



H.F. 1507
(Banaian)

S.F. xxxx

(Delete-All Amendment H1507-1A)

Executive Summary of Commission Staff Materials

Affected Pension Plan(s): Large Minnesota Public Retirement Plans
Relevant Provisions of Law: Minnesota Statutes, Sec. 356.215, Subd. 8
General Nature of Proposal: Revising interest rate actuarial assumption.
Date of Summary: February 9, 2012

Specific Proposed Changes

Revises interest rate actuarial assumptions for all MSRS plans, all PERA plans, TRA, DTRFA, and SPTRFA. The rate of return assumptions applicable to the specific plan are revised downward by one full percentage point. For all the plans, the pre-retirement interest rate is revised from 8.5% to 7.5%. For the two first class city teacher plans, the post-retirement interest assumption is revised from 8.5% to 7.5%. For MSRS, PERA, and TRA the post-retirement interest rate assumption is revised from 6.0% to 5.0 %.

Policy Issues Raised by the Proposed Legislation

1. Whether any change in investment return assumptions is justified given the long-term investment performance of the SBI and the various other plan administrations.
2. Whether SBI and the pension fund administrators will support or oppose the proposal.
3. If the Commission were to conclude that rate of return assumptions for the major retirement plans need to be changed, the issue is the degree of change that is appropriate.
4. The proposed change will increase contribution rate deficiencies computed by the actuaries, which can lead to changes in actual contribution rates paid by state, local, and school district employees and their employers.
5. Possible need to also revise salary increase and payroll growth assumptions.
6. The continued inconsistencies across Minnesota plans in rate of return assumptions.
7. Need to revise refund treatment.
8. The very large impact that implementing the proposal would have on the liabilities, funding ratios, and contribution requirements of the various plans.
9. Benefit implications of proposed change because post-retirement assumptions are dependent upon computed funding ratios, which will fall under this proposal.

Potential Amendments

H1507-1A is the delete-all amendment updating the bill based on Minnesota Statutes, 2011 Supplement.
H1507-2A revises the pre-retirement interest rate assumption to 8.0% rather than the proposed 7.5%, and makes corresponding revisions in post-retirement interest rate assumptions where applicable.
H1507-3A, an alternative to -2A, revises the pre-retirement interest rate assumption to 8.25% rather than the proposed 7.5%, and makes corresponding revisions in post-retirement interest rate assumptions.
H1507-4A is an alternative to -2A or -3A. Under this amendment, investment return assumptions will be unchanged for a few years while the Legislature awaits information from SBI regarding the three-year annualized return it earns during Fiscal Years 2013-2015. If the SBI return equals or exceeds 8.5%, the assumptions will remain unchanged. If the return is less than 8.5%, the one percentage point reduction proposed in the bill will be imposed, starting in 2016.



TO: Members of the Legislative Commission on Pensions and Retirement
FROM: Ed Burek, Deputy Director *EB*
RE: H.F. 1507 (Banaian); S.F. xxxx, in the form of Delete-All Amendment H1507-1A;
Large Minnesota Public Retirement Plans; Revising Interest Rate Actuarial Assumption
DATE: February 9, 2012

Summary of Delete-All Amendment H1507-1A to H.F. 1507 (Banaian); S.F. xxxx

H.F. 1507 (Banaian); S.F. xxxx was introduced during the 2011 Legislative Session. The bill would have revised two sections of statutes, Minnesota Statutes Section 356.215, Subdivision 8, an interest and salary assumption provision, and Section 356.216, dealing with actuarial valuations for local police and paid fire plans. Both of those statutory provisions were revised in 2011. For the Commission and Legislature to now deal with the substance of H.F. 1507 (Banaian), it is necessary to use a delete-everything amendment which contains the substantive changes proposed in the original bill but which is drawn to the applicable provision in the 2011 Minnesota Statutes Supplement. The amendment does not include a section amending Minnesota Statutes 2011 Supplement, Section 356.216, because the proposed revisions to that provision as found in the original bill are no longer needed. The original bill included some language specific to the Minneapolis police and fire relief association actuarial valuations, but those associations no longer exist as pension organizations. They were merged into the Public Employees Police and Fire Retirement Plan (PERA-P&F) in 2011.

H.F. 1507 (Banaian); S.F. xxxx, in the form of Delete All Amendment H.F. 1507-1A, revises actuarial interest rate assumptions (also called the rate of return assumptions) for all Minnesota State Retirement System (MSRS) plans, all Public Employees Retirement Association (PERA) plans, the Teachers Retirement Association (TRA), the Duluth Teachers Retirement Fund Association (DTRFA), and the St. Paul Teachers Retirement Fund Association (SPTRFA). The rate of return assumptions applicable to the specific plan are revised downward by one full percentage point. For all the plans, the pre-retirement interest rate is revised from 8.5% to 7.5%. For the two first class city teacher plans the post-retirement interest assumption is revised from 8.5% to 7.5%. For MSRS, PERA, and TRA, the post-retirement interest rate assumption is revised from 6.0% to 5.0 %.

Background Information on Relevant Topics

- **Attachment A:** Background information on defined benefit plans and actuarial funding.
- **Attachment B:** Public Fund Survey report of investment return assumptions by state.

Discussion and Analysis

- a. Characteristics of the Proposed Assumption. The proposal reduces the rate of return assumptions used by MSRS, PERA, TRA, and first class city teacher plans by one full percentage point. This is a significant change from the current assumptions. The liabilities computed in actuarial valuations are sensitive to changes in the expected investment return to be earned by the pension plan over time. With the assumption change, it will be assumed that considerably less will be added to the funds over time due to investment returns. The actuarial calculations will indicate that employee and employer contribution rates need to be increased to accept a greater role in funding the plans.

Investment returns are the largest source of pension fund assets. In 2010 Session testimony before House committees, the State Board of Investment (SBI) executive director and the executive directors of MSRS, PERA, and TRA stated that 67% of the assets in the SBI combined fund (the accumulated assets of the MSRS, PERA, and TRA plans) are attributable to investment returns, while 18% represent the accumulated employer contributions and 15% is the accumulated employee contributions. These results are due to investment performance which over very long periods has been somewhat above the current 8.5% investment return assumption.

