cash flow difficulties. Absent a pension

benefit increase, a massive structural change like a total consolidation is unlikely to have any substantial political support within the affected retirement plan or the successor retirement plan.

Conclusion

In future deliberations on this topic as part of the mandated study, the Commission will be able to explore the actuarial and funding implications of potential first class city teacher retirement fund association phase-outs or consolidations in greater detail and to gain the perspectives and additional information and policy considerations provided by the Technical Advisory Group.

**A-3 Actuarial Analyses on Consolidation Options
for First Class City Retirement Funds - Thomas
Custis, Milliman & Robertson, Inc. (Feb. 1,
1994)**



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February 2, 1994

Mr. Lawrence A. Martin
Executive Director
Minnesota Legislative Commission
on Pensions and Retirement
55 State Office Building
St. Paul, MN 55155-1201

RE: **First Class City Retirement Plan Study**

Dear Larry:

Enclosed are our actuarial projections for each of the five retirement systems involved. We have displayed the projection results only through 2015 for a couple reasons:

1. Due to the decreasing amortization period as we approach 2020, the numbers (particularly the Suff/(Def) Rate) became very distorted; and
2. Beyond about 2005, the projections (except MERF) become dominated by new entrants; i.e., we are really not learning much about funding the existing obligations.

The actuarial projections address Options 1, 7, 8, 12 and 13 which are the options requiring changes in the actuarial valuation results. Please note that Option 3 projections would be the same as Option 1 prior to reflecting any changes to assumed expenses. Also, Option 5 would be the same as Option 7 if the expense assumptions are the same. Finally, we have added Options 1B for MERF and 3B for Minneapolis Teachers to reflect the impact of an asset

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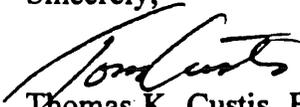
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Mr. Lawrence A. Martin
February 1, 1994
Page Two

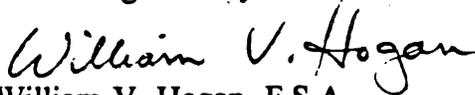
return on MERF of 8.5%, thus lowering the projected required state contributions for MERF and thereby increasing those contributions available for Minneapolis Teachers under Option 3. Note also that the Option 1 projection for Duluth has been revised. In our earlier work, we had added new entrants under the "old plan" normal costs instead of under the "new plan".

If you would like to discuss these results, please give us a call.

Sincerely,



Thomas K. Custis, F.S.A.
Consulting Actuary



William V. Hogan, F.S.A.
Consulting Actuary

TKC/WVH/bh

Enclosure

**ACTUARIAL STUDY FOR
FIRST CLASS CITY RETIREMENT FUNDS**

February 2, 1994

MILLIMAN & ROBERTSON, INC.

LCP & P FEB - 2 1994

METHODOLOGY AND ASSUMPTIONS

ACTUARIAL STUDY FOR
FIRST CLASS CITY RETIREMENT FUNDS

TRA	-	Teachers Retirement Fund
DTA	-	Duluth Teachers Retirement Fund
SPTA	-	St. Paul Teachers Retirement Fund
MPLS	-	Minneapolis Teachers Retirement Fund
MERF	-	Minneapolis Employees Retirement Fund

I. GENERAL COMMENTARY

In preparing the projections reported in this study, the July 1, 1993 actuarial valuation results were used as the initial starting point with specific changes as noted in Section II for each of the options. Section III outlines the projection methodology and assumptions used in future years while Section IV summarizes the overall interest rates used in each of the options presented in this report.

II. INITIAL VALUATION METHODOLOGY AND ASSUMPTIONS

Option 1: The July 1, 1993 Actuarial Valuation results were applied without change for TRA, DTA, SPTA, MPLS and MERF.

Option 1B: The July 1, 1993 Actuarial Valuation results for MERF were not changed; however, assets were assumed to grow at 8.5% interest rather than the valuation assumption.

Option 3: Actuarial projections were the same as for Option 1.

Option 3B: Actuarial projections were the same as for Option 1B except that additional state contributions up to the cap (\$10,455,000) become available under the MERF projection. These additional state contributions are assumed to be directed to MPLS.

Options 5 & 7: The July 1, 1993 Actuarial Valuation results were modified to reflect the increase in actuarial liability and normal costs for DTA, SPTA and MPLS due to applying the SBI method for annual pension increases. These changes were implemented by using an interest rate of 8.5% and 5.0% for pre- and post-retirement respectively rather than the valuation interest rates.

Option 8: The July 1, 1993 Actuarial Valuation results were applied without change for TRA, DTA, SPTA and MPLS.

Option 12: The July 1, 1993 Actuarial Valuation results were modified to reflect the increase in actuarial liability and normal costs for current active members of DTA, SPTA and MPLS due to applying the SBI method for annual pension increases. The comparison of value of the SBI calculation to current benefits for active members of DTA and SPTA was somewhat complex. Essentially, a stationary population was assumed in order to explicitly value the "13th check". The regular benefit was then valued using an 8.5% interest rate for both pre- and post-retirement. Under a stationary population concept, a 10% increase in the annual 13th check was assumed to reflect the increase in a participant's points and the increasing size of assets. These 13th checks were also valued at an 8.5% interest rate. For active members, the "points" applied at retirement for the first 13th check will be equal to the years of service. Likewise, the benefit formula is directly based upon years of service so that, mathematically, the greater of calculation will hinge upon the level of salary at retirement compared to the assets and the total retiree points under this methodology. Based upon the current populations for DTA and SPTA, the 13th check calculation is larger if the salary at retirement is approximately less than \$38,000 and \$42,800, respectively. Based upon our review of the active populations for both groups, it was determined that a very small percentage of the current active employees would be impacted and would constitute the smallest benefits among new retirees. Consequently, we assumed that all active members would elect the SBI calculation. For active members of MPLS, a seriatim comparison was made between the TRA benefits with an SBI calculation at a 5.0% post-retirement interest rate and the current benefits at an 6.5% post-retirement interest rate.

Option 13: Actuarial projections were the same as for Option 12 except that a seriatim comparison of the SBI calculation to the current method was made for each current retiree under DTA, SPTA and MPLS. Methodology for the 13th check calculation under DTA and SPTA was the same as for Option 12 using the current actual points from the valuation data. A significant proportion of the retiree population has higher values under the 13th check methodology.

III. PROJECTION METHODOLOGY AND ASSUMPTIONS

Options 1,3,5 and 7:

Total Actives: Assumed to remain constant except for MERF where no new entrants were assumed; therefore, new entrants are assumed to make up the difference between the initial active count and the remaining count projected from the closed group.

Total Payroll: Payroll is as projected for the closed group, plus the projected payroll for new entrants (except MERF) which is equal to the total number of new entrants times new entrant salary. New entrant salary is calculated as the average salary for those on 7/1/93 with 1-4 years of service increased 6.5 percent per year since 1993.

Employee Statutory Rate: Assumed to be unchanged from law as of July 1, 1993. The projected percentage may change as the distribution of participants changes from basic to coordinated.

Employer Statutory Rate: Same as for employee (future rate changes in the law as of July 1, 1993 are reflected).

State Contribution Percent: Statutorily required state funding amounts expressed as a percent of payroll in each year; maximum supplemental payments to MPLS are assumed from the State, City and School Board.

Administrative Surcharge Percent: Applicable only for Minneapolis and St. Paul Teachers Plans, this is a fixed rate as calculated for the July 1, 1993 valuation.

Total Statutory Rate: The sum of the previous four columns.

Normal Cost Percent: Assumed to be constant for each sub-plan; aggregate rate change over time to reflect shift from basic to coordinated.

Expense as % of Payroll: As calculated for the July 1, 1993 valuation; assumed to be constant in the future.

Supplemental Rate: $BOY\ UAL \div PVFS$

Total Required Rate: The sum of the previous three columns.

Suff/(Def) Rate: Total Statutory Rate - Total Required Rate

BOY UAL: Beginning of the Year Unfunded Actuarial Liability; taken from 7/1/93 valuation for 1993; for subsequent years, it is calculated as follows:

Prior year BOY UAL times 1.085, plus
Prior year [Normal Cost + Expense] times 1.0425, minus
Prior year Total Statutory Contribution times 1.0425.

PVFS: Present Value of Future Salary (for amortization by 2020) calculated as $.957 \times \text{Total Payroll} \times \text{annuity Due factor}$ for an increasing annuity with a period certain from current year to 2020; fixed annuity due factor to 2020 for MERF.

UAL as % of Payroll: $\text{BOY UAL} \div \text{Total Payroll}$

Option 3B: Same as Options 1,3,5 and 7 except State Contribution Percent for MPLS reflects additional amounts available under the cap due to MERF projection in Option 1B.

Options 8,12 and 13: Total Actives and Total Payroll are projected on a closed group basis for DTA, SPTA and MPLS with new entrants and their payroll moving to TRA projection. In addition, DTA, SPTA and MPLS expenses are assumed to increase as a % of payroll by the following formula:

$$(\text{New Entrant Payroll Going to TRA}) \times (\text{Expense \%} - \text{TRA Expense \%}) \times .9^{(\text{Current Year} - 1993)}$$

Also, SPTA and MPLS special administrative charges are changed to reflect this increase.

✓ The amortization basis is changed to a fixed dollar amount payable to 2020 (as for MERF) instead of a level percentage of payroll.

IV. INTEREST RATE SUMMARY

INTEREST RATES FOR VALUATION OF LIABILITIES (Pre-retirement/Post-retirement)					
	TRA	DTA	SPTA	MPLS	MERF
<i>Option 1A</i>	8.5%/5.0%	7.5%/7.5%	7.5%/7.5%	8.5%/6.5%	6.0%/5.0%
<i>1B</i>	N/A	N/A	N/A	N/A	6.0%**/5.0%
<i>Option 3A</i>	N/A	N/A	N/A	N/A	N/A
<i>3B</i>	N/A	N/A	N/A	8.5%/6.5%	N/A
<i>Options 5&7</i>	N/A	8.5%/5.0%	8.5%/5.0%	8.5%/5.0%	N/A
<i>Option 8</i>	8.5%/5.0%	7.5%/7.5%	7.5%/7.5%	8.5%/6.5%	N/A
<i>Option 12</i>	N/A	Greater of TRA 8.5%/5.0% or Local 8.5%/8.5%*	Greater of TRA 8.5%/5.0% or Local 8.5%/8.5%*	Greater of TRA 8.5%/5.0% or Local 8.5%/6.5%	N/A
<i>Option 13</i>	N/A	Greater of TRA 8.5%/5.0% or Local 8.5%/8.5%*	Greater of TRA 8.5%/5.0% or Local 8.5%/8.5%*	Greater of TRA 8.5%/5.0% or Local 8.5%/6.5%	N/A

* 13th check explicitly valued based upon current points and 1% of assets with an estimated 10% increase each year in the future.

** Assets projected at 8.5% rate instead of at pre-retirement interest rate.

Teachers Retirement Association

Consolidation Study

Option #1 - Continue Current Program

Year	Total Actives	Total Payroll	Employee Statutory Rate	Employer Statutory Rate	State Contrib Percent	Admin Surcharge Percent	Total Statutory Rate	Normal Cost Percent	Expense as % of Payroll	Supplemental Rate	Total Required Rate	Suff/(Def) Rate	BOY UAL	PVFS	UAL as % of Payroll
1993	65,268	2,156,739	4.52%	8.16%	0.00%	0.00%	12.68%	9.84%	0.15%	2.76%	12.75%	-0.07%	1,220,122	44,216,272	56.57%
1994	65,268	2,290,176	4.51%	8.15%	0.00%	0.00%	12.66%	9.82%	0.15%	2.77%	12.74%	-0.08%	1,263,201	45,587,328	55.16%
1995	65,268	2,419,215	4.51%	8.15%	0.00%	0.00%	12.66%	9.81%	0.15%	2.80%	12.76%	-0.10%	1,306,287	46,697,365	54.00%
1996	65,268	2,544,225	4.50%	8.14%	0.00%	0.00%	12.64%	9.81%	0.15%	2.84%	12.80%	-0.16%	1,349,440	47,552,091	53.04%
1997	65,268	2,670,327	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	2.89%	12.84%	-0.20%	1,392,771	48,247,888	52.16%
1998	65,268	2,798,829	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	2.94%	12.89%	-0.25%	1,436,259	48,801,893	51.32%
1999	65,268	2,930,229	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	3.01%	12.96%	-0.32%	1,479,844	49,186,182	50.50%
2000	65,268	3,061,967	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	3.09%	13.04%	-0.40%	1,523,455	49,375,593	49.75%
2001	65,268	3,197,557	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	3.17%	13.12%	-0.48%	1,567,081	49,420,005	49.01%
2002	65,268	3,337,048	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	3.27%	13.22%	-0.58%	1,610,611	49,308,482	48.26%
2003	65,268	3,477,924	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	3.38%	13.33%	-0.69%	1,653,931	48,960,368	47.56%
2004	65,268	3,625,564	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	3.50%	13.45%	-0.81%	1,696,982	48,471,218	46.81%
2005	65,268	3,781,354	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	3.64%	13.59%	-0.95%	1,739,553	47,803,763	46.00%
2006	65,268	3,949,258	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	3.79%	13.74%	-1.10%	1,781,374	47,016,234	45.11%
2007	65,268	4,127,390	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	3.86%	13.91%	-1.27%	1,822,040	46,016,475	44.15%
2008	65,268	4,318,316	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	4.15%	14.10%	-1.46%	1,861,167	44,839,021	43.10%
2009	65,268	4,522,256	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	4.37%	14.32%	-1.68%	1,898,266	43,451,105	41.98%
2010	65,268	4,745,705	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	4.62%	14.57%	-1.93%	1,932,798	41,828,501	40.73%
2011	65,268	4,994,568	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	4.92%	14.87%	-2.23%	1,964,001	39,959,139	39.32%
2012	65,268	5,270,344	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	5.26%	15.21%	-2.57%	1,990,877	37,827,897	37.78%
2013	65,268	5,569,689	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	5.70%	15.65%	-3.01%	2,012,305	35,285,873	36.13%
2014	65,268	5,895,502	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	6.27%	16.22%	-3.58%	2,027,159	32,328,634	34.38%
2015	65,268	6,251,744	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	7.05%	17.00%	-4.36%	2,034,137	28,837,668	32.54%

Teachers Retirement Association

Consolidation Study

Option #8 - Close First Class City Teachers' Plans and Move New Entrants into TRA

Year	Total Actives	Total Payroll	Employee Statutory Rate	Employer Statutory Rate	State Contrib Percent	Admin Surcharge Percent	Total Statutory Rate	Normal Cost Percent	Expense as % of Payroll	Supplemental Rate	Total Required Rate	Suff/ (Def) Rate	BOY UAL	PVFS	UAL as % of Payroll
1993	65,268	2,156,739	4.52%	8.16%	0.00%	0.00%	12.68%	9.84%	0.15%	2.76%	12.75%	-0.07%	1,220,122	44,216,272	56.57%
1994	66,011	2,312,861	4.51%	8.15%	0.00%	0.00%	12.66%	9.82%	0.15%	2.74%	12.71%	-0.05%	1,263,201	46,038,889	54.62%
1995	66,460	2,457,955	4.51%	8.15%	0.00%	0.00%	12.66%	9.81%	0.15%	2.75%	12.71%	-0.05%	1,305,651	47,445,137	53.12%
1996	66,886	2,600,180	4.50%	8.14%	0.00%	0.00%	12.64%	9.81%	0.15%	2.77%	12.73%	-0.09%	1,347,664	48,597,904	51.83%
1997	67,296	2,745,010	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	2.80%	12.75%	-0.11%	1,389,274	49,597,275	50.61%
1998	67,692	2,893,857	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	2.83%	12.78%	-0.14%	1,430,371	50,458,862	49.43%
1999	68,105	3,048,649	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	2.87%	12.82%	-0.18%	1,470,792	51,173,948	48.24%
2000	68,471	3,204,277	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	2.92%	12.87%	-0.23%	1,510,312	51,670,411	47.13%
2001	68,856	3,367,252	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	2.98%	12.93%	-0.29%	1,548,828	52,042,739	46.00%
2002	69,245	3,537,292	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	3.03%	12.98%	-0.34%	1,586,049	52,267,311	44.84%
2003	69,615	3,711,029	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	3.10%	13.05%	-0.41%	1,621,665	52,241,895	43.70%
2004	69,991	3,895,188	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	3.18%	13.13%	-0.49%	1,655,436	52,075,899	42.50%
2005	70,343	4,089,884	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	3.26%	13.21%	-0.57%	1,686,915	51,704,187	41.25%
2006	70,691	4,300,408	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	3.35%	13.30%	-0.66%	1,715,609	51,196,697	39.89%
2007	71,029	4,524,767	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	3.45%	13.40%	-0.76%	1,740,839	50,446,850	38.47%
2008	71,327	4,763,284	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	3.56%	13.51%	-0.87%	1,761,921	49,459,316	36.99%
2009	71,620	5,019,084	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	3.69%	13.64%	-1.00%	1,778,107	48,224,761	35.43%
2010	71,872	5,295,707	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	3.83%	13.78%	-1.14%	1,788,495	46,676,206	33.77%
2011	72,156	5,604,856	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	4.00%	13.95%	-1.31%	1,792,008	44,841,765	31.97%
2012	72,401	5,943,180	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	4.19%	14.14%	-1.50%	1,787,150	42,657,176	30.07%
2013	72,612	6,307,337	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	4.44%	14.39%	-1.75%	1,772,392	39,959,125	28.10%
2014	72,822	6,703,433	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	4.75%	14.70%	-2.06%	1,746,167	36,759,011	26.05%
2015	73,018	7,134,377	4.50%	8.14%	0.00%	0.00%	12.64%	9.80%	0.15%	5.19%	15.14%	-2.50%	1,706,606	32,909,027	23.92%

Duluth Teachers Retirement Fund
Consolidation Study
Option #1 - Continue Current Program

Year	Total Actives	Total Payroll	Employee Statutory Rate	Employer Statutory Rate	State Contrib Percent	Admin Surcharge Percent	Total Statutory Rate	Normal Cost Percent	Expense as % of Payroll	Supplemental Rate	Total Required Rate	Suff/ (Def) Rate	BOY UAL	PVFS	UAL as % of Payroll
1993	1,453	42,160	4.50%	5.79%	0.00%	0.00%	10.29%	9.17%	0.83%	0.21%	10.21%	0.08%	1,844	864,344	4.37%
1994	1,453	44,625	4.50%	5.79%	0.00%	0.00%	10.29%	9.21%	0.83%	0.21%	10.25%	0.04%	1,875	888,284	4.20%
1995	1,453	47,401	4.50%	5.79%	0.00%	0.00%	10.29%	9.23%	0.83%	0.21%	10.27%	0.02%	1,918	914,969	4.05%
1996	1,453	49,965	4.50%	5.79%	0.00%	0.00%	10.29%	9.25%	0.83%	0.21%	10.29%	0.00%	1,965	933,852	3.93%
1997	1,453	52,813	4.50%	5.79%	0.00%	0.00%	10.29%	9.27%	0.83%	0.21%	10.31%	-0.02%	2,023	954,241	3.83%
1998	1,453	55,533	4.50%	5.79%	0.00%	0.00%	10.29%	9.29%	0.83%	0.22%	10.34%	-0.05%	2,092	968,305	3.77%
1999	1,453	58,061	4.50%	5.79%	0.00%	0.00%	10.29%	9.32%	0.83%	0.22%	10.37%	-0.08%	2,174	974,599	3.74%
2000	1,453	60,628	4.50%	5.79%	0.00%	0.00%	10.29%	9.35%	0.83%	0.23%	10.41%	-0.12%	2,276	977,658	3.75%
2001	1,453	63,319	4.50%	5.79%	0.00%	0.00%	10.29%	9.38%	0.83%	0.25%	10.46%	-0.17%	2,401	978,633	3.79%
2002	1,453	66,091	4.50%	5.79%	0.00%	0.00%	10.29%	9.42%	0.83%	0.26%	10.51%	-0.22%	2,556	976,568	3.87%
2003	1,453	69,058	4.50%	5.79%	0.00%	0.00%	10.29%	9.45%	0.83%	0.28%	10.56%	-0.27%	2,746	972,158	3.98%
2004	1,453	72,237	4.50%	5.79%	0.00%	0.00%	10.29%	9.49%	0.83%	0.31%	10.63%	-0.34%	2,971	965,754	4.11%
2005	1,453	75,785	4.50%	5.79%	0.00%	0.00%	10.29%	9.51%	0.83%	0.34%	10.68%	-0.39%	3,242	958,072	4.28%
2006	1,453	79,524	4.50%	5.79%	0.00%	0.00%	10.29%	9.54%	0.83%	0.38%	10.75%	-0.46%	3,559	946,743	4.48%
2007	1,453	83,526	4.50%	5.79%	0.00%	0.00%	10.29%	9.56%	0.83%	0.42%	10.81%	-0.52%	3,929	931,238	4.70%
2008	1,453	87,619	4.50%	5.79%	0.00%	0.00%	10.29%	9.59%	0.83%	0.48%	10.90%	-0.61%	4,353	909,785	4.97%
2009	1,453	92,224	4.50%	5.79%	0.00%	0.00%	10.29%	9.61%	0.83%	0.55%	10.99%	-0.70%	4,844	886,110	5.25%
2010	1,453	97,556	4.50%	5.79%	0.00%	0.00%	10.29%	9.63%	0.83%	0.63%	11.09%	-0.80%	5,402	859,859	5.54%
2011	1,453	104,069	4.50%	5.79%	0.00%	0.00%	10.29%	9.64%	0.83%	0.72%	11.19%	-0.90%	6,032	832,607	5.80%
2012	1,453	110,689	4.50%	5.79%	0.00%	0.00%	10.29%	9.65%	0.83%	0.85%	11.33%	-1.04%	6,741	794,468	6.09%
2013	1,453	117,445	4.50%	5.79%	0.00%	0.00%	10.29%	9.66%	0.83%	1.01%	11.50%	-1.21%	7,536	744,054	6.42%
2014	1,453	124,167	4.50%	5.79%	0.00%	0.00%	10.29%	9.66%	0.83%	1.24%	11.73%	-1.44%	8,418	680,881	6.78%
2015	1,453	132,604	4.50%	5.79%	0.00%	0.00%	10.29%	9.67%	0.83%	1.54%	12.04%	-1.75%	9,398	611,668	7.09%

Duluth Teachers Retirement Fund

Consolidation Study

Option #7 - Continue Current Program except change COLA from 13th check to SBI COLA

Year	Total Actives	Total Payroll	Employee Statutory Rate	Employer Statutory Rate	State Contrib Percent	Admin Surcharge Percent	Total Statutory Rate	Normal Cost Percent	Expense as % of Payroll	Supplemental Rate	Total Required Rate	Suff/ (Def) Rate	BOY UAL	PVFS	UAL as % of Payroll
1993	1,453	42,160	4.50%	5.79%	0.00%	0.00%	10.29%	9.17%	0.83%	0.21%	10.21%	0.08%	1,844	864,344	4.37%
1994	1,453	44,625	4.50%	5.79%	0.00%	0.00%	10.29%	9.47%	0.83%	3.69%	13.99%	-3.70%	32,781	888,284	73.46%
1995	1,453	47,401	4.50%	5.79%	0.00%	0.00%	10.29%	9.49%	0.83%	3.89%	14.21%	-3.92%	35,571	914,969	75.04%
1996	1,453	49,965	4.50%	5.79%	0.00%	0.00%	10.29%	9.51%	0.83%	4.13%	14.47%	-4.18%	38,608	933,852	77.27%
1997	1,453	52,813	4.50%	5.79%	0.00%	0.00%	10.29%	9.53%	0.83%	4.39%	14.75%	-4.46%	41,917	954,241	79.37%
1998	1,453	55,533	4.50%	5.79%	0.00%	0.00%	10.29%	9.55%	0.83%	4.70%	15.08%	-4.79%	45,519	968,305	81.97%
1999	1,453	58,061	4.50%	5.79%	0.00%	0.00%	10.29%	9.58%	0.83%	5.07%	15.48%	-5.19%	49,442	974,599	85.16%
2000	1,453	60,628	4.50%	5.79%	0.00%	0.00%	10.29%	9.61%	0.83%	5.49%	15.93%	-5.64%	53,721	977,658	88.61%
2001	1,453	63,319	4.50%	5.79%	0.00%	0.00%	10.29%	9.65%	0.83%	5.97%	16.45%	-6.16%	58,384	978,633	92.21%
2002	1,453	66,091	4.50%	5.79%	0.00%	0.00%	10.29%	9.68%	0.83%	6.50%	17.01%	-6.72%	63,471	976,568	96.04%
2003	1,453	69,058	4.50%	5.79%	0.00%	0.00%	10.29%	9.72%	0.83%	7.10%	17.65%	-7.36%	69,020	972,158	99.95%
2004	1,453	72,237	4.50%	5.79%	0.00%	0.00%	10.29%	9.75%	0.83%	7.77%	18.35%	-8.06%	75,069	965,754	103.92%
2005	1,453	75,785	4.50%	5.79%	0.00%	0.00%	10.29%	9.78%	0.83%	8.52%	19.13%	-8.84%	81,668	958,072	107.76%
2006	1,453	79,524	4.50%	5.79%	0.00%	0.00%	10.29%	9.81%	0.83%	9.39%	20.03%	-9.74%	88,863	946,743	111.74%
2007	1,453	83,526	4.50%	5.79%	0.00%	0.00%	10.29%	9.83%	0.83%	10.38%	21.04%	-10.75%	96,706	931,238	115.78%
2008	1,453	87,619	4.50%	5.79%	0.00%	0.00%	10.29%	9.86%	0.83%	11.57%	22.26%	-11.97%	105,249	909,785	120.12%
2009	1,453	92,224	4.50%	5.79%	0.00%	0.00%	10.29%	9.88%	0.83%	12.93%	23.64%	-13.35%	114,561	886,110	124.22%
2010	1,453	97,556	4.50%	5.79%	0.00%	0.00%	10.29%	9.90%	0.83%	14.50%	25.23%	-14.94%	124,703	859,859	127.83%
2011	1,453	104,069	4.50%	5.79%	0.00%	0.00%	10.29%	9.91%	0.83%	16.30%	27.04%	-16.75%	135,748	832,607	130.44%
2012	1,453	110,689	4.50%	5.79%	0.00%	0.00%	10.29%	9.92%	0.83%	18.60%	29.35%	-19.06%	147,776	794,468	133.51%
2013	1,453	117,445	4.50%	5.79%	0.00%	0.00%	10.29%	9.93%	0.83%	21.62%	32.38%	-22.09%	160,870	744,054	136.97%
2014	1,453	124,167	4.50%	5.79%	0.00%	0.00%	10.29%	9.93%	0.83%	25.72%	36.48%	-26.19%	175,116	680,881	141.03%
2015	1,453	132,604	4.50%	5.79%	0.00%	0.00%	10.29%	9.94%	0.83%	31.16%	41.93%	-31.64%	190,615	611,668	143.75%

Duluth Teachers Retirement Fund
Consolidation Study
Option #8 - Close First Class City Teachers' Plans to New Entrants

Year	Total Actives	Total Payroll	Employee Statutory Rate	Employer Statutory Rate	State Contrib Percent	Admin Surcharge Percent	Total Statutory Rate	Normal Cost Percent	Expense as % of Payroll	Supplemental Rate	Total Required Rate	Suff/ (Def) Rate	BOY UAL	PVFS	UAL as % of Payroll
1993	1,453	42,160	4.50%	5.79%	0.00%	0.00%	10.29%	9.17%	0.83%	0.21%	10.21%	0.08%	1,844	864,344	4.37%
1994	1,356	42,156	4.50%	5.79%	0.00%	0.00%	10.29%	9.18%	0.87%	0.41%	10.46%	-0.17%	1,875	10.75	4.45%
1995	1,294	43,091	4.50%	5.79%	0.00%	0.00%	10.29%	9.18%	0.88%	0.42%	10.48%	-0.19%	1,928	10.62	4.47%
1996	1,230	43,527	4.50%	5.79%	0.00%	0.00%	10.29%	9.19%	0.90%	0.44%	10.53%	-0.24%	1,992	10.49	4.58%
1997	1,172	44,173	4.50%	5.79%	0.00%	0.00%	10.29%	9.20%	0.92%	0.45%	10.57%	-0.28%	2,072	10.35	4.69%
1998	1,112	44,367	4.50%	5.79%	0.00%	0.00%	10.29%	9.20%	0.93%	0.48%	10.61%	-0.32%	2,166	10.18	4.88%
1999	1,050	44,006	4.50%	5.79%	0.00%	0.00%	10.29%	9.21%	0.95%	0.52%	10.68%	-0.39%	2,275	10.01	5.17%
2000	989	43,395	4.50%	5.79%	0.00%	0.00%	10.29%	9.23%	0.96%	0.56%	10.75%	-0.46%	2,408	9.83	5.55%
2001	924	42,395	4.50%	5.79%	0.00%	0.00%	10.29%	9.24%	0.97%	0.63%	10.84%	-0.55%	2,565	9.63	6.05%
2002	859	41,069	4.50%	5.79%	0.00%	0.00%	10.29%	9.27%	0.99%	0.71%	10.97%	-0.68%	2,751	9.41	6.70%
2003	804	39,941	4.50%	5.79%	0.00%	0.00%	10.29%	9.29%	1.00%	0.81%	11.10%	-0.81%	2,971	9.17	7.44%
2004	738	38,074	4.50%	5.79%	0.00%	0.00%	10.29%	9.32%	1.02%	0.95%	11.29%	-1.00%	3,225	8.90	8.47%
2005	683	36,603	4.50%	5.79%	0.00%	0.00%	10.29%	9.35%	1.04%	1.12%	11.51%	-1.22%	3,519	8.62	9.61%
2006	633	35,086	4.50%	5.79%	0.00%	0.00%	10.29%	9.38%	1.05%	1.32%	11.75%	-1.46%	3,855	8.32	10.99%
2007	589	33,659	4.50%	5.79%	0.00%	0.00%	10.29%	9.41%	1.06%	1.58%	12.05%	-1.76%	4,234	7.98	12.58%
2008	535	31,192	4.50%	5.79%	0.00%	0.00%	10.29%	9.45%	1.08%	1.96%	12.49%	-2.20%	4,656	7.63	14.93%
2009	492	29,314	4.50%	5.79%	0.00%	0.00%	10.29%	9.49%	1.10%	2.42%	13.01%	-2.72%	5,132	7.23	17.51%
2010	447	27,421	4.50%	5.79%	0.00%	0.00%	10.29%	9.52%	1.12%	3.03%	13.87%	-3.38%	5,660	6.81	20.64%
2011	365	23,286	4.50%	5.79%	0.00%	0.00%	10.29%	9.54%	1.19%	4.22%	14.95%	-4.66%	6,242	6.35	26.81%
2012	313	20,542	4.50%	5.79%	0.00%	0.00%	10.29%	9.57%	1.23%	5.71%	16.51%	-6.22%	6,878	5.86	33.48%
2013	273	18,070	4.50%	5.79%	0.00%	0.00%	10.29%	9.59%	1.28%	7.89%	18.76%	-8.47%	7,573	5.31	41.91%
2014	233	14,745	4.50%	5.79%	0.00%	0.00%	10.29%	9.62%	1.38%	11.94%	22.94%	-12.65%	8,326	4.73	56.47%
2015	195	12,440	4.50%	5.80%	0.00%	0.00%	10.30%	9.65%	1.48%	17.93%	29.06%	-18.76%	9,143	4.10	73.50%

Duluth Teachers Retirement Fund

Consolidation Study

Option #12 - Close First Class City Teachers' Plans to New Entrants and Provide "Greater of" Benefits for Current Employees Only

Year	Total Actives	Total Payroll	Employee Statutory Rate	Employer Statutory Rate	State Contrib Percent	Admin Surcharge Percent	Total Statutory Rate	Normal Cost Percent	Expense as % of Payroll	Supplemental Rate	Total Required Rate	Suff/ (Def) Rate	BOY UAL	PVFS	UAL as % of Payroll
1993	1,453	42,160	4.50%	5.79%	0.00%	0.00%	10.29%	9.17%	0.83%	0.21%	10.21%	0.08%	1,844	864,344	4.37%
1994	1,356	42,156	4.50%	5.79%	0.00%	0.00%	10.29%	10.00%	0.87%	9.21%	20.08%	-9.79%	41,721	10.75	98.97%
1995	1,294	43,091	4.50%	5.79%	0.00%	0.00%	10.29%	10.00%	0.88%	9.95%	20.83%	-10.54%	45,521	10.62	105.64%
1996	1,230	43,527	4.50%	5.79%	0.00%	0.00%	10.29%	10.01%	0.90%	10.88%	21.79%	-11.50%	49,658	10.49	114.09%
1997	1,172	44,173	4.50%	5.79%	0.00%	0.00%	10.29%	10.01%	0.92%	11.85%	22.78%	-12.49%	54,160	10.35	122.61%
1998	1,112	44,367	4.50%	5.79%	0.00%	0.00%	10.29%	10.02%	0.93%	13.08%	24.03%	-13.74%	59,058	10.18	133.11%
1999	1,050	44,006	4.50%	5.79%	0.00%	0.00%	10.29%	10.03%	0.95%	14.62%	25.60%	-15.31%	64,382	10.01	146.30%
2000	989	43,395	4.50%	5.79%	0.00%	0.00%	10.29%	10.05%	0.96%	16.45%	27.46%	-17.17%	70,170	9.83	161.70%
2001	924	42,395	4.50%	5.79%	0.00%	0.00%	10.29%	10.07%	0.97%	18.73%	29.77%	-19.48%	76,458	9.63	180.35%
2002	859	41,069	4.50%	5.79%	0.00%	0.00%	10.29%	10.09%	0.99%	21.55%	32.63%	-22.34%	83,288	9.41	202.80%
2003	804	39,941	4.50%	5.79%	0.00%	0.00%	10.29%	10.12%	1.00%	24.77%	35.89%	-25.60%	90,706	9.17	227.10%
2004	738	38,074	4.50%	5.79%	0.00%	0.00%	10.29%	10.15%	1.02%	29.15%	40.32%	-30.03%	98,761	8.90	259.39%
2005	683	36,603	4.50%	5.79%	0.00%	0.00%	10.29%	10.18%	1.04%	34.07%	45.29%	-35.00%	107,504	8.62	293.70%
2006	633	35,086	4.50%	5.79%	0.00%	0.00%	10.29%	10.21%	1.05%	40.08%	51.34%	-41.05%	116,995	8.32	333.45%
2007	589	33,659	4.50%	5.79%	0.00%	0.00%	10.29%	10.24%	1.06%	47.39%	58.69%	-48.40%	127,296	7.98	378.19%
2008	535	31,192	4.50%	5.79%	0.00%	0.00%	10.29%	10.30%	1.08%	58.18%	69.56%	-59.27%	138,473	7.63	443.94%
2009	492	29,314	4.50%	5.79%	0.00%	0.00%	10.29%	10.33%	1.10%	71.06%	82.49%	-72.20%	150,598	7.23	513.74%
2010	447	27,421	4.50%	5.79%	0.00%	0.00%	10.29%	10.37%	1.12%	87.69%	99.18%	-88.89%	163,748	6.81	597.17%
2011	365	23,286	4.50%	5.79%	0.00%	0.00%	10.29%	10.39%	1.19%	120.39%	131.97%	-121.68%	178,010	6.35	764.45%
2012	313	20,542	4.50%	5.79%	0.00%	0.00%	10.29%	10.42%	1.23%	160.70%	172.35%	-162.06%	193,452	5.86	941.73%
2013	273	18,070	4.50%	5.79%	0.00%	0.00%	10.29%	10.45%	1.28%	219.06%	230.79%	-220.50%	210,188	5.31	1163.19%
2014	233	14,745	4.50%	5.79%	0.00%	0.00%	10.29%	10.47%	1.38%	327.38%	339.23%	-328.94%	228,325	4.73	1548.49%
2015	195	12,440	4.50%	5.80%	0.00%	0.00%	10.30%	10.51%	1.48%	486.18%	498.17%	-487.87%	247,972	4.10	1993.34%

Duluth Teachers Retirement Fund

Consolidation Study

Option #13 - Close First Class City Teachers' Plans to New Entrants and Provide "Greater of" Benefits for All Current Members