Ultimately, the accumulated contributions (plus aid, if any) and amounts generated by investing these assets must be sufficient to cover the stream of benefits paid by the plan. At any point in time, however, the true liability is unknown. Actuaries estimate the amounts based on the size of the

covered group and salaries, the demographics of the covered membership, the benefits offered by the plan, the actuarial methodologies used and all the assumptions used in an actuarial valuation (assumptions regarding salary increase, inflation, investment return, probability of terminating at any given age, probabilities of becoming disabled, mortality, age of first receipt of a benefit, etc.) The assumptions used in a valuation ought to be best estimates of what is expected to occur. The actuary uses the available information and the assumptions to develop the actuarial valuation. A key result of the actuarial valuation is the required contributions as determined by the actuary. The actuarial valuation is essentially a budgeting tool, indicating how much needs to be deposited in the fund in a given year to keep the fund on a track to full funding.

Deviations between what is assumed in the actuarial valuation and actual experience as played out over time tend to be self-correcting. For example, the rate of return assumption for our major plans is currently 8.5%. Suppose this understates actual long-term returns. If the actual return in a given year is higher than 8.5% return, a gain occurs. More of the plan's liabilities are being covered by investment returns than assumed in the valuation. This pre-payment of liability lowers contribution requirements in subsequent years. If instead, the actual return earned in a given year is less than predicted, the opposite occurs. Fewer liabilities are being covered by investment returns than predicted, leading to higher contribution requirements in future years.

Thus, if the Legislature were to decrease the assumed return from 8.5% to 7.5%, and this was the only change made, the contribution requirements computed by the actuary would increase, because it is assumed that markets will play a lesser role in financing the plan. The burden is shifted more toward the employees and employer (assuming contribution requirements stated in law are revised to be in line with the contribution requirements as computed by the actuary). However, if over time investment returns exceed the assumption, gains are recorded, reducing unfunded liability and reducing computed contribution requirements in later years. Looking into the future, if the investment return assumption is lowered and actual performance exceeds that expectation, the main change may be in the pattern of contribution requirements over time. They may be somewhat higher in earlier years and lower in future years than would be the case if the investment return assumption (or assumptions) had not been changed.

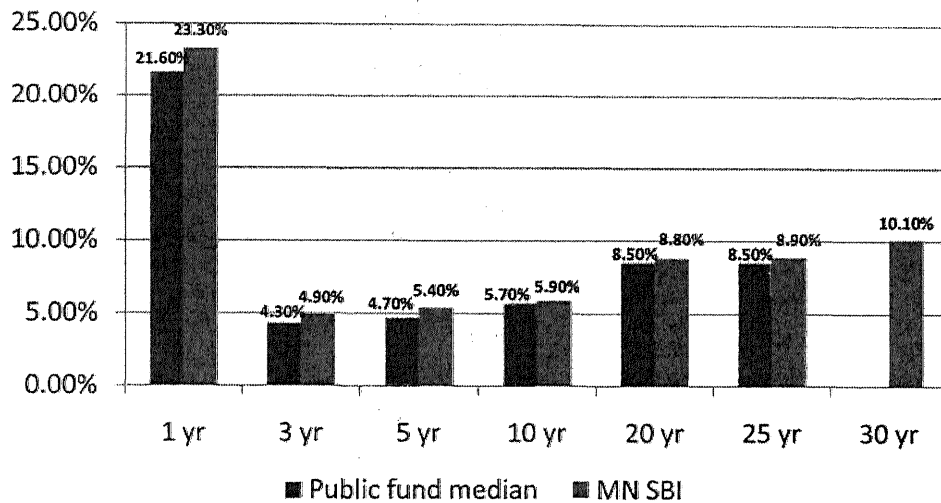
The investment return assumption is a long-term assumption and has been very infrequently changed. It is understood that actual experience will provide variation around that assumed rate, but over time, if the rate in current law is a good approximation of long-term tendencies, the financing of the pension plans will proceed in a reasonable fashion.

Changes in the statutory rate of return assumption reflect changes in investment practices and in the investment authority provided under law to our pension plans, although the timing of the changes in this statutory actuarial assumption often coincided with benefit system reforms, such as the move from pensions based on career average salary to high-five salary in 1973, or more recent benefit reforms or enhancements. Many decades ago, Minnesota public pension plans were prohibited from investing in stocks. Over time, investment practices and the investment authority for Minnesota public pension plans have changed to permit extensive investments in domestic and foreign stocks and other equity investments, which lead to higher expected returns. Looking back over the last 40 years at changes in the rate of return assumption for Minnesota statewide pension plans, in the very early 1970s the rate of return assumption was 3.5%. This was increased in 1973 to 5.0%, and in 1984 to 8.0%. In 1989, the pre-retirement rate of return assumption was revised to 8.5%, and has not been changed since. The 8.5% investment return assumption in current law reflects the longstanding opinion of the SBI, which invests the pension assets of our major plans, that an 8.5% long-term return (annualized return) is achievable.

- b. Review of Investment Returns. SBI invests the assets of the MSRS, PERA, and TRA plans. These assets are approximately 96% of all Minnesota public pension plan assets. (The two first class city teacher plans, combined, invest about 2.5% of all Minnesota public pension plans assets, and volunteer fire plans invest less than 1.0% of total system assets.)

Over the 2011 Legislative Interim, the Commission reviewed considerable investment return information and heard testimony from SBI, plan administrators, actuaries, consultants and other interested parties about rate of return assumptions. TRA and its actuarial consultants from Cavanaugh Macdonald Consulting, Patrice Beckham and Brent Banister, stressed that given the very long time horizons of open pension plans, the investment return actuarial assumption ought to be based on very long time periods, 30 to 50 years, not the 10-year or shorter period covered in a typical experience study. Handouts they provided included actual rate of return information on SBI and public fund medians reproduced below.