Year	Total Actives	Total Payroll	Employee Statutory Rate	Employer Statutory Rate	State Contrib Percent	Admin Surcharge Percent	Total Statutory Rate	Normal Cost Percent	Expense as % of Payroll	Supplemental Rate	Total Required Rate	Suff/ (Def) Rate	BOY UAL	PVFS	UAL as % of Payroll
1993	1,453	42,160	4.50%	5.79%	0.00%	0.00%	10.29%	9.17%	0.83%	0.21%	10.21%	0.08%	1,844	864,344	4.37%
1994	1,356	42,156	4.50%	5.79%	0.00%	0.00%	10.29%	10.00%	0.87%	9.97%	20.84%	-10.55%	45,164	10.75	107.13%
1995	1,294	43,091	4.50%	5.79%	0.00%	0.00%	10.29%	10.00%	0.88%	10.76%	21.64%	-11.35%	49,256	10.62	114.31%
1996	1,230	43,527	4.50%	5.79%	0.00%	0.00%	10.29%	10.01%	0.90%	11.76%	22.67%	-12.38%	53,711	10.49	123.40%
1997	1,172	44,173	4.50%	5.79%	0.00%	0.00%	10.29%	10.01%	0.92%	12.81%	23.74%	-13.45%	58,558	10.35	132.56%
1998	1,112	44,367	4.50%	5.79%	0.00%	0.00%	10.29%	10.02%	0.93%	14.13%	25.08%	-14.79%	63,829	10.18	143.86%
1999	1,050	44,006	4.50%	5.79%	0.00%	0.00%	10.29%	10.03%	0.95%	15.79%	26.77%	-16.48%	69,559	10.01	158.07%
2000	989	43,395	4.50%	5.79%	0.00%	0.00%	10.29%	10.05%	0.96%	17.77%	28.78%	-18.49%	75,787	9.83	174.64%
2001	924	42,395	4.50%	5.79%	0.00%	0.00%	10.29%	10.07%	0.97%	20.22%	31.26%	-20.97%	82,552	9.63	194.72%
2002	859	41,069	4.50%	5.79%	0.00%	0.00%	10.29%	10.09%	0.99%	23.26%	34.34%	-24.05%	89,900	9.41	218.90%
2003	804	39,941	4.50%	5.79%	0.00%	0.00%	10.29%	10.12%	1.00%	26.72%	37.84%	-27.55%	97,880	9.17	245.06%
2004	738	38,074	4.50%	5.79%	0.00%	0.00%	10.29%	10.15%	1.02%	31.44%	42.61%	-32.32%	106,545	8.90	279.84%
2005	683	36,603	4.50%	5.79%	0.00%	0.00%	10.29%	10.18%	1.04%	36.75%	47.97%	-37.68%	115,950	8.62	316.78%
2006	633	35,086	4.50%	5.79%	0.00%	0.00%	10.29%	10.21%	1.05%	43.22%	54.48%	-44.19%	126,159	8.32	359.57%
2007	589	33,659	4.50%	5.79%	0.00%	0.00%	10.29%	10.24%	1.06%	51.09%	62.39%	-52.10%	137,239	7.98	407.73%
2008	535	31,192	4.50%	5.79%	0.00%	0.00%	10.29%	10.30%	1.08%	62.72%	74.10%	-63.81%	149,261	7.63	478.53%
2009	492	29,314	4.50%	5.79%	0.00%	0.00%	10.29%	10.33%	1.10%	76.58%	88.01%	-77.72%	162,303	7.23	553.67%
2010	447	27,421	4.50%	5.79%	0.00%	0.00%	10.29%	10.37%	1.12%	94.49%	105.98%	-95.69%	176,448	6.81	643.49%
2011	365	23,286	4.50%	5.79%	0.00%	0.00%	10.29%	10.39%	1.19%	129.70%	141.28%	-130.99%	191,789	6.35	823.63%
2012	313	20,542	4.50%	5.79%	0.00%	0.00%	10.29%	10.42%	1.23%	173.12%	184.77%	-174.48%	208,402	5.86	1014.50%
2013	273	18,070	4.50%	5.79%	0.00%	0.00%	10.29%	10.45%	1.28%	235.96%	247.69%	-237.40%	226,409	5.31	1252.96%
2014	233	14,745	4.50%	5.79%	0.00%	0.00%	10.29%	10.47%	1.38%	352.61%	364.46%	-354.17%	245,925	4.73	1667.85%
2015	195	12,440	4.50%	5.80%	0.00%	0.00%	10.30%	10.51%	1.48%	523.62%	535.61%	-525.31%	267,068	4.10	2146.84%

St. Paul Teachers Retirement Fund
Consolidation Study
Option #1 - Continue Current Program

Year	Total Actives	Total Payroll	Employee Statutory Rate	Employer Statutory Rate	State Contrib Percent	Admin Surcharge Percent	Total Statutory Rate	Normal Cost Percent	Expense as % of Payroll	Supplemental Rate	Total Required Rate	Suff/ (Def) Rate	BOY UAL	PVFS	UAL as % of Payroll
1993	3,441	130,921	6.19%	8.68%	0.38%	0.12%	15.37%	11.78%	0.27%	6.63%	18.68%	-3.31%	177,891	2,683,742	135.88%
1994	3,441	136,089	6.01%	8.87%	0.38%	0.12%	15.38%	11.43%	0.27%	6.96%	18.66%	-3.28%	188,478	2,708,935	138.50%
1995	3,441	142,952	5.90%	9.55%	0.37%	0.12%	15.94%	11.24%	0.27%	7.22%	18.73%	-2.79%	199,278	2,759,367	139.40%
1996	3,441	150,241	5.80%	9.44%	0.36%	0.12%	15.72%	11.06%	0.27%	7.46%	18.79%	-3.07%	209,614	2,808,037	139.52%
1997	3,441	157,636	5.68%	9.32%	0.36%	0.12%	15.48%	10.85%	0.27%	7.74%	18.86%	-3.38%	220,547	2,848,188	139.91%
1998	3,441	165,759	5.57%	9.21%	0.35%	0.12%	15.25%	10.67%	0.27%	8.03%	18.97%	-3.72%	232,133	2,890,270	140.04%
1999	3,441	173,347	5.46%	9.10%	0.34%	0.12%	15.02%	10.47%	0.27%	8.40%	19.14%	-4.12%	244,395	2,909,767	140.99%
2000	3,441	182,000	5.36%	9.00%	0.34%	0.12%	14.82%	10.30%	0.27%	8.77%	19.34%	-4.52%	257,421	2,934,833	141.44%
2001	3,441	190,309	5.26%	8.90%	0.33%	0.12%	14.61%	10.12%	0.27%	9.22%	19.61%	-5.00%	271,230	2,941,329	142.52%
2002	3,441	199,417	5.15%	8.79%	0.33%	0.12%	14.39%	9.93%	0.27%	9.70%	19.90%	-5.51%	285,910	2,946,599	143.37%
2003	3,441	208,248	5.04%	8.68%	0.32%	0.12%	14.16%	9.73%	0.27%	10.28%	20.28%	-6.12%	301,505	2,931,601	144.78%
2004	3,441	217,998	4.92%	8.56%	0.32%	0.12%	13.92%	9.54%	0.27%	10.92%	20.73%	-6.81%	318,116	2,914,476	145.93%
2005	3,441	228,286	4.82%	8.46%	0.31%	0.12%	13.71%	9.36%	0.27%	11.64%	21.27%	-7.56%	335,796	2,885,982	147.09%
2006	3,441	240,147	4.74%	8.38%	0.31%	0.12%	13.55%	9.21%	0.27%	12.40%	21.88%	-8.33%	354,612	2,858,975	147.66%
2007	3,441	252,405	4.66%	8.30%	0.30%	0.12%	13.38%	9.08%	0.27%	13.31%	22.66%	-9.28%	374,597	2,814,075	148.41%
2008	3,441	265,903	4.60%	8.24%	0.29%	0.12%	13.25%	8.98%	0.27%	14.34%	23.59%	-10.34%	395,827	2,760,994	148.86%
2009	3,441	280,218	4.56%	8.20%	0.29%	0.12%	13.17%	8.91%	0.27%	15.54%	24.72%	-11.55%	418,359	2,692,417	149.30%
2010	3,441	296,457	4.54%	8.18%	0.28%	0.12%	13.12%	8.86%	0.27%	16.93%	26.06%	-12.94%	442,255	2,612,964	149.18%
2011	3,441	313,893	4.52%	8.16%	0.27%	0.12%	13.07%	8.83%	0.27%	18.62%	27.72%	-14.65%	467,552	2,511,310	148.95%
2012	3,441	332,934	4.51%	8.15%	0.26%	0.12%	13.04%	8.81%	0.27%	20.69%	29.77%	-16.73%	494,317	2,389,632	148.47%
2013	3,441	353,139	4.50%	8.14%	0.26%	0.12%	13.02%	8.81%	0.27%	23.36%	32.44%	-19.42%	522,605	2,237,257	147.99%
2014	3,441	375,599	4.50%	8.14%	0.25%	0.12%	13.01%	8.80%	0.27%	26.82%	35.89%	-22.88%	552,497	2,059,638	147.10%
2015	3,441	399,960	4.50%	8.14%	0.24%	0.12%	13.00%	8.80%	0.27%	31.66%	40.73%	-27.73%	584,040	1,844,913	146.02%

St. Paul Teachers Retirement Fund

Consolidation Study

Option #7 - Continue Current Program except change COLA from 13th check to SBI COLA

Year	Total Actives	Total Payroll	Employee Statutory Rate	Employer Statutory Rate	State Contrib Percent	Admin Surcharge Percent	Total Statutory Rate	Normal Cost Percent	Expense as % of Payroll	Supplemental Rate	Total Required Rate	Suff/ (Def) Rate	BOY UAL	PVFS	UAL as % of Payroll
1993	3,441	130,921	6.19%	8.68%	0.38%	0.12%	15.37%	11.78%	0.27%	6.63%	18.68%	-3.31%	177,891	2,683,742	135.88%
1994	3,441	136,089	6.01%	8.87%	0.38%	0.12%	15.38%	11.97%	0.27%	11.86%	23.90%	-8.52%	315,772	2,708,935	232.03%
1995	3,441	142,952	5.90%	9.55%	0.37%	0.12%	15.94%	11.77%	0.27%	12.25%	24.29%	-8.35%	338,153	2,759,367	236.55%
1996	3,441	150,241	5.80%	9.44%	0.36%	0.12%	15.72%	11.58%	0.27%	12.86%	24.71%	-8.99%	361,079	2,808,037	240.33%
1997	3,441	157,636	5.68%	9.32%	0.36%	0.12%	15.48%	11.36%	0.27%	13.54%	25.17%	-9.69%	385,699	2,848,188	244.68%
1998	3,441	165,759	5.57%	9.21%	0.35%	0.12%	15.25%	11.17%	0.27%	14.26%	25.70%	-10.45%	412,160	2,890,270	248.65%
1999	3,441	173,347	5.46%	9.10%	0.34%	0.12%	15.02%	10.96%	0.27%	15.14%	26.37%	-11.35%	440,588	2,909,767	254.17%
2000	3,441	182,000	5.36%	9.00%	0.34%	0.12%	14.82%	10.79%	0.27%	16.05%	27.11%	-12.29%	471,178	2,934,833	258.89%
2001	3,441	190,309	5.26%	8.90%	0.33%	0.12%	14.61%	10.60%	0.27%	17.14%	28.01%	-13.40%	504,072	2,941,329	264.87%
2002	3,441	199,417	5.15%	8.79%	0.33%	0.12%	14.39%	10.40%	0.27%	18.31%	28.98%	-14.59%	539,485	2,946,599	270.53%
2003	3,441	208,248	5.04%	8.68%	0.32%	0.12%	14.18%	10.19%	0.27%	19.70%	30.16%	-16.00%	577,603	2,931,601	277.36%
2004	3,441	217,998	4.92%	8.56%	0.32%	0.12%	13.92%	9.98%	0.27%	21.23%	31.48%	-17.56%	618,673	2,914,476	283.80%
2005	3,441	228,286	4.82%	8.46%	0.31%	0.12%	13.71%	9.80%	0.27%	22.97%	33.04%	-19.33%	662,918	2,885,982	290.39%
2006	3,441	240,147	4.74%	8.38%	0.31%	0.12%	13.55%	9.64%	0.27%	24.85%	34.76%	-21.21%	710,584	2,858,975	295.89%
2007	3,441	252,405	4.66%	8.30%	0.30%	0.12%	13.38%	9.51%	0.27%	27.07%	36.85%	-23.47%	761,908	2,814,075	301.86%
2008	3,441	265,903	4.60%	8.24%	0.29%	0.12%	13.25%	9.40%	0.27%	29.80%	39.27%	-26.02%	817,180	2,760,994	307.32%
2009	3,441	280,218	4.56%	8.20%	0.29%	0.12%	13.17%	9.33%	0.27%	32.56%	42.16%	-28.99%	876,694	2,692,417	312.86%
2010	3,441	296,457	4.54%	8.18%	0.28%	0.12%	13.12%	9.28%	0.27%	36.00%	45.55%	-32.43%	940,769	2,612,964	317.34%
2011	3,441	313,893	4.52%	8.16%	0.27%	0.12%	13.07%	9.24%	0.27%	40.21%	49.72%	-36.65%	1,009,725	2,511,310	321.68%
2012	3,441	332,934	4.51%	8.15%	0.26%	0.12%	13.04%	9.23%	0.27%	45.36%	54.86%	-41.82%	1,083,930	2,389,632	325.57%
2013	3,441	353,139	4.50%	8.14%	0.26%	0.12%	13.02%	9.22%	0.27%	52.02%	61.51%	-48.49%	1,163,770	2,237,257	329.55%
2014	3,441	375,599	4.50%	8.14%	0.25%	0.12%	13.01%	9.22%	0.27%	60.67%	70.16%	-57.15%	1,249,682	2,059,638	332.72%
2015	3,441	399,960	4.50%	8.14%	0.24%	0.12%	13.00%	9.21%	0.27%	72.75%	82.23%	-69.23%	1,342,102	1,844,913	335.56%

St. Paul Teachers Retirement Fund
Consolidation Study
Option #8 - Close First Class City Teachers' Plans to New Entrants

Year	Total Actives	Total Payroll	Employee Statutory Rate	Employer Statutory Rate	State Contrib Percent	Admin Surcharge Percent	Total Statutory Rate	Normal Cost Percent	Expense as % of Payroll	Supplemental Rate	Total Required Rate	Suff/ (Def) Rate	BOY UAL	PVFS	UAL as % of Payroll
1993	3,441	130,921	6.19%	8.68%	0.38%	0.12%	15.37%	11.78%	0.27%	6.63%	18.68%	-3.31%	177,891	2,683,742	135.88%
1994	3,124	126,100	6.13%	9.09%	0.41%	0.13%	15.76%	11.64%	0.28%	13.90%	25.82%	-10.06%	188,478	10.75	149.47%
1995	2,902	124,864	6.11%	9.75%	0.42%	0.13%	16.41%	11.59%	0.28%	15.04%	26.91%	-10.50%	199,440	10.62	159.73%
1996	2,695	123,578	6.08%	9.72%	0.44%	0.14%	16.38%	11.55%	0.29%	16.24%	28.08%	-11.70%	210,486	10.49	170.33%
1997	2,499	121,779	6.03%	9.67%	0.46%	0.14%	16.30%	11.46%	0.29%	17.65%	29.40%	-13.10%	222,519	10.35	182.72%
1998	2,314	120,073	5.98%	9.62%	0.48%	0.15%	16.23%	11.38%	0.30%	19.28%	30.96%	-14.73%	235,651	10.18	196.26%
1999	2,137	117,049	5.93%	9.57%	0.51%	0.15%	16.16%	11.28%	0.30%	21.33%	32.91%	-16.75%	249,970	10.01	213.56%
2000	1,983	114,961	5.87%	9.51%	0.53%	0.15%	16.06%	11.18%	0.30%	23.51%	34.99%	-18.93%	265,637	9.83	231.07%
2001	1,828	111,323	5.80%	9.44%	0.57%	0.16%	15.97%	11.06%	0.31%	26.37%	37.74%	-21.77%	282,723	9.63	253.97%
2002	1,683	107,735	5.70%	9.35%	0.60%	0.16%	15.81%	10.89%	0.31%	29.73%	40.93%	-25.12%	301,418	9.41	279.78%
2003	1,540	102,665	5.59%	9.23%	0.65%	0.16%	15.63%	10.69%	0.31%	34.19%	45.19%	-29.56%	321,859	9.17	313.51%
2004	1,397	97,092	5.45%	9.09%	0.71%	0.17%	15.42%	10.46%	0.32%	39.84%	50.62%	-35.20%	344,263	8.90	354.57%
2005	1,260	90,891	5.31%	8.95%	0.78%	0.17%	15.21%	10.21%	0.32%	47.07%	57.60%	-42.39%	368,818	8.62	405.78%
2006	1,146	86,174	5.16%	8.80%	0.85%	0.17%	14.98%	9.95%	0.32%	55.19%	65.46%	-50.48%	395,727	8.32	459.22%
2007	1,033	80,349	5.01%	8.65%	0.94%	0.18%	14.78%	9.69%	0.33%	66.30%	76.32%	-61.54%	425,128	7.98	529.10%
2008	920	74,065	4.87%	8.51%	1.05%	0.18%	14.61%	9.44%	0.33%	80.92%	90.69%	-76.08%	457,274	7.63	617.39%
2009	812	67,158	4.77%	8.41%	1.19%	0.19%	14.56%	9.27%	0.34%	101.41%	111.02%	-96.46%	492,407	7.23	733.21%
2010	734	62,816	4.67%	8.31%	1.31%	0.19%	14.48%	9.10%	0.34%	124.08%	133.52%	-119.04%	530,793	6.81	845.00%
2011	645	56,884	4.60%	8.24%	1.49%	0.20%	14.53%	8.97%	0.35%	158.52%	167.84%	-153.31%	572,604	6.35	1006.61%
2012	570	51,877	4.55%	8.19%	1.69%	0.21%	14.64%	8.90%	0.36%	203.35%	212.61%	-197.97%	618,185	5.86	1191.63%
2013	508	47,350	4.53%	8.17%	1.90%	0.21%	14.81%	8.86%	0.36%	265.61%	274.83%	-260.02%	667,815	5.31	1410.39%
2014	439	42,272	4.51%	8.15%	2.20%	0.22%	15.08%	8.82%	0.37%	361.01%	370.20%	-355.12%	721,814	4.73	1707.56%
2015	379	37,872	4.50%	8.14%	2.53%	0.23%	15.40%	8.80%	0.38%	502.70%	511.88%	-496.48%	780,572	4.10	2061.06%