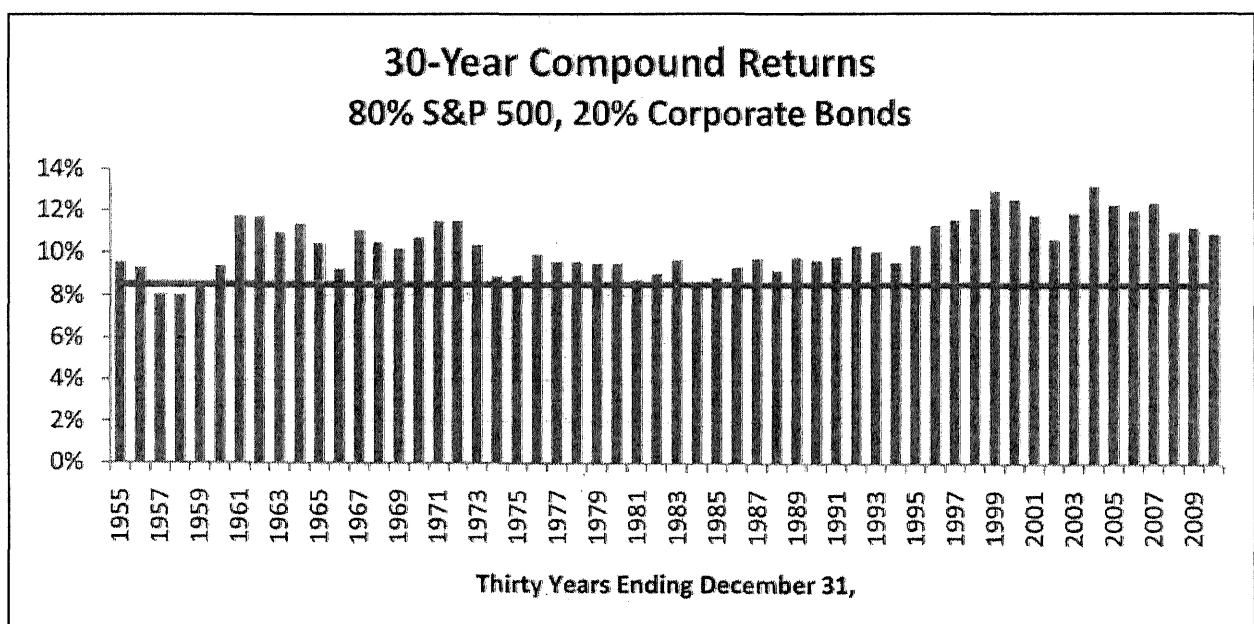
Median public pension fund and Minnesota SBI investment returns for periods ended 6/30/11



Source: National Assn of State Retirement Administrators, Callan Associates, MN SBI

SBI exceeded the public fund median for all periods shown. SBI returns for three, five, and 10 years are well below 8.5%, but this is measuring results for the first decade of this century, a period in which the domestic equity markets were as bad as they were during the Great Depression of the 1930s. For longer periods (20 years, 25 years, and 30 years) SBI exceeded an 8.5% annualized return by a comfortable margin, even though each of these periods included the last terrible investment decade.

Ms. Beckham and Dr. Banister also provided historical information on the long term results of holding a portfolio where 80% of the portfolio tracks the S&P 500 and 20% is invested in corporate bonds. This represents a ratio of equities and bonds typical of our current pension funds. Their results reproduced below display the average (annualized) returns for thirty-year periods, with the solid horizontal line indicating an 8.5% return, our current assumption.



The historical information displayed strongly supports a rate of return assumption of at least 8.5%. The first year shown in the graph is 1955, and the bar associated with that year indicates an average return for the period 1926 through 1955 (a 30-year period) which is in excess of 9%. Similarly, the information shown for 1956 represents the average return earned on the portfolio from 1927 through 1956. That return is also in excess of 9%. If we use the year 1940 to mark the end of the Great Depression, then every return shown for an end year prior to the early 1970s is influenced by investment returns earned during all or part of the Great Depression. For only two periods, the 30-year period ending in 1957 and the 30-year period ending in 1958, is the 30-year average return less than 8.5%, and not by much. The chart indicates 30-year average returns ending in 1957 and 1958 which are about 8.0%. For every other 30-year rolling period shown in the chart the average return is at least 8.5%, and generally more. Even the 30-year returns for all years ending in the first decade of this century, despite being influence by the recent Great Recession, indicate average returns of 10% or higher.

- c. Results of Recent Experience Study. While a logical recommendation from the data provided by TRA's consultant is to keep the current investment return assumptions, PERA's actuary reached a different conclusion, and recommended a reduction in the rate of return assumption. The 2004-2008 PERA experience study includes a presentation which is entirely forward looking. Nothing in the experience study indicates that Mercer looked at SBI's actual experience, its returns to date and how it has performed in the various asset classes. Rather, Mercer used long-term return assumptions developed by Mercer Investment Consulting and attempted to apply these to the SBI asset mix. The approach appears to be based on what actuaries refer to as the "building-block method" (Actuarial Standards Board, Actuarial Standard of Practice, No. 27, page 5). In general, Mercer developed a rate of return assumption for the various types of assets SBI holds and applied these to the SBI asset mix, which enables Mercer to compute an expected total portfolio return. The applicable table from the experience study is shown below. The gross return which Mercer computed is 8.2%. After adjusting this upward by 0.1% based on a change in inflation which Mercer expected due federal fiscal policy actions occurring in 2009, and subtracting 0.2% for assumed investment expenses, the net return was 8.1%. Mercer then rounded this to the nearest quarter percent and advised that the investment return assumption should be revised from the current 8.5% to 8.0%.