St. Paul Teachers Retirement Fund

Consolidation Study

Option #12 - Close First Class City Teachers' Plans to New Entrants and Provide "Greater of" Benefits for Active Employees Only

Year	Total Actives	Total Payroll	Employee Statutory Rate	Employer Statutory Rate	State Contrib Percent	Admin Surcharge Percent	Total Statutory Rate	Normal Cost Percent	Expense as % of Payroll	Supplemental Rate	Total Required Rate	Suff/ (Def) Rate	BOY UAL	PVFS	UAL as % of Payroll
1993	3,441	130,921	6.19%	8.68%	0.38%	0.12%	15.37%	11.78%	0.27%	6.63%	18.68%	-3.31%	177,891	2,683,742	135.88%
1994	3,124	126,100	6.13%	9.09%	0.41%	0.13%	15.76%	13.38%	0.28%	24.90%	38.56%	-22.80%	337,531	10.75	267.67%
1995	2,902	124,864	6.11%	9.75%	0.42%	0.13%	16.41%	13.33%	0.28%	27.41%	41.02%	-24.61%	363,458	10.62	291.08%
1996	2,695	123,578	6.08%	9.72%	0.44%	0.14%	16.38%	13.28%	0.29%	30.14%	43.71%	-27.33%	390,709	10.49	316.16%
1997	2,499	121,779	6.03%	9.67%	0.46%	0.14%	16.30%	13.18%	0.29%	33.35%	46.82%	-30.52%	420,292	10.35	345.13%
1998	2,314	120,073	5.98%	9.62%	0.48%	0.15%	16.23%	13.08%	0.30%	37.01%	50.39%	-34.16%	452,418	10.18	376.79%
1999	2,137	117,049	5.93%	9.57%	0.51%	0.15%	16.16%	12.97%	0.30%	41.59%	54.86%	-38.70%	487,298	10.01	416.32%
2000	1,983	114,961	5.87%	9.51%	0.53%	0.15%	16.06%	12.85%	0.30%	46.48%	59.63%	-43.57%	525,200	9.83	456.85%
2001	1,828	111,323	5.80%	9.44%	0.57%	0.16%	15.97%	12.72%	0.31%	52.83%	65.86%	-49.89%	566,357	9.63	508.75%
2002	1,683	107,735	5.70%	9.35%	0.60%	0.16%	15.81%	12.53%	0.31%	60.28%	73.12%	-57.31%	611,085	9.41	567.21%
2003	1,540	102,665	5.59%	9.23%	0.65%	0.16%	15.63%	12.29%	0.31%	70.07%	82.67%	-67.04%	659,684	9.17	642.56%
2004	1,397	97,092	5.45%	9.09%	0.71%	0.17%	15.42%	12.02%	0.32%	82.46%	94.80%	-79.38%	712,519	8.90	733.86%
2005	1,260	90,891	5.31%	8.95%	0.78%	0.17%	15.21%	11.74%	0.32%	98.27%	110.33%	-95.12%	769,963	8.62	847.13%
2006	1,146	86,174	5.16%	8.80%	0.85%	0.17%	14.98%	11.44%	0.32%	116.10%	127.86%	-112.88%	832,420	8.32	965.96%
2007	1,033	80,349	5.01%	8.65%	0.94%	0.18%	14.78%	11.15%	0.33%	140.41%	151.89%	-137.11%	900,281	7.98	1120.46%
2008	920	74,065	4.87%	8.51%	1.05%	0.18%	14.61%	10.86%	0.33%	172.36%	183.55%	-168.94%	974,032	7.63	1315.10%
2009	812	67,158	4.77%	8.41%	1.19%	0.19%	14.56%	10.66%	0.34%	217.11%	228.11%	-213.55%	1,054,182	7.23	1569.71%
2010	734	62,816	4.67%	8.31%	1.31%	0.19%	14.48%	10.47%	0.34%	266.80%	277.61%	-263.13%	1,141,291	6.81	1816.88%
2011	645	56,884	4.60%	8.24%	1.49%	0.20%	14.53%	10.32%	0.35%	342.15%	352.82%	-338.29%	1,235,889	6.35	2172.64%
2012	570	51,877	4.55%	8.19%	1.69%	0.21%	14.64%	10.23%	0.36%	440.34%	450.93%	-436.29%	1,338,646	5.86	2580.40%
2013	508	47,350	4.53%	8.17%	1.90%	0.21%	14.81%	10.18%	0.36%	576.80%	587.34%	-572.53%	1,450,236	5.31	3062.83%
2014	439	42,272	4.51%	8.15%	2.20%	0.22%	15.08%	10.14%	0.37%	785.91%	796.42%	-781.34%	1,571,395	4.73	3717.36%
2015	379	37,872	4.50%	8.14%	2.53%	0.23%	15.40%	10.12%	0.38%	1096.72%	1107.22%	-1091.82%	1,702,950	4.10	4496.55%

St. Paul Teachers Retirement Fund

Consolidation Study

Option #13 - Close First Class City Teachers' Plans to New Entrants and Provide "Greater of" Benefits for All Current Members

Year	Total Actives	Total Payroll	Employee Statutory Rate	Employer Statutory Rate	State Contrib Percent	Admin Surcharge Percent	Total Statutory Rate	Normal Cost Percent	Expense as % of Payroll	Supplemental Rate	Total Required Rate	Suff/ (Def) Rate	BOY UAL	PVFS	UAL as % of Payroll
1993	3,441	130,921	6.19%	8.68%	0.38%	0.12%	15.37%	11.78%	0.27%	6.63%	18.68%	-3.31%	177,891	2,683,742	135.88%
1994	3,124	126,100	6.13%	9.09%	0.41%	0.13%	15.76%	13.38%	0.28%	26.41%	40.07%	-24.31%	357,993	10.75	283.90%
1995	2,902	124,864	6.11%	9.75%	0.42%	0.13%	16.41%	13.33%	0.28%	29.08%	42.69%	-26.28%	385,659	10.62	308.86%
1996	2,695	123,578	6.08%	9.72%	0.44%	0.14%	16.38%	13.28%	0.29%	32.00%	45.57%	-29.19%	414,797	10.49	335.66%
1997	2,499	121,779	6.03%	9.67%	0.46%	0.14%	16.30%	13.18%	0.29%	35.42%	48.89%	-32.59%	446,427	10.35	366.59%
1998	2,314	120,073	5.98%	9.62%	0.48%	0.15%	16.23%	13.08%	0.30%	39.33%	52.71%	-36.48%	480,774	10.18	400.40%
1999	2,137	117,049	5.93%	9.57%	0.51%	0.15%	16.16%	12.97%	0.30%	44.22%	57.49%	-41.33%	518,064	10.01	442.60%
2000	1,983	114,961	5.87%	9.51%	0.53%	0.15%	16.06%	12.85%	0.30%	49.43%	62.58%	-46.52%	558,582	9.83	485.89%
2001	1,828	111,323	5.80%	9.44%	0.57%	0.16%	15.97%	12.72%	0.31%	56.21%	69.24%	-53.27%	602,577	9.63	541.29%
2002	1,683	107,735	5.70%	9.35%	0.60%	0.16%	15.81%	12.53%	0.31%	64.15%	76.99%	-61.18%	650,384	9.41	603.69%
2003	1,540	102,665	5.59%	9.23%	0.65%	0.16%	15.63%	12.29%	0.31%	74.60%	87.20%	-71.57%	702,323	9.17	684.09%
2004	1,397	97,092	5.45%	9.09%	0.71%	0.17%	15.42%	12.02%	0.32%	87.81%	100.15%	-84.73%	758,782	8.90	781.51%
2005	1,260	90,891	5.31%	8.95%	0.78%	0.17%	15.21%	11.74%	0.32%	104.68%	116.74%	-101.53%	820,158	8.62	902.35%
2006	1,146	86,174	5.16%	8.80%	0.85%	0.17%	14.98%	11.44%	0.32%	123.70%	135.46%	-120.48%	886,882	8.32	1029.18%
2007	1,033	80,349	5.01%	8.65%	0.94%	0.18%	14.78%	11.15%	0.33%	149.62%	161.10%	-146.32%	959,372	7.98	1194.01%
2008	920	74,065	4.87%	8.51%	1.05%	0.18%	14.61%	10.86%	0.33%	183.70%	194.89%	-180.28%	1,038,146	7.63	1401.66%
2009	812	67,158	4.77%	8.41%	1.19%	0.19%	14.56%	10.66%	0.34%	231.44%	242.44%	-227.88%	1,123,746	7.23	1673.29%
2010	734	62,816	4.67%	8.31%	1.31%	0.19%	14.48%	10.47%	0.34%	284.44%	295.25%	-280.77%	1,216,768	6.81	1937.03%
2011	645	56,884	4.60%	8.24%	1.49%	0.20%	14.53%	10.32%	0.35%	364.82%	375.49%	-360.96%	1,317,781	6.35	2316.60%
2012	570	51,877	4.55%	8.19%	1.69%	0.21%	14.64%	10.23%	0.36%	469.57%	480.16%	-465.52%	1,427,499	5.86	2751.67%
2013	508	47,350	4.53%	8.17%	1.90%	0.21%	14.81%	10.18%	0.36%	615.15%	625.69%	-610.88%	1,546,642	5.31	3266.43%
2014	439	42,272	4.51%	8.15%	2.20%	0.22%	15.08%	10.14%	0.37%	838.23%	848.74%	-833.66%	1,675,996	4.73	3964.81%
2015	379	37,872	4.50%	8.14%	2.53%	0.23%	15.40%	10.12%	0.38%	1169.81%	1180.31%	-1164.91%	1,816,442	4.10	4796.22%

Minneapolis Teachers Retirement Fund

Consolidation Study

Option #1 - Continue Current Program

Year	Total Actives	Total Payroll	Employee Statutory Rate	Employer Statutory Rate	State Contrib Percent	Admin Surcharge Percent	Total Statutory Rate	Normal Cost Percent	Expense as % of Payroll	Supplemental Rate	Total Required Rate	Suff/ (Def) Rate	BOY UAL	PVFS	UAL as % of Payroll
1993	4,297	144,313	6.38%	8.91%	3.46%	0.27%	19.02%	12.66%	0.43%	12.74%	25.83%	-6.81%	376,952	2,958,264	261.20%
1994	4,297	152,432	6.19%	9.83%	3.28%	0.27%	19.57%	12.33%	0.43%	13.19%	25.95%	-6.38%	400,071	3,034,252	262.46%
1995	4,297	162,163	6.12%	9.76%	3.08%	0.27%	19.23%	12.21%	0.43%	13.52%	26.16%	-6.93%	423,258	3,130,178	261.01%
1996	4,297	172,300	6.05%	9.69%	2.90%	0.27%	18.91%	12.09%	0.43%	13.91%	26.43%	-7.52%	448,084	3,220,316	260.06%
1997	4,297	182,795	5.98%	9.62%	2.74%	0.27%	18.61%	11.96%	0.43%	14.37%	26.76%	-8.15%	474,675	3,302,776	259.68%
1998	4,297	193,477	5.89%	9.53%	2.58%	0.27%	18.27%	11.80%	0.43%	14.92%	27.15%	-8.88%	503,175	3,373,572	260.07%
1999	4,297	204,281	5.79%	9.43%	2.45%	0.27%	17.94%	11.61%	0.43%	15.57%	27.61%	-9.67%	533,750	3,429,023	261.28%
2000	4,297	214,987	5.69%	9.33%	2.33%	0.27%	17.62%	11.44%	0.43%	16.34%	28.21%	-10.59%	566,579	3,466,758	263.54%
2001	4,297	226,401	5.58%	9.22%	2.21%	0.27%	17.28%	11.24%	0.43%	17.20%	28.87%	-11.59%	601,865	3,499,151	265.84%
2002	4,297	237,704	5.45%	9.09%	2.10%	0.27%	16.91%	11.01%	0.43%	18.22%	29.66%	-12.75%	639,801	3,512,328	269.16%
2003	4,297	249,145	5.31%	8.95%	2.01%	0.27%	16.54%	10.76%	0.43%	19.41%	30.60%	-14.06%	680,627	3,507,335	273.18%
2004	4,297	262,162	5.19%	8.83%	1.91%	0.27%	16.20%	10.56%	0.43%	20.67%	31.66%	-15.46%	724,601	3,504,924	276.39%
2005	4,297	275,390	5.07%	8.71%	1.82%	0.27%	15.87%	10.34%	0.43%	22.17%	32.94%	-17.07%	771,932	3,481,470	280.31%
2006	4,297	288,841	4.92%	8.56%	1.73%	0.27%	15.48%	10.07%	0.43%	23.93%	34.43%	-18.95%	822,904	3,438,675	284.90%
2007	4,297	303,015	4.77%	8.41%	1.65%	0.27%	15.10%	9.81%	0.43%	25.98%	36.22%	-21.12%	877,847	3,378,324	289.70%
2008	4,297	319,801	4.68%	8.32%	1.56%	0.27%	14.83%	9.64%	0.43%	28.22%	38.29%	-23.46%	937,081	3,320,634	293.02%
2009	4,297	338,361	4.62%	8.26%	1.48%	0.27%	14.63%	9.54%	0.43%	30.79%	40.76%	-26.13%	1,000,855	3,251,070	295.79%
2010	4,297	357,760	4.57%	8.21%	1.40%	0.27%	14.45%	9.44%	0.43%	33.92%	43.79%	-29.34%	1,069,474	3,153,285	298.94%
2011	4,297	379,657	4.54%	8.18%	1.32%	0.27%	14.31%	9.39%	0.43%	37.64%	47.46%	-33.15%	1,143,324	3,037,456	301.15%
2012	4,297	402,912	4.52%	8.16%	1.24%	0.27%	14.19%	9.36%	0.43%	42.28%	52.07%	-37.88%	1,222,752	2,891,902	303.48%
2013	4,297	427,421	4.51%	8.15%	1.17%	0.27%	14.10%	9.34%	0.43%	48.31%	58.08%	-43.98%	1,308,181	2,707,859	306.06%
2014	4,297	454,487	4.50%	8.14%	1.10%	0.27%	14.01%	9.33%	0.43%	56.18%	65.94%	-51.93%	1,400,069	2,492,229	308.05%
2015	4,297	482,170	4.50%	8.14%	1.04%	0.27%	13.95%	9.32%	0.43%	67.39%	77.14%	-63.19%	1,498,886	2,224,124	310.86%

Minneapolis Teachers Retirement Fund

Consolidation Study

Option #3B - Continue Current Program With Excess State Contributions Not Used By MERF

Year	Total Actives	Total Payroll	Employee Statutory Rate	Employer Statutory Rate	State Contrib Percent	Admin Surcharge Percent	Total Statutory Rate	Normal Cost Percent	Expense as % of Payroll	Supplemental Rate	Total Required Rate	Suff/ (Def) Rate	BOY UAL	PVFS	UAL as % of Payroll
1993	4,297	144,313	6.38%	8.91%	3.46%	0.27%	19.02%	12.66%	0.43%	12.74%	25.83%	-6.81%	376,952	2,958,264	261.20%
1994	4,297	152,432	6.19%	9.83%	3.28%	0.27%	19.57%	12.33%	0.43%	13.19%	25.95%	-6.38%	400,071	3,034,252	262.46%
1995	4,297	162,163	6.12%	9.76%	3.08%	0.27%	19.23%	12.21%	0.43%	13.52%	26.16%	-6.93%	423,258	3,130,178	261.01%
1996	4,297	172,300	6.05%	9.69%	2.90%	0.27%	18.91%	12.09%	0.43%	13.91%	26.43%	-7.52%	448,084	3,220,316	260.06%
1997	4,297	182,795	5.98%	9.62%	2.74%	0.27%	18.61%	11.96%	0.43%	14.37%	26.76%	-8.15%	474,675	3,302,776	259.68%
1998	4,297	193,477	5.89%	9.53%	2.58%	0.27%	18.27%	11.80%	0.43%	14.92%	27.15%	-8.88%	503,175	3,373,572	260.07%
1999	4,297	204,281	5.79%	9.43%	2.45%	0.27%	17.94%	11.61%	0.43%	15.57%	27.61%	-9.67%	533,750	3,429,023	261.28%
2000	4,297	214,987	5.69%	9.33%	2.33%	0.27%	17.62%	11.44%	0.43%	16.34%	28.21%	-10.59%	566,579	3,466,758	263.54%
2001	4,297	226,401	5.58%	9.22%	2.53%	0.27%	17.60%	11.24%	0.43%	17.20%	28.87%	-11.27%	601,865	3,499,151	265.84%
2002	4,297	237,704	5.45%	9.09%	2.84%	0.27%	17.65%	11.01%	0.43%	18.19%	29.63%	-11.98%	639,033	3,512,328	268.84%
2003	4,297	249,145	5.31%	8.95%	3.13%	0.27%	17.66%	10.76%	0.43%	19.33%	30.52%	-12.86%	677,980	3,507,335	272.12%
2004	4,297	262,162	5.19%	8.83%	3.41%	0.27%	17.70%	10.56%	0.43%	20.51%	31.50%	-13.80%	718,815	3,504,924	274.19%
2005	4,297	275,390	5.07%	8.71%	3.69%	0.27%	17.74%	10.34%	0.43%	21.87%	32.64%	-14.90%	761,543	3,481,470	276.53%
2006	4,297	288,841	4.92%	8.56%	3.98%	0.27%	17.73%	10.07%	0.43%	23.45%	33.95%	-16.22%	806,243	3,438,675	279.13%
2007	4,297	303,015	4.77%	8.41%	4.25%	0.27%	17.70%	9.81%	0.43%	25.25%	35.49%	-17.79%	852,998	3,378,324	281.50%
2008	4,297	319,801	4.68%	8.32%	4.48%	0.27%	17.75%	9.64%	0.43%	27.16%	37.23%	-19.48%	901,923	3,320,634	282.03%
2009	4,297	338,361	4.62%	8.26%	4.57%	0.27%	17.72%	9.54%	0.43%	29.31%	39.28%	-21.56%	952,995	3,251,070	281.65%
2010	4,297	357,760	4.57%	8.21%	4.32%	0.27%	17.37%	9.44%	0.43%	31.92%	41.79%	-24.42%	1,006,646	3,153,285	281.37%
2011	4,297	379,657	4.54%	8.18%	4.07%	0.27%	17.06%	9.39%	0.43%	35.04%	44.86%	-27.80%	1,064,256	3,037,456	280.32%
2012	4,297	402,912	4.52%	8.16%	3.84%	0.27%	16.79%	9.36%	0.43%	38.94%	48.73%	-31.94%	1,126,064	2,891,902	279.48%
2013	4,297	427,421	4.51%	8.15%	3.62%	0.27%	16.55%	9.34%	0.43%	44.03%	53.80%	-37.25%	1,192,375	2,707,859	278.97%
2014	4,297	454,487	4.50%	8.14%	3.40%	0.27%	16.31%	9.33%	0.43%	50.70%	60.46%	-44.15%	1,263,520	2,492,229	278.01%
2015	4,297	482,170	4.50%	8.14%	3.21%	0.27%	16.12%	9.32%	0.43%	60.24%	69.99%	-53.87%	1,339,831	2,224,124	277.88%