The Mercer analysis raises several questions:

- 1) The Mercer study claims to be entirely forward looking, not relying on past returns, at least not in any specific way, but provides almost no information about how these expected future return estimates for each asset type were developed. Further information to permit the reader to assess the reliability of these estimates would have been helpful.
- 2) Mercer did not have expected rates of return for all the asset types in the SBI portfolio. Mercer therefore had to rely on proxies which may or may not be a good fit. Mercer Investment Consulting had no rate of return assumption for mezzanine debt. It therefore assumed that the returns for those assets would be the same as mezzanine private equity. Similarly, lacking estimates for resource investment returns, Mercer assumed those assets would have the same return as the predicted return which Mercer has developed for commodities.
- 3) Mercer's adjustment for inflation not captured elsewhere, 0.1%, may be too high or too low.
- 4) The reduction for assumed investment expenses, 0.2%, may be too high. This may be a generic reduction which Mercer uses in performing rate of return studies, rather than one based on actual SBI expenses.
- 5) The analysis is specific to SBI's asset mix at the time the study was performed. Any pension fund asset mix will evolve over time as new investment forms become practical and new opportunities arise. The approach Mercer took is specific to the then current SBI portfolio, and does not allow for these inevitable changes which will alter the return expected from SBI's portfolio.
- 6) Mercer fails to recognize areas where SBI and many other pension funds consistently outperform the market. Mercer assumes SBI will match but not beat any of the asset group returns.

Perhaps assuming returns in excess of average is not permitted under standards that apply to actuaries. However, this is an area where an examination of SBI's actual past returns relative to market can provide insight. Areas worthy of mention are domestic fixed income and foreign stock (the developed international equity markets and the emerging markets). SBI uses the Barclays Aggregate Bond Index as its bond benchmark, the same benchmark upon which Mercer developed its assumption of future bond returns, but SBI bond returns typically beat that index for multi-year periods. The Barclays index is an investment-grade bond index, but SBI has beaten that return through modest use of junk bonds, and far more significantly, by making moves between government bonds and investment-grade corporate bonds. The SBI quarterly report which provides calendar year 2010 results indicates that the SBI bond portfolio exceeded the Barclay bond index for one-, three-, and ten-year periods, and the five-year return matched the index. Similarly, SBI and many other pension funds outperform the average foreign market returns through managers able to avoid countries where economic or political turmoil will harm the local market, and by using other techniques. SBI's international stock returns (developed and emerging markets) beat the applicable index for one, three, five, and ten-year periods. Thus, for some markets where Mercer is assuming SBI will match an index, SBI has consistently beat that applicable index, but these additional increments are not included in Mercer's development of its long-term rate of return estimate.

It is quite possible that if the Mercer analysis, summarized in the table below, could be fine tuned the results would support continued use of the existing 8.5% rate of return assumption rather than the modest reduction which Mercer proposed.

Mercer Best Estimate Rate of Return Development			
Asset Class	Target Allocation	Annual Geometric Return	Standard Deviation
U.S. Equity – Large Cap	42.6%	8.2%	17.9%
U.S. Equity – Small Cap	2.4	8.5	24.0
Private Equity	10.6	9.6	28.4
Mezzanine Debt	4.1	8.5	19.4
International Equity	12.0	8.4	18.4
Emerging Markets Equity	3.0	8.4	26.0
U.S. Fixed Income	18.0	4.7	5.5
Real Estate	3.8	7.4	13.7
Resource	1.5	4.6	18.0
Cash	2.0	3.5	1.3
Portfolio – Gross	100.0%	8.2%	13.3%
Gross Geometric Expected Return		8.2%	
Increase in Expected Return from Net Inflation/ Capital Supply Adjustment Described Above		0.1%	
Assumed Investment Expenses		(0.2%)	
Net Geometric Expected Return – Best Estimate		8.1%	

Source: 2004-2008 PERA-P&F Experience Study, pp. 13-16, Mercer, August 13, 2009

- d. Comparison of Minnesota Rate of Return Assumption to Other Public Funds. Some information is available permitting comparison of rate of return assumptions across public pension funds, but any source will have limitations. The National Association of State Retirement Administrators (NASRA) has a Public Fund Survey providing considerable information about the 126 plans included in their survey. That survey suggests that our 8.5% assumption is higher than generally used in other states. The following chart, derived from the NASRA survey data, shows that 10% of the plan funds (13 plan funds) use an 8.5% assumption. An 8.0% assumption is by far the most common, with over 47% of the plans (59 plan funds) using that assumption. On the low end, one fund (it happens to be the Texas Municipal Fund) is using a 7.0% assumption. A list of all the included pension plan funds in alphabetical order, along with the fund's rate of return assumption and the date of the fund actuarial valuation used in the survey, appear as Attachment B.

Review of that attachment suggests that, although the chart below provides a rough approximation of general tendencies among the included plans, it does not necessarily reflect tendencies in the entire population of public plans in the country because the sample used in the survey does not appear to be random. The results also are not a good reflection of general state policies, because some states have far more plans included in the survey than others, although each state has at least one entry. Thus, the results give far more weight to assumptions used in some states than in others. The states which heavily influence results because of a large number of included plans are Minnesota (five), Washington (seven), Texas (seven), Missouri (six), Colorado (seven), California (six), Illinois (five), and New York (five). These eight states account for 48 included plans, which is 38% of the entire sample.

The impact of some of the heavily weighted states can be seen by examining the results for plans using an 8.5% rate of return assumption. Although 13 plans use that assumption, five of those are Minnesota plans (MSRS-General, PERA-General, TRA, DTRFA, and SPTRFA), which is at least twice the number of Minnesota plans one would expect in the sample if each of the states were to be given equal weight in the survey, and all those Minnesota plans use an 8.5% interest assumption. Therefore, although 10% of the included plans use an 8.5% interest assumption, that does not imply that 10% of the states generally use that as their primary rate of return assumption. On the other hand, the prevalence of the 8.0% assumption (47% of the sample funds) may also be misleading. The state of Washington, with its seven included plans, all use an 8.0% assumption. If fewer Washington plans were included, the 8.0% assumption would be less common than suggested in the chart.