Minneapolis Teachers Retirement Fund

Consolidation Study

Option #7 - Continue Current Program except change COLA from 13th check to SBI COLA

Year	Total Actives	Total Payroll	Employee Statutory Rate	Employer Statutory Rate	State Contrib Percent	Admin Surcharge Percent	Total Statutory Rate	Normal Cost Percent	Expense as % of Payroll	Supplemental Rate	Total Required Rate	Suff/ (Def) Rate	BOY UAL	PVFS	UAL as % of Payroll
1993	4,297	144,313	6.38%	8.91%	3.46%	0.27%	19.02%	12.66%	0.43%	12.74%	25.83%	-6.81%	376,952	2,958,264	261.20%
1994	4,297	152,432	6.19%	9.83%	3.28%	0.27%	19.57%	13.69%	0.43%	16.99%	31.11%	-11.54%	515,465	3,034,252	338.16%
1995	4,297	162,163	6.12%	9.76%	3.08%	0.27%	19.23%	13.55%	0.43%	17.59%	31.57%	-12.34%	550,616	3,130,178	339.55%
1996	4,297	172,300	6.05%	9.69%	2.90%	0.27%	18.91%	13.42%	0.43%	18.28%	32.13%	-13.22%	588,537	3,220,316	341.58%
1997	4,297	182,795	5.98%	9.62%	2.74%	0.27%	18.61%	13.27%	0.43%	19.06%	32.76%	-14.15%	629,455	3,302,776	344.35%
1998	4,297	193,477	5.89%	9.53%	2.58%	0.27%	18.27%	13.10%	0.43%	19.97%	33.50%	-15.23%	673,618	3,373,572	348.16%
1999	4,297	204,281	5.79%	9.43%	2.45%	0.27%	17.94%	12.89%	0.43%	21.04%	34.36%	-16.42%	721,298	3,429,023	353.09%
2000	4,297	214,987	5.69%	9.33%	2.33%	0.27%	17.62%	12.69%	0.43%	22.29%	35.41%	-17.79%	772,789	3,466,758	359.46%
2001	4,297	226,401	5.58%	9.22%	2.21%	0.27%	17.28%	12.47%	0.43%	23.67%	36.57%	-19.29%	828,423	3,499,151	365.91%
2002	4,297	237,704	5.45%	9.09%	2.10%	0.27%	16.91%	12.23%	0.43%	25.30%	37.96%	-21.05%	888,534	3,512,328	373.80%
2003	4,297	249,145	5.31%	8.95%	2.01%	0.27%	16.54%	11.95%	0.43%	27.19%	39.57%	-23.03%	953,506	3,507,335	382.71%
2004	4,297	262,162	5.19%	8.83%	1.91%	0.27%	16.20%	11.72%	0.43%	29.21%	41.36%	-25.16%	1,023,751	3,504,924	390.50%
2005	4,297	275,390	5.07%	8.71%	1.82%	0.27%	15.87%	11.47%	0.43%	31.59%	43.49%	-27.62%	1,099,683	3,481,470	399.32%
2006	4,297	288,841	4.92%	8.56%	1.73%	0.27%	15.48%	11.18%	0.43%	34.37%	45.98%	-30.50%	1,181,779	3,438,675	409.15%
2007	4,297	303,015	4.77%	8.41%	1.65%	0.27%	15.10%	10.89%	0.43%	37.61%	48.93%	-33.83%	1,270,562	3,378,324	419.31%
2008	4,297	319,801	4.68%	8.32%	1.56%	0.27%	14.83%	10.70%	0.43%	41.15%	52.28%	-37.45%	1,366,586	3,320,634	427.32%
2009	4,297	338,361	4.62%	8.26%	1.48%	0.27%	14.63%	10.59%	0.43%	45.23%	56.25%	-41.62%	1,470,404	3,251,070	434.57%
2010	4,297	357,760	4.57%	8.21%	1.40%	0.27%	14.45%	10.48%	0.43%	50.19%	61.10%	-46.65%	1,582,636	3,153,285	442.37%
2011	4,297	379,657	4.54%	8.18%	1.32%	0.27%	14.31%	10.43%	0.43%	56.10%	66.96%	-52.65%	1,703,979	3,037,456	448.82%
2012	4,297	402,912	4.52%	8.16%	1.24%	0.27%	14.19%	10.39%	0.43%	63.46%	74.28%	-60.09%	1,835,152	2,891,902	455.47%
2013	4,297	427,421	4.51%	8.15%	1.17%	0.27%	14.10%	10.37%	0.43%	73.01%	83.81%	-69.71%	1,976,959	2,707,859	462.53%
2014	4,297	454,487	4.50%	8.14%	1.10%	0.27%	14.01%	10.35%	0.43%	85.48%	96.26%	-82.25%	2,130,274	2,492,229	468.72%
2015	4,297	482,170	4.50%	8.14%	1.04%	0.27%	13.95%	10.35%	0.43%	103.23%	114.01%	-100.06%	2,296,020	2,224,124	476.18%

Minneapolis Teachers Retirement Fund

Consolidation Study

Option #8 - Close First Class City Teachers' Plans to New Entrants

Year	Total Actives	Total Payroll	Employee Statutory Rate	Employer Statutory Rate	State Contrib Percent	Admin Surcharge Percent	Total Statutory Rate	Normal Cost Percent	Expense as % of Payroll	Supplemental Rate	Total Required Rate	Suff/ (Def) Rate	BOY UAL	PVFS	UAL as % of Payroll
1993	4,297	144,313	6.38%	8.91%	3.46%	0.27%	19.02%	12.66%	0.43%	12.74%	25.83%	-6.81%	376,952	2,958,264	261.20%
1994	3,968	142,178	6.31%	9.95%	3.52%	0.30%	20.08%	12.55%	0.45%	26.18%	39.18%	-19.10%	400,071	10.75	281.39%
1995	3,803	145,765	6.30%	9.94%	3.43%	0.31%	19.98%	12.53%	0.46%	27.36%	40.35%	-20.37%	423,580	10.62	290.59%
1996	3,648	149,356	6.29%	9.93%	3.35%	0.31%	19.88%	12.51%	0.46%	28.66%	41.63%	-21.75%	448,959	10.49	300.60%
1997	3,492	152,487	6.27%	9.91%	3.28%	0.32%	19.78%	12.48%	0.47%	30.18%	43.13%	-23.35%	476,366	10.35	312.40%
1998	3,341	155,145	6.24%	9.88%	3.22%	0.32%	19.66%	12.41%	0.47%	32.04%	44.92%	-25.26%	505,992	10.18	326.14%
1999	3,167	156,027	6.18%	9.82%	3.20%	0.33%	19.53%	12.32%	0.48%	34.45%	47.25%	-27.72%	538,052	10.01	344.84%
2000	3,016	156,729	6.13%	9.77%	3.19%	0.33%	19.42%	12.22%	0.48%	37.18%	49.88%	-30.46%	572,821	9.83	365.48%
2001	2,851	156,365	6.06%	9.70%	3.20%	0.33%	19.29%	12.09%	0.48%	40.55%	53.12%	-33.83%	610,541	9.63	390.46%
2002	2,672	153,882	5.97%	9.61%	3.25%	0.34%	19.17%	11.94%	0.49%	44.99%	57.42%	-38.25%	651,505	9.41	423.38%
2003	2,500	150,425	5.84%	9.48%	3.32%	0.34%	18.98%	11.71%	0.49%	50.46%	62.66%	-43.68%	696,072	9.17	462.74%
2004	2,333	147,255	5.73%	9.37%	3.40%	0.35%	18.85%	11.52%	0.50%	56.81%	68.83%	-49.98%	744,597	8.90	505.65%
2005	2,173	143,044	5.60%	9.24%	3.50%	0.35%	18.69%	11.28%	0.50%	64.67%	76.45%	-57.76%	797,397	8.62	557.45%
2006	1,989	135,683	5.39%	9.03%	3.69%	0.36%	18.47%	10.91%	0.51%	75.73%	87.15%	-68.68%	854,880	8.32	630.06%
2007	1,808	127,110	5.15%	8.79%	3.93%	0.37%	18.24%	10.48%	0.52%	90.46%	101.46%	-83.22%	917,574	7.98	721.88%
2008	1,677	122,601	4.97%	8.81%	4.08%	0.37%	18.03%	10.16%	0.52%	105.40%	116.08%	-98.05%	985,966	7.63	804.21%
2009	1,535	116,961	4.86%	8.50%	4.27%	0.38%	18.01%	9.96%	0.53%	125.39%	135.88%	-117.87%	1,060,378	7.23	906.60%
2010	1,406	110,957	4.72%	8.36%	4.51%	0.38%	17.97%	9.72%	0.53%	151.05%	161.30%	-143.33%	1,141,339	6.81	1028.63%
2011	1,293	106,538	4.65%	8.29%	4.69%	0.39%	18.02%	9.58%	0.54%	181.73%	191.85%	-173.83%	1,229,417	6.35	1153.97%
2012	1,175	100,614	4.58%	8.22%	4.97%	0.39%	18.16%	9.47%	0.54%	224.75%	234.76%	-216.60%	1,325,148	5.86	1317.06%
2013	1,066	94,233	4.56%	8.20%	5.31%	0.40%	18.47%	9.43%	0.55%	285.83%	295.61%	-277.14%	1,429,229	5.31	1516.69%
2014	965	88,550	4.52%	8.16%	5.65%	0.41%	18.74%	9.36%	0.56%	368.25%	378.17%	-359.43%	1,542,373	4.73	1741.82%
2015	867	80,984	4.50%	8.14%	6.17%	0.42%	19.23%	9.32%	0.57%	501.55%	511.44%	-492.21%	1,665,332	4.10	2056.36%

Minneapolis Teachers Retirement Fund

Consolidation Study

Option #12 - Close First Class City Teachers' Plans to New Entrants and Provide "Greater of" Benefits for Active Employees Only

Year	Total Actives	Total Payroll	Employee Statutory Rate	Employer Statutory Rate	State Contrib Percent	Admin Surcharge Percent	Total Statutory Rate	Normal Cost Percent	Expense as % of Payroll	Supplemental Rate	Total Required Rate	Suff/ (Def) Rate	BOY UAL	PVFS	UAL as % of Payroll
1993	4,297	144,313	6.38%	8.91%	3.46%	0.27%	19.02%	12.66%	0.43%	12.74%	25.83%	-6.81%	376,952	2,958,264	261.20%
1994	3,968	142,178	6.31%	9.95%	3.52%	0.30%	20.08%	13.55%	0.45%	28.71%	42.71%	-22.63%	438,851	10.75	308.66%
1995	3,803	145,765	6.30%	9.94%	3.43%	0.31%	19.98%	13.53%	0.46%	30.18%	44.17%	-24.19%	467,138	10.62	320.47%
1996	3,648	149,356	6.29%	9.93%	3.35%	0.31%	19.88%	13.51%	0.46%	31.77%	45.74%	-25.86%	497,735	10.49	333.25%
1997	3,492	152,487	6.27%	9.91%	3.28%	0.32%	19.78%	13.47%	0.47%	33.63%	47.57%	-27.79%	530,839	10.35	348.12%
1998	3,341	155,145	6.24%	9.88%	3.22%	0.32%	19.66%	13.40%	0.47%	35.88%	49.75%	-30.09%	566,674	10.18	365.25%
1999	3,167	156,027	6.18%	9.82%	3.20%	0.33%	19.53%	13.30%	0.48%	38.77%	52.55%	-33.02%	605,490	10.01	388.07%
2000	3,016	156,729	6.13%	9.77%	3.19%	0.33%	19.42%	13.20%	0.48%	42.03%	55.71%	-36.29%	647,587	9.83	413.19%
2001	2,851	156,365	6.06%	9.70%	3.20%	0.33%	19.29%	13.06%	0.48%	46.04%	59.58%	-40.29%	693,252	9.63	443.36%
2002	2,672	153,882	5.97%	9.61%	3.25%	0.34%	19.17%	12.89%	0.49%	51.30%	64.68%	-45.51%	742,816	9.41	482.72%
2003	2,500	150,425	5.84%	9.48%	3.32%	0.34%	18.98%	12.64%	0.49%	57.75%	70.88%	-51.90%	796,669	9.17	529.61%
2004	2,333	147,255	5.73%	9.37%	3.40%	0.35%	18.85%	12.44%	0.50%	65.25%	78.19%	-59.34%	855,207	8.90	580.77%
2005	2,173	143,044	5.60%	9.24%	3.50%	0.35%	18.69%	12.17%	0.50%	74.52%	87.19%	-68.50%	918,816	8.62	642.33%
2006	1,989	135,683	5.39%	9.03%	3.69%	0.36%	18.47%	11.78%	0.51%	87.52%	99.81%	-81.34%	987,958	8.32	728.14%
2007	1,808	127,110	5.15%	8.79%	3.93%	0.37%	18.24%	11.32%	0.52%	104.82%	116.86%	-98.42%	1,063,192	7.98	836.44%
2008	1,677	122,601	4.97%	8.61%	4.08%	0.37%	18.03%	10.97%	0.52%	122.41%	133.90%	-115.87%	1,145,068	7.63	933.96%
2009	1,535	116,961	4.86%	8.50%	4.27%	0.38%	18.01%	10.75%	0.53%	145.93%	157.21%	-139.20%	1,234,038	7.23	1055.08%
2010	1,406	110,957	4.72%	8.36%	4.51%	0.38%	17.97%	10.49%	0.53%	176.11%	187.13%	-169.16%	1,330,726	6.81	1199.32%
2011	1,293	106,538	4.65%	8.29%	4.69%	0.39%	18.02%	10.35%	0.54%	212.23%	223.12%	-205.10%	1,435,796	6.35	1347.69%
2012	1,175	100,614	4.58%	8.22%	4.97%	0.39%	18.16%	10.22%	0.54%	262.88%	273.64%	-255.48%	1,549,917	5.86	1540.45%
2013	1,066	94,233	4.56%	8.20%	5.31%	0.40%	18.47%	10.18%	0.55%	334.52%	345.25%	-326.78%	1,673,894	5.31	1776.33%
2014	965	88,550	4.52%	8.16%	5.65%	0.41%	18.74%	10.10%	0.56%	431.80%	442.46%	-423.72%	1,808,571	4.73	2042.44%
2015	867	80,984	4.50%	8.14%	6.17%	0.42%	19.23%	10.06%	0.57%	588.74%	599.37%	-580.14%	1,954,843	4.10	2413.85%

Minneapolis Teachers Retirement Fund

Consolidation Study

Option #13 - Close First Class City Teachers' Plans to New Entrants and Provide "Greater of" Benefits for All Current Members

Year	Total Actives	Total Payroll	Employee Statutory Rate	Employer Statutory Rate	State Contrib Percent	Admin Surcharge Percent	Total Statutory Rate	Normal Cost Percent	Expense as % of Payroll	Supplemental Rate	Total Required Rate	Suff/ (Def) Rate	BOY UAL	PVFS	UAL as % of Payroll
1993	4,297	144,313	6.38%	8.91%	3.46%	0.27%	19.02%	12.66%	0.43%	12.74%	25.83%	-6.81%	376,952	2,958,264	261.20%
1994	3,968	142,178	6.31%	9.95%	3.52%	0.30%	20.08%	13.55%	0.45%	33.18%	47.18%	-27.10%	507,115	10.75	356.68%
1995	3,803	145,765	6.30%	9.94%	3.43%	0.31%	19.98%	13.53%	0.46%	34.96%	48.95%	-28.97%	541,205	10.62	371.29%
1996	3,648	149,356	6.29%	9.93%	3.35%	0.31%	19.88%	13.51%	0.46%	36.90%	50.87%	-30.99%	578,098	10.49	387.06%
1997	3,492	152,487	6.27%	9.91%	3.28%	0.32%	19.78%	13.47%	0.47%	39.16%	53.10%	-33.32%	618,033	10.35	405.30%
1998	3,341	155,145	6.24%	9.88%	3.22%	0.32%	19.66%	13.40%	0.47%	41.87%	55.74%	-36.08%	661,280	10.18	426.23%
1999	3,167	156,027	6.18%	9.82%	3.20%	0.33%	19.53%	13.30%	0.48%	45.34%	59.12%	-39.59%	708,137	10.01	453.85%
2000	3,016	156,729	6.13%	9.77%	3.19%	0.33%	19.42%	13.20%	0.48%	49.26%	62.94%	-43.52%	758,959	9.83	484.25%
2001	2,851	156,365	6.06%	9.70%	3.20%	0.33%	19.29%	13.06%	0.48%	54.06%	67.60%	-48.31%	814,090	9.63	520.64%
2002	2,672	153,882	5.97%	9.61%	3.25%	0.34%	19.17%	12.89%	0.49%	60.35%	73.73%	-54.56%	873,926	9.41	567.92%
2003	2,500	150,425	5.84%	9.48%	3.32%	0.34%	18.98%	12.64%	0.49%	68.07%	81.20%	-62.22%	938,923	9.17	624.18%
2004	2,333	147,255	5.73%	9.37%	3.40%	0.35%	18.85%	12.44%	0.50%	77.03%	89.97%	-71.12%	1,009,553	8.90	685.58%
2005	2,173	143,044	5.60%	9.24%	3.50%	0.35%	18.69%	12.17%	0.50%	88.10%	100.77%	-82.08%	1,086,282	8.62	759.40%
2006	1,989	135,683	5.39%	9.03%	3.69%	0.36%	18.47%	11.78%	0.51%	103.61%	115.90%	-97.43%	1,169,658	8.32	862.05%
2007	1,808	127,110	5.15%	8.79%	3.93%	0.37%	18.24%	11.32%	0.52%	124.25%	136.09%	-117.85%	1,260,336	7.98	991.53%
2008	1,577	122,601	4.97%	8.61%	4.08%	0.37%	18.03%	10.97%	0.52%	145.27%	156.76%	-138.73%	1,358,969	7.63	1108.45%
2009	1,535	116,961	4.86%	8.50%	4.27%	0.39%	18.01%	10.75%	0.53%	173.38%	184.66%	-166.65%	1,466,120	7.23	1253.51%
2010	1,406	110,957	4.72%	8.36%	4.51%	0.38%	17.97%	10.49%	0.53%	209.44%	220.46%	-202.49%	1,582,535	6.81	1426.26%
2011	1,293	106,538	4.65%	8.29%	4.69%	0.39%	18.02%	10.35%	0.54%	252.62%	263.51%	-245.49%	1,709,009	6.35	1604.13%
2012	1,175	100,614	4.58%	8.22%	4.97%	0.39%	18.16%	10.22%	0.54%	313.15%	323.91%	-305.75%	1,846,353	5.86	1835.08%
2013	1,066	94,233	4.56%	8.20%	5.31%	0.40%	18.47%	10.18%	0.55%	398.80%	409.53%	-391.06%	1,995,527	5.31	2117.64%
2014	965	88,550	4.52%	8.16%	5.65%	0.41%	18.74%	10.10%	0.56%	515.12%	525.78%	-507.04%	2,157,543	4.73	2436.53%
2015	867	80,984	4.50%	8.14%	6.17%	0.42%	19.23%	10.06%	0.57%	702.78%	713.41%	-694.18%	2,333,478	4.10	2881.39%

Minneapolis Employees Retirement Fund
Consolidation Study
Option #1A - Continue Current Program

Year	Total Actives	Total Payroll	Employee Statutory Rate	Employer Statutory Rate	State Contrib Percent	Admin Surcharge Percent	Total Statutory Rate	Normal Cost Percent	Expense as % of Payroll	Supplemental Rate	Total Required Rate	Suff/ (Def) Rate	BOY UAL	PVFS	UAL as % of Payroll
1993	2,321	89,200	9.75%	22.90%	11.72%	0.00%	44.37%	18.68%	2.20%	23.49%	44.37%	0.00%	284,321	13.57	318.75%
1994	1,913	78,520	9.75%	24.54%	13.32%	0.00%	47.61%	18.68%	2.23%	26.69%	47.60%	0.01%	279,800	13.35	356.34%
1995	1,818	77,829	9.75%	24.64%	13.43%	0.00%	47.82%	18.68%	2.24%	26.91%	47.83%	-0.01%	275,000	13.13	353.34%
1996	1,714	76,675	9.75%	24.85%	13.64%	0.00%	48.24%	18.68%	2.24%	27.31%	48.23%	0.01%	269,928	12.89	352.04%
1997	1,621	75,429	9.75%	25.06%	13.86%	0.00%	48.67%	18.68%	2.24%	27.75%	48.67%	0.00%	264,554	12.64	350.73%
1998	1,520	73,377	9.75%	25.45%	14.25%	0.00%	49.45%	18.68%	2.25%	28.52%	49.45%	0.00%	258,870	12.37	352.80%
1999	1,436	72,103	9.75%	25.72%	14.50%	0.00%	49.97%	18.68%	2.26%	29.03%	49.97%	0.00%	252,847	12.08	350.67%
2000	1,340	70,082	9.75%	26.13%	14.92%	0.00%	50.80%	18.68%	2.27%	29.85%	50.80%	0.00%	246,459	11.78	351.67%
2001	1,241	67,424	9.75%	26.72%	15.51%	0.00%	51.98%	18.68%	2.28%	31.02%	51.98%	0.00%	239,697	11.46	355.51%
2002	1,149	64,828	9.75%	27.32%	16.13%	0.00%	53.20%	18.68%	2.29%	32.23%	53.20%	0.00%	232,535	11.13	358.70%
2003	1,051	61,389	9.75%	28.23%	17.03%	0.00%	55.01%	18.68%	2.31%	34.03%	55.02%	-0.01%	224,968	10.77	366.46%
2004	961	58,027	9.75%	29.26%	18.02%	0.00%	57.03%	18.68%	2.33%	36.02%	57.03%	0.00%	216,951	10.38	373.88%
2005	865	54,046	9.75%	30.62%	19.34%	0.00%	59.71%	18.68%	2.35%	38.68%	59.71%	0.00%	208,440	9.97	385.67%
2006	763	49,304	9.75%	32.47%	21.21%	0.00%	63.43%	18.68%	2.39%	42.35%	63.42%	0.01%	199,412	9.55	404.45%
2007	655	43,124	9.75%	35.57%	24.24%	0.00%	69.56%	18.68%	2.45%	48.44%	69.57%	-0.01%	189,869	9.09	440.29%
2008	542	36,410	9.75%	40.02%	28.71%	0.00%	78.48%	18.68%	2.54%	57.27%	78.49%	-0.01%	179,746	8.62	493.67%
2009	430	29,524	9.75%	46.88%	35.41%	0.00%	92.04%	18.68%	2.67%	70.69%	92.04%	0.00%	169,053	8.10	572.59%
2010	350	24,470	9.75%	54.27%	42.73%	0.00%	106.75%	18.68%	2.82%	85.25%	106.75%	0.00%	157,699	7.56	644.46%
2011	270	19,363	9.75%	65.60%	53.99%	0.00%	129.34%	18.68%	3.04%	107.63%	129.35%	-0.01%	145,675	6.99	752.32%
2012	207	15,209	9.75%	80.54%	68.74%	0.00%	159.03%	18.68%	3.33%	137.02%	159.03%	0.00%	132,951	6.38	874.17%
2013	156	11,898	9.75%	99.70%	87.87%	0.00%	197.32%	18.68%	3.71%	174.93%	197.32%	0.00%	119,464	5.74	1004.07%
2014	101	7,955	9.76%	143.94%	131.43%	0.00%	285.13%	18.68%	4.58%	261.87%	285.13%	0.00%	105,195	5.05	1322.45%
2015	59	4,740	9.75%	233.45%	220.58%	0.00%	463.78%	18.67%	6.33%	438.77%	463.77%	0.01%	90,051	4.33	1899.89%

Minneapolis Employees Retirement Fund

Consolidation Study

Option #1B - Continue Current Program (except assume assets earn 8.5%)

Year	Total Actives	Total Payroll	Employee Statutory Rate	Employer Statutory Rate	State Contrib Percent	Admin Surcharge Percent	Total Statutory Rate	Normal Cost Percent	Expense as % of Payroll	Supplemental Rate	Total Required Rate	Suff/ (Def) Rate	BOY UAL	PVFS	UAL as % of Payroll
1993	2,321	89,200	9.75%	22.90%	11.72%	0.00%	44.37%	18.68%	2.20%	23.49%	44.37%	0.00%	284,321	13.57	318.75%
1994	1,913	78,520	9.75%	23.90%	13.32%	0.00%	46.97%	18.68%	2.23%	26.05%	46.96%	0.00%	273,068	13.35	347.77%
1995	1,818	77,829	9.75%	23.22%	13.43%	0.00%	46.40%	18.68%	2.24%	25.48%	46.40%	0.00%	260,408	13.13	334.59%
1996	1,714	76,675	9.75%	22.67%	13.64%	0.00%	45.06%	18.68%	2.24%	25.14%	46.06%	0.00%	248,447	12.89	324.02%
1997	1,621	75,429	9.75%	22.02%	13.86%	0.00%	45.63%	18.68%	2.24%	24.71%	45.63%	0.00%	235,542	12.64	312.27%
1998	1,520	73,377	9.75%	21.37%	14.25%	0.00%	45.37%	18.68%	2.25%	24.43%	45.36%	0.00%	221,748	12.37	302.20%
1999	1,436	72,103	9.75%	20.46%	14.50%	0.00%	44.71%	18.68%	2.26%	23.77%	44.71%	0.00%	207,042	12.08	287.15%
2000	1,340	70,082	9.75%	19.49%	14.92%	0.00%	44.16%	18.68%	2.27%	23.21%	44.16%	0.00%	191,628	11.78	273.43%
2001	1,241	67,424	9.75%	19.49%	14.41%	0.00%	43.65%	18.68%	2.28%	22.70%	43.66%	0.00%	175,382	11.46	260.12%
2002	1,149	64,828	9.75%	19.74%	13.44%	0.00%	42.93%	18.68%	2.29%	21.96%	42.93%	0.00%	158,445	11.13	244.41%
2003	1,051	61,389	9.75%	20.09%	12.48%	0.00%	42.32%	18.68%	2.31%	21.33%	42.32%	0.00%	141,021	10.77	229.72%
2004	961	58,027	9.75%	20.48%	11.22%	0.00%	41.45%	18.68%	2.33%	20.44%	41.45%	0.00%	123,141	10.38	212.21%
2005	865	54,046	9.75%	21.00%	9.78%	0.00%	40.53%	18.68%	2.35%	19.49%	40.52%	0.00%	105,046	9.97	194.37%
2006	763	49,304	9.75%	21.73%	8.03%	0.00%	39.51%	18.68%	2.39%	18.44%	39.51%	0.00%	86,832	9.55	176.12%
2007	655	43,124	9.75%	22.92%	6.01%	0.00%	38.68%	18.68%	2.45%	17.55%	38.68%	0.00%	68,809	9.09	159.56%
2008	542	36,410	9.75%	24.68%	3.13%	0.00%	37.58%	18.68%	2.54%	16.34%	37.58%	0.00%	51,275	8.62	140.82%
2009	430	29,524	9.75%	26.16%	0.00%	0.00%	35.91%	18.68%	2.87%	14.56%	35.91%	0.00%	34,815	8.10	117.92%
2010	350	24,470	9.75%	22.45%	0.00%	0.00%	32.20%	18.68%	2.82%	10.70%	32.20%	0.00%	19,799	7.56	80.91%
2011	270	19,363	9.75%	16.76%	0.00%	0.00%	26.51%	18.68%	3.04%	4.79%	26.51%	0.00%	6,488	6.99	33.51%
2012	207	15,209	9.75%	12.26%	0.00%	0.00%	22.01%	18.68%	3.33%	0.00%	22.01%	0.00%	0	6.38	0.00%
2013	156	11,898	9.75%	12.64%	0.00%	0.00%	22.39%	18.68%	3.71%	0.00%	22.39%	0.00%	0	5.74	0.00%
2014	101	7,955	9.76%	13.50%	0.00%	0.00%	23.26%	18.68%	4.58%	0.00%	23.26%	0.00%	0	5.05	0.00%
2015	59	4,740	9.75%	15.25%	0.00%	0.00%	25.00%	18.67%	6.33%	0.00%	25.00%	0.00%	0	4.33	0.00%

**A-4 Consolidation Study 1994. Tables converting
Milliman & Robertson actuarial analyses on
various options into dollar costs. P. Kapler, MN
Dept. of Finance (March 3, 1994)**

CONSOLIDATION STUDY, 1994

P. KAPLER
3/4/94

PROFILE OF FUNDS - Active members and payroll					COORDINATED MEMBERS	
FUND	1994 actives	% of combined actives	1994 PAYROLL	% of combined payroll	Normal C Total	Normal Cost Retirements Only
TRA	65,268	87.66%	2,290,176	87.30%	9.80%	7.89%
MPLS	4,297	5.77%	152,432	5.81%	9.32%	7.56%
DULUTH	1,453	1.95%	44,625	1.70%	9.17%	6.78%
ST PAUL	3,441	4.62%	136,089	5.19%		
TOTAL	74,459	100.00%	2,623,322	100.00%		

PENSION COMMISSION ACTURARY - ANALYSES OF CONSOLIDATION OPTIONS

OPTION 1	1994 PAYROLL	Normal %	Suppl %	Admin %	Normal Cost	Suppl Cost	Admin Cost	Total Cost	Current Statutory %	Current Statutory Contribs	\$ Deficiency	% Deficiency	Cost(Savings) over Option #1
TRA	2,290,176	9.82%	2.77%	0.15%	224,895	63,438	3,435	291,768	12.66%	289,936	1,832	0.08%	na
MPLS	152,432	12.33%	13.19%	0.43%	18,795	20,106	655	39,556	19.57%	29,831	9,725	6.38%	na
DULUTH	44,625	9.21%	0.21%	0.21%	4,110	94	94	4,297	10.29%	4,592	(295)	-0.66%	na
ST PAUL	136,089	11.43%	6.96%	0.27%	15,555	9,472	367	25,394	15.38%	20,930	4,464	3.28%	na
TOTAL	2,623,322				263,355	93,109	4,552	361,016		345,290	15,726	0.60%	na
Option 6	No plan changes - just admin svcs agency Costs same as Option 1 - assume admin savings of 5% for all funds												
FUND	1994 PAYROLL	Normal %	Suppl %	Admin %	Normal Cost	Suppl Cost	Admin Cost	Total Cost	Current Statutory %	Current Statutory Contribs	\$ Deficiency	% Deficiency	Cost(Savings) over Option #1
TRA	2,290,176	9.82%	2.77%	0.13%	224,895	63,438	2,977	291,310	12.66%	289,936	1,374	0.06%	(458)
MPLS	152,432	12.33%	13.19%	0.37%	18,795	20,106	568	39,469	19.57%	29,831	9,638	6.32%	(87)
DULUTH	44,625	9.21%	0.21%	0.18%	4,110	94	81	4,285	10.29%	4,592	(307)	-0.69%	(13)
ST PAUL	136,089	11.43%	6.96%	0.23%	15,555	9,472	318	25,345	15.38%	20,930	4,415	3.24%	(49)
TOTAL	2,623,322				263,355	93,109	3,944	360,409		345,290	15,119	0.58%	(608)

Option 7														
FUND	1994 PAYROLL	Normal %	Suppl %	Admin %	Normal Cost	Suppl Cost	Admin Cost	Total Cost	Current Statutory %	Statutory Contribs	\$ Deficiency	% Deficiency	Cost(Savings) over Option #1	
TRA	2,290,176	9.82%	2.77%	0.13%	224,895	63,438	2,977	291,310	12.66%	289,936	1,374	0.06%	(459)	
MPLS	152,432	13.69%	16.99%	0.37%	20,868	25,898	568	47,334	19.57%	29,831	17,503	11.48%	7,778	
DULUTH	44,625	9.47%	3.69%	0.18%	4,226	1,647	81	5,954	10.29%	4,562	1,362	3.05%	1,656	
ST PAUL	136,089	11.97%	11.66%	0.23%	16,290	15,868	318	32,476	15.38%	20,930	11,546	8.48%	7,082	
TOTAL	2,623,322				266,279	106,851	3,944	377,074		345,290	31,784	1.21%	16,058	

Option 8														
FUND	1994 PAYROLL	Normal %	Suppl %	Admin %	Normal Cost	Suppl Cost	Admin Cost	Total Cost	Current Statutory %	Statutory Contribs	\$ Deficiency	% Deficiency	Cost(Savings) over Option #1	
TRA	2,290,176	9.82%	2.74%	0.14%	224,895	62,751	3,092	290,738	12.66%	289,936	802	0.03%	(1,031)	
MPLS	152,432	12.55%	26.18%	0.39%	19,130	39,907	590	59,627	19.57%	29,831	29,796	19.55%	20,071	
DULUTH	44,625	9.18%	0.41%	0.19%	4,087	183	84	4,364	10.29%	4,562	(228)	-0.51%	66	
ST PAUL	136,089	11.64%	13.90%	0.24%	15,841	18,916	331	35,068	15.38%	20,930	14,157	10.40%	9,694	
TOTAL	2,623,322				263,963	121,757	4,097	389,816		345,290	44,527	1.70%	28,800	

Option 9														
FUND	1994 PAYROLL	Normal %	Suppl %	Admin %	Normal Cost	Suppl Cost	Admin Cost	Total Cost	Current Statutory %	Statutory Contribs	\$ Deficiency	% Deficiency	Cost(Savings) over Option #1	
TRA	2,290,176	9.82%	2.74%	0.14%	224,895	62,751	3,092	287,646	12.66%	289,936	(2,290)	-0.10%	(4,122)	
MPLS	152,432	12.55%	26.18%	0.39%	19,130	39,907	590	59,037	19.57%	29,831	29,206	19.16%	19,481	
DULUTH	44,625	9.18%	0.41%	0.19%	4,087	183	84	4,280	10.29%	4,562	(312)	-0.70%	(18)	
ST PAUL	136,089	11.64%	13.90%	0.24%	15,841	18,916	331	34,757	15.38%	20,930	13,827	10.16%	9,363	
TOTAL	2,623,322				263,963	121,757	4,097	385,720		345,290	40,430	1.54%	24,704	

Option 10													
FUND	1994 PAYROLL	Normal %	Suppl %	Admin %	Normal Cost	Suppl Cost	Admin Cost	Total Cost	Current Statutory %	Statutory Contribs	\$ Deficiency	% Deficiency	Cost(Savings) over Option #1
TRA	2,290,176	9.82%	2.74%	0.14%	224,895	62,751	3,092	290,738	12.66%	289,936	802	0.03%	(1,031)
MPLS	152,432	12.55%	26.18%	0.39%	19,130	39,907	590	59,627	19.57%	29,831	29,796	19.55%	20,071
DULUTH	44,625	9.18%	0.41%	0.19%	4,097	183	84	4,364	10.29%	4,592	(228)	-0.51%	68
ST PAUL	136,089	11.64%	13.90%	0.24%	15,841	18,916	331	35,088	15.38%	20,930	14,157	10.40%	9,694
TOTAL	2,623,322				263,963	121,757	4,097	389,816		345,290	44,527	1.70%	28,800