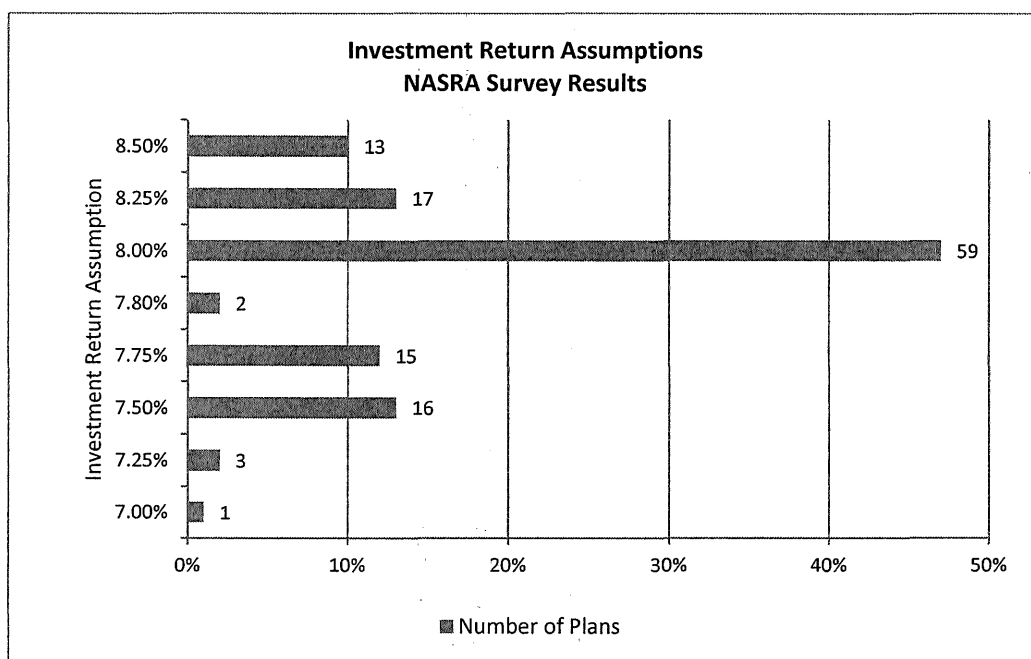
Review of the data also indicates that about 19 of the included plans are not state-level plans, but rather are local or county plans. These may influence results if, as is the case in Minnesota, some of these local plans have a lower rate of return assumption than their state-level counterparts.

Also of interest is that for some states, the included plans from that state do not use the same rate of return assumption. For example, of the six included Missouri plans, the Missouri Local plan uses a 7.5% assumption; the Missouri PEERS, Missouri Teachers, and St. Louis School Employees Plans

use an 8.0% assumption; the Missouri DOT and Highway Patrol uses 8.25%; and the Missouri State Employees plan has an 8.5% assumption. The Missouri plans in the survey include at least one local plan (St. Louis School Employees) which has a lower return assumption than some other Missouri plans. Minnesota also has local plans which have a rate of return assumption below the 8.5% rate used by the Minnesota state level plans, but none of Minnesota's local plans were included in the survey. Texas, with its six included state-level or local plans, have varying rate of return assumptions ranging from 8.5% for Houston Firefighters to 7.0% for Texas Municipal.

The survey indicates the rate of return assumptions being used by various plans and indicates a central tendency, but the survey does not provide any indication of whether these rate of return assumptions were developed from a thoughtful process. Selecting a rate of return assumption based on a survey presumes that these city, county, and states did their homework. There is risk that the exercise might amount to the blind leading the blind.

A final reservation to mention is that some of the information may be out of date. As indicated in the attachment, the dates of the actuarial valuation from which the rate of return assumptions are taken vary. Some of the information is from 2008 valuations, some from 2009, and some from 2010. It is possible that some states or local governments have more recently revised their assumptions.



- e. Rate of Return Assumptions Used in Surrounding States. The following chart shows rate of return assumptions used in the states which are close to Minnesota, as indicated by the plans from these states which are included in the NASRA survey. The lowest rate is 7.5%, used by the Iowa PERS plan and the Illinois Municipal plan. At the high end are a few other Illinois plans. The Illinois Teachers plan, Illinois SERS, and Illinois Universities plan all use an 8.5% assumption, the same as the large Minnesota plans.

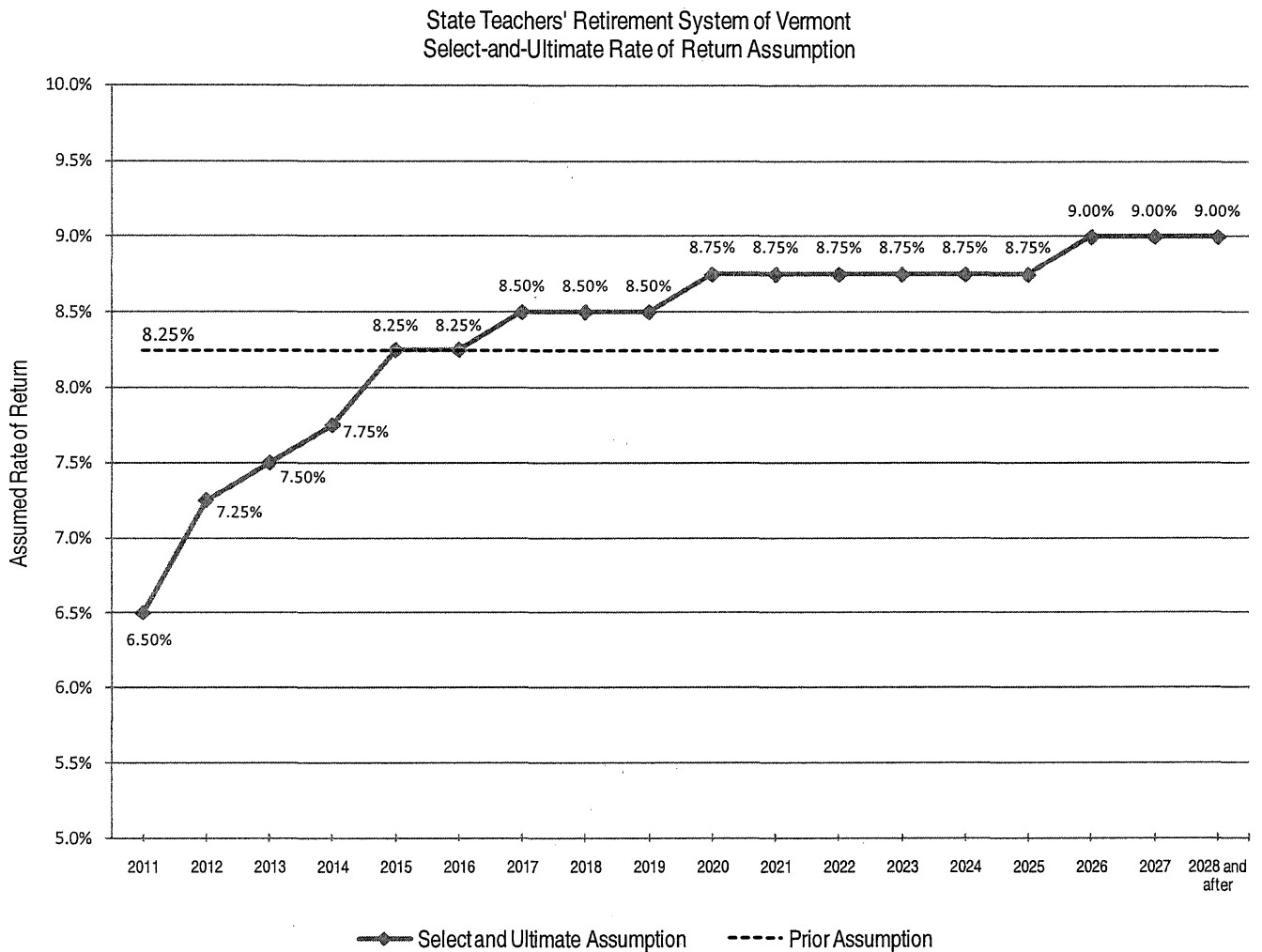
Public Fund Survey Report¹
Investment Return Assumptions, by State and Plan