Option 11													
FUND	1994 PAYROLL	Normal %	Suppl %	Admin %	Normal Cost	Suppl Cost	Admin Cost	Total Cost	Current Statutory %	Statutory Contribs	\$ Deficiency	% Deficiency	Cost(Savings) over Option #1
TRA	2,290,176	9.82%	2.74%	0.14%	224,895	62,751	3,092	290,738	12.66%	289,936	802	0.03%	(1,031)
MPLS	152,432	12.55%	26.18%	0.39%	19,130	39,907	590	59,627	19.57%	29,831	29,796	19.55%	20,071
DULUTH	44,625	9.18%	0.41%	0.19%	4,097	183	84	4,364	10.29%	4,592	(228)	-0.51%	68
ST PAUL	136,089	11.64%	13.90%	0.24%	15,841	18,916	331	35,088	15.38%	20,930	14,157	10.40%	9,694
TOTAL	2,623,322				263,963	121,757	4,097	389,816		345,290	44,527	1.70%	28,800

Option 12													
FUND	1994 PAYROLL	Normal %	Suppl %	Admin %	Normal Cost	Suppl Cost	Admin Cost	Total Cost	Current Statutory %	Statutory Contribs	\$ Deficiency	% Deficiency	Cost(Savings) over Option #1
TRA	2,290,176	9.82%	2.74%	0.14%	224,895	62,751	3,092	290,738	12.66%	289,936	802	0.03%	(1,031)
MPLS	152,432	13.55%	28.71%	0.39%	20,855	43,763	590	65,008	19.57%	29,831	35,177	23.08%	25,452
DULUTH	44,625	10.00%	9.21%	0.19%	4,463	4,110	84	8,657	10.29%	4,592	4,065	9.11%	4,359
ST PAUL	136,089	13.38%	24.90%	0.24%	18,209	33,868	331	52,428	15.38%	20,930	31,495	23.14%	27,031
TOTAL	2,623,322				268,221	144,510	4,097	416,828		345,290	71,538	2.73%	55,812

Option 13													
FUND	1994 PAYROLL	Normal %	Suppl %	Admin %	Normal Cost	Suppl Cost	Admin Cost	Total Cost	Current Statutory %	Statutory Contribs	\$ Deficiency	% Deficiency	Cost(Savings) over Option #1
TRA	2,290,176	9.82%	2.74%	0.14%	224,895	62,751	3,092	290,738	12.66%	289,936	802	0.03%	(1,031)
MPLS	152,432	13.55%	33.18%	0.39%	20,855	50,577	590	71,821	19.57%	29,831	41,990	27.55%	32,265
DULUTH	44,625	10.00%	9.97%	0.19%	4,463	4,449	84	8,996	10.29%	4,592	4,404	9.87%	4,699
ST PAUL	136,089	13.38%	26.41%	0.24%	18,209	35,941	331	54,481	15.38%	20,930	33,550	24.65%	29,068

TOTAL	2,623,322	288,221	153,718	4,097	428,036	345,290	80,746	3.08%	65,020
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**A-5 Analyses on G.O. Bonding Option for MERF -
Dan Peterson, Gabriel, Roeder, Smith & Co., to
James Hacking (Jan. 4, 1994)**

To: Jim Hacking
From: Dan Petersen
Subject: Projection based on floating cap on State amortization payment, 7% pre-retirement interest rate, and \$100 million bond sale.
Date: January 4, 1994

The attached tables reflect the alternatives we discussed earlier regarding possible funding changes. The projections shown in Tables I through VI are based on the following:

- Table I - Current Plan, Current Assumptions
- Table II - Current Plan, Current Assumptions with a floating cap on State amortization payments equal to 70% of the total amortization payment after reduction by 2.5% of payroll plus \$3.9 million.
- Table III - Same as II except interest rate assumption for funding changed from 6% to 7%.
- Table IV - Same as III except \$100 million Municipal Bond sale at 7% with proceeds added to M.E.R.F. active fund.
- Table V - Comparison of total employer contributions (including bond payments) from Tables III and IV.
- Table VI - Comparison of accumulated active plan assets developed by alternatives shown in Tables III and IV.

MERF PROJECTION
OUTLINE OF ECONOMIC ASSUMPTIONS

I. <u>Investment Assumptions</u> (Active Fund)	9.5%	
Active Fund		
II. <u>Salary Increases</u>	4.0%	
III. <u>Valuation Assumptions</u> (Used to Determine Annual Contribution)		
A. Salary Increase	4.0%	
B. Interest Rate	6.0% (Tables I and II)	
	7.0% (Tables III through VI)	
IV. Bond Amortization Payments	\$8,170,000	per year is included in Employer Contributions as shown in Tables IV and V.

Note: All other assumptions were consistent with those used in the July 1, 1993 Actuarial Valuation Report. An annual maximum state amortization payment of \$10,455,000 was assumed subject to an additional variable non-increasing cap equal to 70% of the total required amortization payment after reduction by 2.5% of payroll and \$3.9 million.

Minneapolis Employees Retirement Fund
 Projection Study
 (DOLLARS IN THOUSANDS)

TABLE I

ACTIVE FUND CONTRIBUTIONS

<u>Fiscal Year</u>	<u>Contributions</u>			
	<u>Members</u>	<u>Employer</u>	<u>State</u>	<u>Total</u>
1993	\$ 8,995	\$ 21,664	\$ 10,455	\$ 41,114
1994	8,697	20,426	10,455	39,578
1995	8,170	19,870	10,455	38,495
1996	7,838	18,627	10,455	36,920
1997	7,798	17,104	10,455	35,357
1998	7,569	16,308	10,455	34,332
1999	7,336	16,007	9,628	32,971
2000	7,096	15,606	8,417	31,119
2001	6,850	15,412	7,071	29,333
2002	6,574	15,222	5,601	27,397
2003	6,301	14,951	4,013	25,265
2004	6,065	14,695	2,264	23,024
2005	5,758	14,537	411	20,706
2006	5,477	12,640	0	18,117
2007	5,153	10,202	0	15,355
2008	4,219	8,270	0	12,489
2009	3,556	5,787	0	9,343
2010	2,796	2,785	0	5,581
2011	2,369	0	0	2,369
2012	1,896	0	0	1,896
2013	1,489	0	0	1,489
2014	1,090	0	0	1,090
2015	711	0	0	711
2016	468	0	0	468
2017	311	0	0	311
2018	213	0	0	213
2019	116	0	0	116
2020	44	0	0	44
Total	\$124,955	\$260,113	\$100,135	\$485,203

Minneapolis Employees Retirement Fund
 Projection Study
 (DOLLARS IN THOUSANDS)

TABLE II

ACTIVE FUND CONTRIBUTIONS

<u>Fiscal Year</u>	<u>Contributions</u>			
	<u>Members</u>	<u>Employer</u>	<u>State</u>	<u>Total</u>
1993	\$ 8,995	\$ 21,664	\$10,455	\$ 41,114
1994	8,697	21,003	9,878	39,578
1995	8,170	20,925	9,400	38,495
1996	7,838	20,219	8,863	36,920
1997	7,798	19,347	8,212	35,357
1998	7,569	19,245	7,518	34,332
1999	7,336	18,895	6,740	32,971
2000	7,096	18,131	5,892	31,119
2001	6,850	17,534	4,949	29,333
2002	6,574	16,902	3,921	27,397
2003	6,301	16,155	2,809	25,265
2004	6,065	15,375	1,584	23,024
2005	5,758	14,661	287	20,706
2006	5,477	12,640	0	18,117
2007	5,153	10,202	0	15,355
2008	4,219	8,270	0	12,489
2009	3,556	5,787	0	9,343
2010	2,796	2,785	0	5,581
2011	2,369	0	0	2,369
2012	1,896	0	0	1,896
2013	1,489	0	0	1,489
2014	1,090	0	0	1,090
2015	711	0	0	711
2016	468	0	0	468
2017	311	0	0	311
2018	213	0	0	213
2019	116	0	0	116
2020	44	0	0	44
Total	\$124,955	\$279,740	\$80,508	\$485,203

Minneapolis Employees Retirement Fund
 Projection Study
 (DOLLARS IN THOUSANDS)

TABLE III

ACTIVE FUND CONTRIBUTIONS

<u>Fiscal Year</u>	<u>Contributions</u>			
	<u>Members</u>	<u>Employer</u>	<u>State</u>	<u>Total</u>
1993	\$ 8,995	\$ 21,664	\$10,455	\$ 41,114
1994	8,697	18,638	9,721	37,056
1995	8,170	18,642	9,329	36,141
1996	7,838	18,072	8,873	34,783
1997	7,798	17,324	8,296	33,418
1998	7,569	17,238	7,701	32,508
1999	7,336	16,790	7,040	31,166
2000	7,096	16,303	6,321	29,720
2001	6,850	15,811	5,516	28,177
2002	6,574	15,270	4,655	26,499
2003	6,301	14,629	3,745	24,675
2004	6,065	13,998	2,728	22,791
2005	5,758	13,390	1,680	20,828
2006	5,477	12,614	580	18,671
2007	5,153	11,345	0	16,498
2008	4,219	9,963	0	14,182
2009	3,556	8,118	0	11,674
2010	2,796	5,919	0	8,715
2011	2,369	3,200	0	5,569
2012	1,896	1,215	0	3,111
2013	1,489	0	0	1,489
2014	1,090	0	0	1,090
2015	711	0	0	711
2016	468	0	0	468
2017	311	0	0	311
2018	213	0	0	213
2019	116	0	0	116
2020	44	0	0	44
Total	\$124,955	\$270,143	\$86,640	\$481,738

Minneapolis Employees Retirement Fund
 Projection Study
 (DOLLARS IN THOUSANDS)

TABLE IV

ACTIVE FUND CONTRIBUTIONS

Fiscal Year	Contributions					
	Members	Employer		State	Total	
		Pension	Bond		Pension	Bond
1993	\$ 8,995	\$ 21,664	\$ 0	\$10,455	\$ 41,114	\$ 0
1994	8,697	18,638	0	9,721	37,056	0
1995	8,170	10,473	8,170	9,329	27,972	8,170
1996	7,838	9,702	8,170	8,873	26,413	8,170
1997	7,798	8,751	8,170	8,296	24,845	8,170
1998	7,569	8,459	8,170	7,701	23,729	8,170
1999	7,336	7,795	8,170	7,040	22,171	8,170
2000	7,096	7,083	8,170	6,321	20,500	8,170
2001	6,850	6,357	8,170	5,516	18,723	8,170
2002	6,574	5,593	8,170	4,655	16,822	8,170
2003	6,301	4,711	8,170	3,745	14,757	8,170
2004	6,065	3,833	8,170	2,728	12,626	8,170
2005	5,758	2,983	8,170	1,680	10,421	8,170
2006	5,477	1,952	8,170	580	8,009	8,170
2007	5,153	1,414	8,170	0	6,567	8,170
2008	4,219	934	8,170	0	5,153	8,170
2009	3,556	663	8,170	0	4,219	8,170
2010	2,796	760	8,170	0	3,556	8,170
2011	2,369	0	8,170	0	2,369	8,170
2012	1,896	0	8,170	0	1,896	8,170
2013	1,489	0	8,170	0	1,489	8,170
2014	1,090	0	8,170	0	1,090	8,170
2015	711	0	8,170	0	711	8,170
2016	468	0	8,170	0	468	8,170
2017	311	0	8,170	0	311	8,170
2018	213	0	8,170	0	213	8,170
2019	116	0	8,170	0	116	8,170
2020	44	0	8,170	0	44	8,170
Total	\$124,955	\$121,765	\$212,420	\$86,640	\$333,360	\$212,420

Minneapolis Employees Retirement Fund
 Projection Study
 (DOLLARS IN THOUSANDS)

TABLE V

ACTIVE FUND CONTRIBUTIONS

Comparison of Employer Contributions (including
 Bond Payments) from Tables III and IV

<u>Fiscal Year</u>	<u>Total Employer (Table III)</u>	<u>Total Employer (Table IV)</u>
1993	\$ 21,664	\$ 21,664
1994	18,638	18,638
1995	18,642	18,643
1996	18,072	17,872
1997	17,324	16,921
1998	17,238	16,629
1999	16,790	15,965
2000	16,303	15,253
2001	15,811	14,527
2002	15,270	13,763
2003	14,629	12,881
2004	13,998	12,003
2005	13,390	11,153
2006	12,614	10,122
2007	11,345	9,584
2008	9,963	9,104
2009	8,118	8,833
2010	5,919	8,930
2011	3,200	8,170
2012	1,215	8,170
2013	0	8,170
2014	0	8,170
2015	0	8,170
2016	0	8,170
2017	0	8,170
2018	0	8,170
2019	0	8,170
2020	<u>0</u>	<u>8,170</u>
Total	\$270,143	\$334,185

Minneapolis Employees Retirement Fund
 Projection Study
 (DOLLARS IN THOUSANDS)

TABLE VI

COMPARISON OF ACTIVE ASSET VALUES ACCUMULATED

Under Tables III and IV

<u>Fiscal Year</u>	<u>(Table III)</u>	<u>(Table IV)</u>
1993	\$253,542	\$253,542
1994	277,291	277,291
1995	301,497	402,440
1996	327,220	428,985
1997	355,680	458,132
<hr/>		
1998	385,155	488,144
1999	415,816	519,257
2000	446,479	550,089
2001	476,585	580,134
2002	505,833	609,082
<hr/>		
2003	528,420	631,089
2004	554,027	655,801
2005	571,458	672,000
2006	582,206	681,131
2007	584,615	681,487
<hr/>		
2008	575,581	672,198
2009	544,945	642,932
2010	499,784	601,676
2011	453,123	561,790
2012	416,676	534,889
<hr/>		
2013	374,530	503,973
2014	344,271	486,011
2015	313,842	469,047
2016	277,686	447,636
2017	251,328	437,423
<hr/>		
2018	231,645	435,419
2019	214,273	437,405
2020	204,905	449,235

**A-6 Analyses on G.O. Bonding Options for MPLS-
TRA - Mark Meyer, William Mercer, Inc., (Feb.
17, 1994)**

WILLIAM M.
MERCER
INCORPORATED

MERF using 9.5.

*Scenario all include
the current city/district
admission from 1993 law.*

*assume 7.5 bond
Rate of Return 8.5*

MERF Balance 180 M in 2000

February 17, 1994

Ms. Karen Kilberg
Executive Director
Mpls. Teachers' Ret. Fund Assoc.
815 Peavey Building
730 Second Avenue South
Minneapolis MN 55402-2416

RE: Projected Cash Flows for MTRFA Funding Alternatives

Dear Karen:

Enclosed are five tables that illustrate the cash flow and funded status of the plan under different funding scenarios. These tables differ from the ones we provided you on February 10, 1994 as follows:

1. Table I is the same as the projected cash flow with contribution lock-in that you have seen before. The heading now clarifies that this assumes that MERF does not receive the proceeds of a \$100,000,000 bond. This means that we use Table 3 from the MERF studies by Gabriel Roeder Smith in determining the amount of "lock-in contribution" available to MTRFA.
2. Table II is similar to Table I except that it assumes that MERF does receive the proceeds of a \$100,000,000 bond and that the employer contributions to MERF are adjusted to reflect the debt service. We use Table IV of the MERF illustrations to obtain this "lock-in contribution."
3. Table III illustrates the impact of a \$100,000,000 bond issued by the Minneapolis School District with the proceeds going to MTRFA. This is unchanged from the February 10 exhibit.
4. Table IV simply combines the results of Table II and Table III to show the combined effect of a contribution lock-in (with a MERF bond) and a \$100,000,000 MTRFA bond.

Ms. Karen Kilberg
Mpls. Teachers' Ret. Fund Assoc.
February 17, 1994
Page 2

5. Table V builds on Table IV to include a transfer from MERF to MTRFA at the end of the year 2020 in the amount of \$180,288,000.

Please call me if you have questions or would like additional information.

Sincerely,



Mark D. Meyer, J.D., F.S.A.
Principal

MDM:dem

Encl.

cc: Steve Schugel - Minneapolis Teachers
Doug Parr - Mercer
Deane Ninnemann - Mercer
Beth Moore - Mercer

ybdmdmlt.216

MINNEAPOLIS TEACHERS' RETIREMENT FUND
PROJECTED CASH FLOW WITH CONTRIBUTION LOCK-IN (NO MERF BOND)
 MEASURED AS OF JULY 1, 1993
 (Dollars in Thousands)

TABLE I

<u>FISCAL YEAR</u>	<u>STATUTORY CONTRIBUTIONS</u>	<u>CONTRIBUTION LOCK-IN</u>	<u>OTHER DISBURSEMENTS</u>	<u>INVESTMENT RETURN</u>	<u>CURRENT ASSETS YEAR END</u>	<u>ACTUARIAL ACCRUED LIABILITY</u>	<u>FUNDED RATIO</u>
1992					\$501,741	\$878,693	57.10%
1993	\$24,954	\$0	\$46,974	\$41,606	521,327	924,110	56.41%
1994	29,834	3,760	50,812	43,475	547,584	969,971	56.45%
1995	31,189	4,148	51,917	45,734	576,738	1,019,659	56.56%
1996	32,597	5,174	53,208	48,260	609,561	1,073,347	56.79%
1997	34,004	6,499	55,054	51,088	646,098	1,130,789	57.14%
1998	35,363	7,180	57,642	54,170	685,169	1,191,484	57.51%
1999	36,631	8,289	61,276	57,438	726,251	1,254,528	57.89%
2000	37,859	9,495	65,125	60,870	769,350	1,319,865	58.29%
2001	39,096	10,792	69,684	64,447	814,001	1,386,943	58.69%
2002	40,208	12,194	75,544	68,100	858,959	1,454,438	59.06%
2003	41,202	13,745	82,619	71,729	903,016	1,521,009	59.37%
2004	42,481	15,393	88,945	75,330	947,275	1,587,596	59.67%
2005	43,693	17,049	96,201	78,905	990,721	1,653,161	59.93%
2006	44,714	18,925	105,344	82,333	1,031,349	1,715,469	60.12%
2007	45,779	20,774	114,803	85,508	1,068,607	1,773,943	60.24%
2008	47,445	22,156	121,606	88,515	1,105,117	1,831,537	60.34%
2009	49,516	24,001	127,168	91,549	1,143,015	1,889,813	60.48%
2010	51,685	26,200	132,883	94,713	1,182,730	1,948,743	60.69%
2011	54,329	28,919	137,003	98,141	1,227,116	2,010,444	61.04%
2012	57,184	30,904	141,097	101,946	1,276,053	2,075,348	61.49%
2013	60,296	32,119	144,740	106,134	1,329,862	2,144,412	62.02%
2014	63,712	32,119	148,299	110,702	1,388,096	2,218,316	62.57%
2015	67,249	32,119	152,091	115,641	1,451,014	2,297,327	63.16%
2016	71,287	32,119	155,004	121,037	1,520,453	2,383,197	63.80%
2017	75,663	32,119	157,959	127,000	1,597,276	2,476,732	64.49%
2018	80,289	32,119	161,131	133,591	1,682,144	2,578,552	65.24%
2019	85,297	32,119	163,883	140,901	1,776,578	2,690,103	66.04%
2020	90,659	32,119	166,486	149,045	1,881,915	2,801,930	67.16%
2021	96,385	32,119	168,812	158,143	1,999,750		
2022	102,442	32,119	170,534	168,344	2,132,121		ESM021594

MINNEAPOLIS TEACHERS' RETIREMENT FUND
PROJECTED CASH FLOW WITH CONTRIBUTION LOCK-IN (WITH MERF BOND).