Plan Name	Investment Return Assumption	Actuarial Valuation Date
Iowa PERS	7.50%	12/31/2008
Illinois Municipal	7.50%	12/31/2008
Illinois Teachers	8.50%	12/31/2008
Illinois SERS	8.50%	12/31/2008
Illinois Universities	8.50%	12/31/2008
Chicago Teachers	8.00%	12/31/2008
North Dakota PERS	8.00%	6/30/2009
North Dakota Teachers	8.00%	6/30/2009
South Dakota PERS	7.75%	12/31/2009
Wisconsin Retirement System	7.80%	7/1/2010

¹ Source: Public Fund Survey (www.publicfundsurvey.org), Key Actuarial Assumptions

- f. Example of Select-and-Ultimate Rate. An alternative to the approach proposed in this bill is a select-and-ultimate approach. TRA's actuaries, Ms. Beckham and Mr. Banister, mentioned use a select-and-ultimate rate of return assumption during their testimony at the October 19, 2011, Commission meeting. The actuaries stated that to the best of their knowledge the State Teachers' Retirement System of Vermont was the only public fund currently using that approach, but others are expressing interest in the concept.

The State Teachers' Retirement System of Vermont had been using a level 8.25% per year rate of return assumption. The newly adopted rate of return assumption, first used in the 2011 actuarial valuation, is a select-and-ultimate assumption which assumes lower rates for a few years, escalating gradually over a 15-year period to an ultimate rate of 9.0% per year. The pattern reflects a belief that markets will be troubled in the short term, but Vermont administrators have a very optimistic long term view. The specific rates that will apply are depicted in the following graph.



For the first four years the applicable rate is lower than the 8.25% assumption that plan had been using, but by 2015 they assume that the markets will allow them to match their prior 8.25% assumption, and then improve even further. They assume market returns will rise to 8.5% in 2017, then to 8.75% in 2020, and then to 9.00% in 2026 and thereafter.

- g. Benefit Implications of Proposed Change. In addition to having a large impact on reported liabilities, revising the rate of return assumption will have post retirement adjustment implications for our plans. All our defined benefit plans in the MSRS, PERA, TRA, and first class city teacher plans have provisions which will increase post-retirement adjustments when certain funding ratios (assets divided by liabilities) are attained, generally back to levels in place prior to the 2010 and 2011 financial sustainability provisions. For the MSRS, PERA, and TRA plans, achieving a 90% funding ratio is required for post-retirement increases to fully bounce back. The Duluth Teachers Retirement Fund Association can provide no increase at all to retirees until an 80% funding ratio is achieved, while the Saint Paul Teachers Retirement Fund Association can provide only a 1% increase until an 80% funding ratio is achieved. Lowering the investment return assumption will increase computed liabilities and lower computed funding ratios, making it more difficult to obtain the funding ratios needed to trigger these post retirement adjustments, and prolong the time needed for that to occur.

Pension and Related Policy Issues

H.F. 1507 (Banaian); S.F. xxxx raises a number of pension and related public policy issues for consideration by and possible discussion by the Commission, as follows:

1. Need for Change. The issue is whether any change in investment return assumptions is justified given the long-term investment performance of the SBI. Over long periods, which include the period of dismal returns during the Great Recession, the SBI has exceeded the 8.5% return assumption in current law. The returns since bottoming out in fiscal year 2009 have been considerably in excess of 8.5%, with a fiscal year 2010 return of 16%, and a fiscal year 2011 return of 23.3%. The historical information discussed earlier regarding returns to a portfolio where 80% is indexed to the S&P 500 and 20% is indexed to corporate bonds indicates that, if the past provides guidance, there is strong support for an 8.5% return assumption, or one that is even marginally higher.

Regarding data for recent years, neither the crash in 2008/early 2009, nor the 2010 and 2011 results reflect any sense of normalcy. The returns during the crash reflect a panic, while the returns since then reflect some recovery of the economy and a move to more sensible valuation of securities. Thus, long-term results indicate that the SBI has met and exceeded the 8.5% rate of return assumption, and short-term results have been too turbulent to gain much sense of central tendency going forward. Given the uncertainty, the Commission may wish to consider whether taking a wait-and-see approach might be best, leaving the investment return assumptions unchanged at the current time. On the other hand, the Commission might conclude that market extremes in recent years increase uncertainty as we look forward, and that a cautious approach is needed, justifying a reduction of rate or return assumptions, or some form of select-and-ultimate approach.