MEASURED AS OF JULY 1, 1993

(Dollars in Thousands)

<u>FISCAL YEAR</u>	<u>STATUTORY CONTRIBUTIONS</u>	<u>CONTRIBUTION LOCK-IN</u>	<u>OTHER DISBURSEMENTS</u>	<u>INVESTMENT RETURN</u>	<u>CURRENT ASSETS YEAR END</u>	<u>ACTUARIAL ACCRUED LIABILITY</u>	<u>FUNDED RATIO</u>
1992					\$501,741	\$878,693	57.10%
1993	\$24,954	\$0	\$46,974	\$41,606	521,327	924,110	56.41%
1994	29,834	3,760	50,812	43,475	547,584	969,971	56.45%
1995	31,189	4,147	51,917	45,734	576,737	1,019,659	56.56%
1996	32,597	5,374	53,208	48,269	609,769	1,073,347	56.81%
1997	34,004	6,902	55,054	51,123	646,744	1,130,789	57.19%
1998	35,363	7,789	57,642	54,251	686,505	1,191,484	57.62%
1999	36,631	9,114	61,276	57,587	728,561	1,254,528	58.07%
2000	37,859	10,545	65,125	61,111	772,951	1,319,865	58.56%
2001	39,096	12,076	69,684	64,808	819,247	1,386,943	59.07%
2002	40,208	13,701	75,544	68,610	866,222	1,454,438	59.56%
2003	41,202	15,493	82,619	72,421	912,719	1,521,009	60.01%
2004	42,481	17,388	88,945	76,239	959,882	1,587,596	60.46%
2005	43,693	19,286	96,201	80,072	1,006,732	1,653,161	60.90%
2006	44,714	21,417	105,344	83,799	1,051,318	1,715,469	61.28%
2007	45,779	22,535	114,803	87,280	1,092,109	1,773,943	61.56%
2008	47,445	23,015	121,606	90,549	1,131,512	1,831,537	61.78%
2009	49,516	23,286	127,168	93,762	1,170,908	1,889,813	61.96%
2010	51,685	23,189	132,883	96,956	1,209,855	1,948,743	62.08%
2011	54,329	23,949	137,003	100,236	1,251,366	2,010,444	62.24%
2012	57,184	23,949	141,097	103,711	1,295,113	2,075,348	62.40%
2013	60,296	23,949	144,740	107,407	1,342,025	2,144,412	62.58%
2014	63,712	23,949	148,299	111,389	1,392,776	2,218,316	62.79%
2015	67,249	23,949	152,091	115,692	1,447,575	2,297,327	63.01%
2016	71,287	23,949	155,004	120,397	1,508,204	2,383,197	63.28%
2017	75,663	23,949	157,959	125,611	1,575,468	2,476,732	63.61%
2018	80,289	23,949	161,131	131,391	1,649,966	2,578,552	63.99%
2019	85,297	23,949	163,883	137,819	1,733,148	2,690,103	64.43%
2020	90,659	23,949	166,486	145,007	1,826,277	2,801,930	65.18%
2021	96,385	23,949	168,812	153,067	1,930,866		
2022	102,442	23,949	170,534	162,141	2,048,864		ESM021594

MINNEAPOLIS TEACHERS' RETIREMENT FUND
PROJECTED CASH FLOW WITH \$100 MILLION BOND
 MEASURED AS OF JULY 1, 1993
 (Dollars in Thousands)

TABLE III

<u>FISCAL YEAR</u>	<u>STATUTORY CONTRIBUTIONS</u>	<u>DEBT SERVICE</u>	<u>OTHER DISBURSEMENTS</u>	<u>INVESTMENT RETURN</u>	<u>CURRENT ASSETS YEAR END</u>	<u>ACTUARIAL ACCRUED LIABILITY</u>	<u>FUNDED RATIO</u>
1992					\$501,741	\$878,693	57.10%
1993	\$24,954	\$0	\$46,974	\$41,606	521,327	924,110	56.41%
1994	29,834	0	50,812	43,315	543,664	969,971	56.05%
1995	31,189	0	51,917	45,224	668,160	1,019,659	65.53%
1996	24,538	8,059	53,208	55,469	694,959	1,073,347	64.75%
1997	25,945	8,059	55,054	57,728	723,578	1,130,789	63.99%
1998	27,304	8,059	57,642	60,109	753,349	1,191,484	63.23%
1999	28,572	8,059	61,276	62,538	783,183	1,254,528	62.43%
2000	29,800	8,059	65,125	64,963	812,821	1,319,865	61.58%
2001	31,037	8,059	69,684	67,341	841,515	1,386,943	60.67%
2002	32,149	8,059	75,544	69,578	867,698	1,454,438	59.66%
2003	33,143	8,059	82,619	71,545	889,767	1,521,009	58.50%
2004	34,422	8,059	88,945	73,207	908,451	1,587,596	57.22%
2005	35,634	8,059	96,201	74,538	922,422	1,653,161	55.80%
2006	36,655	8,059	105,344	75,380	929,113	1,715,469	54.16%
2007	37,720	8,059	114,803	75,592	927,622	1,773,943	52.29%
2008	39,386	8,059	121,606	75,247	920,649	1,831,537	50.27%
2009	41,457	8,059	127,168	74,506	909,444	1,889,813	48.12%
2010	43,626	8,059	132,883	73,403	893,590	1,948,743	45.85%
2011	46,270	8,059	137,003	71,993	874,850	2,010,444	43.52%
2012	49,125	8,059	141,097	70,347	853,225	2,075,348	41.11%
2013	52,237	8,059	144,740	68,486	829,208	2,144,412	38.67%
2014	55,653	8,059	148,299	66,439	803,001	2,218,316	36.20%
2015	59,190	8,059	152,091	64,201	774,301	2,297,327	33.70%
2016	63,228	8,059	155,004	61,809	744,334	2,383,197	31.23%
2017	67,604	8,059	157,959	59,322	713,301	2,476,732	28.80%
2018	72,230	8,059	161,131	56,746	681,146	2,578,552	26.42%
2019	77,238	8,059	163,883	54,109	648,610	2,690,103	24.11%
2020	82,600	8,059	166,486	51,460	616,184	2,801,930	21.99%
2021	88,326	8,059	168,812	48,849	584,547		
2022	94,383	8,059	170,534	46,344	554,740		ESM021594

MINNEAPOLIS TEACHERS' RETIREMENT FUND

TABLE IV PROJECTED CASH FLOW WITH CONTRIBUTION LOCK-IN AND \$100 MILLION BONDS BY MTRFA & MERF

MEASURED AS OF JULY 1, 1993

(Dollars in Thousands)

FISCAL YEAR	STATUTORY CONTRIBUTIONS	DEBT SERVICE	CONTRIBUTION LOCK-IN	OTHER DISBURSEMENTS	INVESTMENT RETURN	CURRENT ASSETS YEAR END	ACTUARIAL ACCRUED LIABILITY	FUNDED RATIO
1992						\$501,741	\$878,693	57.10%
1993	\$24,954	\$0	\$0	\$46,974	\$41,606	521,327	924,110	56.41%
1994	29,834	0	3,760	50,812	43,475	547,584	969,971	56.45%
1995	31,189	0	4,147	51,917	45,734	676,737	1,019,659	66.37%
1996	24,538	8,059	5,374	53,208	56,426	709,867	1,073,347	66.14%
1997	25,945	8,059	6,902	55,054	59,289	746,949	1,130,789	66.06%
1998	27,304	8,059	7,789	57,642	62,426	786,826	1,191,484	66.04%
1999	28,572	8,059	9,114	61,276	65,771	829,007	1,254,528	66.08%
2000	29,800	8,059	10,545	65,125	69,306	873,533	1,319,865	66.18%
2001	31,037	8,059	12,076	69,684	73,015	919,977	1,386,943	66.33%
2002	32,149	8,059	13,701	75,544	76,830	967,113	1,454,438	66.49%
2003	33,143	8,059	15,493	82,619	80,654	1,013,784	1,521,009	66.65%
2004	34,422	8,059	17,388	88,945	84,487	1,061,136	1,587,596	66.84%
2005	35,634	8,059	19,286	96,201	88,336	1,108,191	1,653,161	67.03%
2006	36,655	8,059	21,417	105,344	92,081	1,153,000	1,715,469	67.21%
2007	37,720	8,059	22,535	114,803	95,580	1,194,032	1,773,943	67.31%
2008	39,386	8,059	23,015	121,606	98,870	1,233,697	1,831,537	67.36%
2009	41,457	8,059	23,286	127,168	102,105	1,273,377	1,889,813	67.38%
2010	43,626	8,059	23,189	132,883	105,323	1,312,632	1,948,743	67.36%
2011	46,270	8,059	23,949	137,003	108,629	1,354,477	2,010,444	67.37%
2012	49,125	8,059	23,949	141,097	112,133	1,398,587	2,075,348	67.39%
2013	52,237	8,059	23,949	144,740	115,860	1,445,893	2,144,412	67.43%
2014	55,653	8,059	23,949	148,299	119,875	1,497,071	2,218,316	67.49%
2015	59,190	8,059	23,949	152,091	124,214	1,552,333	2,297,327	67.57%
2016	63,228	8,059	23,949	155,004	128,959	1,613,465	2,383,197	67.70%
2017	67,604	8,059	23,949	157,959	134,216	1,681,275	2,476,732	67.88%
2018	72,230	8,059	23,949	161,131	140,042	1,756,365	2,578,552	68.11%
2019	77,238	8,059	23,949	163,883	146,520	1,840,189	2,690,103	68.41%
2020	82,600	8,059	23,949	166,486	153,762	1,934,014	2,801,930	69.02%
2021	88,326	8,059	23,949	168,812	161,882	2,039,359		
2022	94,383	8,059	23,949	170,534	171,021	2,158,178		ESM021594

MINNEAPOLIS TEACHERS' RETIREMENT FUND

TABLE V PROJECTED CASH FLOW WITH CONTRIBUTION LOCK-IN, \$100 MILLION BONDS AND MERF BALLOON

MEASURED AS OF JULY 1, 1993

(Dollars in Thousands)

FISCAL YEAR	STATUTORY CONTRIBUTIONS	DEBT SERVICE	CONTRIBUTION LOCK-IN	OTHER DISBURSEMENTS	INVESTMENT RETURN	CURRENT ASSETS YEAR END	ACTUARIAL ACCRUED LIABILITY	FUNDED RATIO
1992						\$501,741	\$878,693	57.10%
1993	\$24,954	\$0	\$0	\$46,974	\$41,606	521,327	924,110	56.41%
1994	29,834	0	3,760	50,812	43,475	547,584	969,971	56.45%
1995	31,189	0	4,147	51,917	45,734	676,737	1,019,659	66.37%
1996	24,538	8,059	5,374	53,208	56,426	709,867	1,073,347	66.14%
1997	25,945	8,059	6,902	55,054	59,289	746,949	1,130,789	66.06%
1998	27,304	8,059	7,789	57,642	62,426	786,826	1,191,484	66.04%
1999	28,572	8,059	9,114	61,276	65,771	829,007	1,254,528	66.08%
2000	29,800	8,059	10,545	65,125	69,306	873,533	1,319,865	66.18%
2001	31,037	8,059	12,076	69,684	73,015	919,977	1,386,943	66.33%
2002	32,149	8,059	13,701	75,544	76,830	967,113	1,454,438	66.49%
2003	33,143	8,059	15,493	82,619	80,654	1,013,784	1,521,009	66.65%
2004	34,422	8,059	17,388	88,945	84,487	1,061,136	1,587,596	66.84%
2005	35,634	8,059	19,286	96,201	88,336	1,108,191	1,653,161	67.03%
2006	36,655	8,059	21,417	105,344	92,081	1,153,000	1,715,469	67.21%
2007	37,720	8,059	22,535	114,803	95,580	1,194,032	1,773,943	67.31%
2008	39,386	8,059	23,015	121,606	98,870	1,233,697	1,831,537	67.36%
2009	41,457	8,059	23,286	127,168	102,105	1,273,377	1,889,813	67.38%
2010	43,626	8,059	23,189	132,883	105,323	1,312,632	1,948,743	67.36%
2011	46,270	8,059	23,949	137,003	108,629	1,354,477	2,010,444	67.37%
2012	49,125	8,059	23,949	141,097	112,133	1,398,587	2,075,348	67.39%
2013	52,237	8,059	23,949	144,740	115,860	1,445,893	2,144,412	67.43%
2014	55,653	8,059	23,949	148,299	119,875	1,497,071	2,218,316	67.49%
2015	59,190	8,059	23,949	152,091	124,214	1,552,333	2,297,327	67.57%
2016	63,228	8,059	23,949	155,004	128,959	1,613,465	2,383,197	67.70%
2017	67,604	8,059	23,949	157,959	134,216	1,681,275	2,476,732	67.88%
2018	72,230	8,059	23,949	161,131	140,042	1,756,365	2,578,552	68.11%
2019	77,238	8,059	23,949	163,883	146,520	1,840,189	2,690,103	68.41%
2020	82,600	8,059	23,949	166,486	153,762	2,114,302	2,801,930	75.46%
2021	88,326	8,059	23,949	168,812	177,207	2,234,972		
2022	94,383	8,059	23,949	170,534	187,648	2,370,418		ESM021594

MINNEAPOLIS TEACHERS' RETIREMENT FUND
PROJECTED CASH FLOW WITH CONTRIBUTION LOCK-IN AND \$100 MILLION BOND
 MEASURED AS OF JULY 1, 1993
 (Dollars in Thousands)

<u>FISCAL YEAR</u>	<u>STATUTORY CONTRIBUTIONS</u>	<u>DEBT SERVICE</u>	<u>CONTRIBUTION LOCK-IN</u>	<u>OTHER DISBURSEMENTS</u>	<u>INVESTMENT RETURN</u>	<u>CURRENT ASSETS YEAR END</u>	<u>ACTUARIAL ACCRUED LIABILITY</u>	<u>FUNDED RATIO</u>
1992						\$501,741	\$878,693	57.10%
1993	\$24,954	\$0	\$0	\$46,974	\$41,606	521,327	924,110	56.41%
1994	29,834	0	3,760	50,812	43,475	547,584	969,971	56.45%
1995	31,189	0	4,148	51,917	45,734	676,738	1,019,659	66.37%
1996	24,538	8,059	5,174	53,208	56,418	709,660	1,073,347	66.12%
1997	25,945	8,059	6,499	55,054	59,254	746,304	1,130,789	66.00%
1998	27,304	8,059	7,180	57,642	62,345	785,491	1,191,484	65.93%
1999	28,572	8,059	8,289	61,276	65,623	826,699	1,254,528	65.90%
2000	29,800	8,059	9,495	65,125	69,065	869,934	1,319,865	65.91%
2001	31,037	8,059	10,792	69,684	72,654	914,733	1,386,943	65.95%
2002	32,149	8,059	12,194	75,544	76,320	959,852	1,454,438	65.99%
2003	33,143	8,059	13,745	82,619	79,963	1,004,084	1,521,009	66.01%
2004	34,422	8,059	15,393	88,945	83,578	1,048,532	1,587,596	66.05%
2005	35,634	8,059	17,049	96,201	87,169	1,092,183	1,653,161	66.07%
2006	36,655	8,059	18,925	105,344	90,614	1,133,033	1,715,469	66.05%
2007	37,720	8,059	20,774	114,803	93,808	1,170,532	1,773,943	65.98%
2008	39,386	8,059	22,156	121,606	96,836	1,207,304	1,831,537	65.92%
2009	41,457	8,059	24,001	127,168	99,892	1,245,486	1,889,813	65.91%
2010	43,626	8,059	26,200	132,883	103,080	1,285,509	1,948,743	65.97%
2011	46,270	8,059	28,919	137,003	106,535	1,330,230	2,010,444	66.17%
2012	49,125	8,059	30,904	141,097	110,368	1,379,530	2,075,348	66.47%
2013	52,237	8,059	32,119	144,740	114,587	1,433,733	2,144,412	66.86%
2014	55,653	8,059	32,119	148,299	119,189	1,492,395	2,218,316	67.28%
2015	59,190	8,059	32,119	152,091	124,164	1,555,777	2,297,327	67.72%
2016	63,228	8,059	32,119	155,004	129,599	1,625,719	2,383,197	68.22%
2017	67,604	8,059	32,119	157,959	135,605	1,703,088	2,476,732	68.76%
2018	72,230	8,059	32,119	161,131	142,243	1,788,549	2,578,552	69.36%
2019	77,238	8,059	32,119	163,883	149,603	1,883,626	2,690,103	70.02%
2020	82,600	8,059	32,119	166,486	157,802	1,989,661	2,801,930	71.01%
2021	88,326	8,059	32,119	168,812	166,959	2,108,253		
2022	94,383	8,059	32,119	170,534	177,224	2,241,445		

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