2. Position of SBI and Pension Funds. The issue is whether SBI and the pension fund administrations support this proposal.
3. Degree of Change. If the Commission were to conclude that rate of return assumptions for the major retirement plans need to be changed, the issue is the degree of change that is appropriate. The proposal would reduce the rates by a full percentage point, moving the pre-retirement rate from 8.5% to 7.5%. The Commission may wish to consider a lesser change, from 8.5% to 8.25%, or to 8.0%. The NASRA survey results, discussed above, would suggest that the use of an 8.25 or 8.0% assumption is more common than use of 8.5%.
4. State and Local Financial Burden. The issue is that the proposed change will increase contribution rate deficiencies computed by the actuaries, which can lead to changes in actual contribution rates paid by employees and employers. That would add to the burden on state and local government units. The state through its contributions to MSRS plans, local units of government through contributions to PERA, and school districts through contributions to TRA or one of the first class city teacher plans, and to PERA, will have an increased financial burden.
5. Need to Revise Other Assumptions. If a change in investment return assumptions is justified, the issue is whether other assumptions also need to be changed to maintain consistency. Underlying the rate of return assumption is an implicit assumption regarding inflation, since the nominal return is equal to the real return plus inflation. If the proposed investment return assumption change is in part justified by a revised notion of future inflation, that would also suggest revising the salary increase assumption, since salary increases also have an inflation component. If salary increase assumptions are lowered, that may lower contribution needs because the high-five average salary used to compute annuities will be lower than assumed under current assumptions. Another assumption which presumably is tied to inflation rates is the payroll growth assumption.
6. Possible Need to Review Refund Interest Rate. The issue is whether there is also a need to consider revising the interest rate paid on refunds. Under current law, an individual who terminates service and takes a refund receives the employee contributions made by the individual plus 4% interest. By including that interest the plan is giving up a portion of the investment return, currently 8.5% per year, presumably earned on those assets. Four percent interest is 47% of the earned return on those assets (4.0 divided by 8.5=47%). If the rate of return assumption was lowered to 7.5%, and that truly reflects what the plan will earn, then we can expect the fund to give back 53% of the earned return (4.0 divided by 7.5=53%) with a refund. If the Commission were to conclude that we should maintain the same relationship as we currently have between the refund interest rate and the investment return assumption, then that suggest that refund interest rates in pension provisions ought to be lowered to about 3.5%.
7. Inconsistencies in Rate of Return Assumptions Across Plans. The issue is the continued inconsistencies across Minnesota plans in rate of return assumptions between major plans and local

plans. While some allowance may need to be made, the extent of continued differences between rate of return assumptions may not be justified. All these plan administrations are investing in the same investment markets and have virtually identical investment authority provisions in law, but the differing rate of return assumptions suggest that we expect some plan systems to be better investors than others. If, in fact, we can expect comparable performance across plan funds, then that suggests rate of return assumptions should be uniform across plans. If, on the other hand, we truly expect local police, paid fire plans, and volunteer fire plans to produce lower returns than our statewide plans, then the system is inefficient. By moving the investment of local plan assets to the SBI, more assets will be generated through investment returns, permitting any given benefit to be provided at a lesser cost.

8. Benefit Implications of Proposed Change. The issue is that the proposal, through its impact on computed liability and funding ratios, will impact plan post retirement increases, as described earlier. Due to provisions in Laws 2010 and 2011, post-retirement adjustments paid under MSRS, PERA, TRA, DTRFA, and SPTRFA are now dependent upon the plan fund's computed funding ratio. Implementing the proposed change will likely result in no increase payable in DTRFA for a longer period of time. Post-retirement adjustments in MSRS, PERA, TRA, and the SPTRFA will be depressed for a longer period than if the existing law rate of return assumption remains in effect.
9. Considerable Changes in Actuarial Condition: Computed Liabilities and Contribution Requirements. The issue is the very large impact that implementing the proposal would have on the liabilities, funding ratios, and contribution requirements of the various plans. An accurate and complete picture of the impact on all the plans would need to be generated by the actuaries for the various plans. However, for the three largest plans (MSRS-General, PERA-General, and TRA) very rough estimates can be provided based on estimates of actuarial impact, developed by the actuary for MSRS, PERA, and TRA, for a proposal to revise the investment return assumption from 8.5% 8.0%. The actuary's results were produced at different times. The results for TRA are based on the July 1, 2009, actuarial valuation, while the MSRS and PERA results are based on the July 1, 2010, valuation.

Below is an indication of the proposed impact of a change from 8.5%, the current assumption, to 7.5%. In developing the estimates, I used the results provided by the actuary and assumed that the changes are proportional. The actuary computed changes based on a reduction from 8.5% to 8.0%, a decrease of 0.5%. Under the current proposal the rate would drop by 1.0%.

MSRS-General: Actuarial Value of Assets

	Actuarial Condition as of July 1, 2010		1.0% Decrease in Interest Assumption		Resulting Actuarial Condition	
<u>Membership</u>						
Active Members		48,494		--		48,494
Service Retirees		23,337		--		23,337
Disabilitants		1,684		--		1,684
Survivors		3,414		--		3,414
Deferred Retirees		15,388		--		15,388
Nonvested Former Members		<u>6,537</u>		--		<u>6,537</u>
Total Membership		98,854		--		98,854
<u>Funded Status</u>						
Accrued Liability		\$10,264,071,000		\$1,220,800,000		\$11,484,871,000
Current Assets		<u>\$8,960,391,000</u>		<u>\$0</u>		<u>\$8,960,391,000</u>
Unfunded Accrued Liability		\$1,303,680,000		\$1,220,800,000		\$2,524,480,000
Funding Ratio	87.30%		(9.29%)		78.01%	
<u>Financing Requirements</u>						
Covered Payroll		\$2,483,519,000		--		\$2,483,519,000
Benefits Payable		\$473,447,000		--		\$473,447,000
Normal Cost	7.77%	\$193,027,000	1.80%	\$44,704,000	9.57%	\$237,731,000
Administrative Expenses	<u>0.23%</u>	<u>\$5,712,000</u>	--	--	<u>0.23%</u>	<u>\$5,712,000</u>
Normal Cost & Expense	8.00%	\$198,739,000	1.80%	\$44,704,000	9.80%	\$243,443,000
Normal Cost & Expense	8.00%	\$198,739,000	1.80%	\$44,704,000	9.80%	\$243,443,000
Amortization	<u>2.99%</u>	<u>\$74,200,000</u>	<u>2.40%</u>	<u>\$59,606,000</u>	<u>5.39%</u>	<u>\$133,806,000</u>
Total Requirements	10.99%	\$272,939,000	4.20%	\$104,310,000	15.19%	\$377,249,000
Employee Contributions	5.00%	\$124,176,000		--	5.00%	\$124,176,000
Employer Contributions	5.00%	\$124,176,000		--	5.00%	\$124,176,000
Employer Add'l Cont.	0.00%	\$0		--	0.00%	\$0
Direct State Funding	0.00%	\$0		--	0.00%	\$0
Other Govt. Funding	0.00%	\$0		--	0.00%	\$0
Administrative Assessment	<u>0.00%</u>	<u>\$0</u>		--	<u>0.00%</u>	<u>\$0</u>
Total Contributions	10.00%	\$248,352,000		--	10.00%	\$248,352,000
Total Requirements	10.99%	\$272,939,000	4.20%	\$104,310,000	15.19%	\$377,249,000
Total Contributions	<u>10.00%</u>	<u>\$248,352,000</u>	--	--	<u>10.00%</u>	<u>\$248,352,000</u>
Deficiency (Surplus)	0.99%	\$24,587,000	4.20%	\$104,310,000	5.19%	\$128,897,000

PERA-General: Actuarial Value of Assets

	Actuarial Condition as of July 1, 2010		1.0% Decrease in Interest Assumption		Resulting Actuarial Condition	
Membership						
Active Members		140,389		--		140,389
Service Retirees		59,159		--		59,159
Disabilitants		2,215		--		2,215
Survivors		7,120		--		7,120
Deferred Retirees		45,151		--		45,151
Nonvested Former Members		<u>126,027</u>		--		<u>126,027</u>
Total Membership		380,061		--		380,061
Funded Status						
Accrued Liability		\$17,180,956,000		\$1,998,000,000		\$19,178,956,000
Current Assets		<u>\$13,126,993,000</u>		<u>\$0</u>		<u>\$13,126,993,000</u>
Unfunded Accrued Liability		\$4,053,963,000		\$1,998,000,000		\$6,051,963,000
Funding Ratio	76.40%		(7.96%)		68.44%	
Financing Requirements						
Covered Payroll		\$5,160,545,000		--		\$5,160,545,000
Benefits Payable		\$906,300,000		--		\$906,300,000
Normal Cost	6.50%	\$335,526,000	1.40%	\$71,400,000	7.90%	\$406,926,000
Administrative Expenses	<u>0.18%</u>	<u>\$9,289,000</u>	<u>--</u>	<u>--</u>	<u>0.18%</u>	<u>\$9,289,000</u>
Normal Cost & Expense	6.68%	\$344,815,000	1.40%	\$71,400,000	8.08%	\$416,215,000
Normal Cost & Expense	6.68%	\$344,815,000	1.40%	\$71,400,000	8.08%	\$416,215,000
Amortization	<u>5.78%</u>	<u>\$298,280,000</u>	<u>2.20%</u>	<u>\$113,532,000</u>	<u>7.98%</u>	<u>\$411,812,000</u>
Total Requirements	12.46%	\$643,095,000	3.60%	\$184,932,000	16.06%	\$828,027,000
Employee Contributions	6.13%	\$316,120,000		--	6.13%	\$316,120,000
Employer Contributions	7.13%	\$367,746,000		--	7.13%	\$367,746,000
Employer Add'l Cont.	0.00%	\$0		--	0.00%	\$0
Direct State Funding	0.00%	\$0		--	0.00%	\$0
Other Govt. Funding	0.00%	\$0		--	0.00%	\$0
Administrative Assessment	<u>0.00%</u>	<u>\$0</u>		--	<u>0.00%</u>	<u>\$0</u>
Total Contributions	13.25%	\$683,866,000		--	13.25%	\$683,866,000
Total Requirements	12.46%	\$643,095,000	3.60%	\$184,932,000	16.06%	\$828,027,000
Total Contributions	13.25%	\$683,866,000	--	--	13.25%	\$683,866,000
Deficiency (Surplus)	(0.79%)	(\$40,771,000)	3.60%	\$184,932,000	2.81%	\$144,161,000

TRA: Actuarial Value of Assets

	Actuarial Condition as of July 1, 2009		1.0% Decrease in Interest Assumption		Resulting Actuarial Condition	
Membership						
Active Members		77,786		--		77,786
Service Retirees		46,108		--		46,108
Disabilitants		624		--		624
Survivors		3,476		--		3,476
Deferred Retirees		12,490		--		12,490
Nonvested Former Members		<u>23,073</u>		--		<u>23,073</u>
Total Membership		163,557		--		163,557
Funded Status						
Accrued Liability		\$23,114,802,000		\$2,992,548,000		\$26,107,350,000
Current Assets		<u>\$17,882,408,000</u>		<u>\$0</u>		<u>\$17,882,408,000</u>
Unfunded Accrued Liability		\$5,232,394,000		\$2,992,548,000		\$8,224,942,000
Funding Ratio	77.36%		(8.86%)		68.50%	
Financing Requirements						
Covered Payroll		\$4,049,217,000		--		\$4,049,217,000
Benefits Payable		\$1,381,366,000		--		\$1,381,366,000
Normal Cost	8.88%	\$359,579,000	1.42%	\$57,498,000	10.30%	\$417,077,000
Administrative Expenses	<u>0.28%</u>	<u>\$11,338,000</u>	<u>--</u>	<u>--</u>	<u>0.28%</u>	<u>\$11,338,000</u>
Normal Cost & Expense	9.16%	\$370,917,000	1.42%	\$57,498,000	10.58%	\$428,415,000
Normal Cost & Expense	9.16%	\$370,917,000	1.42%	\$57,498,000	10.58%	\$428,415,000
Amortization	<u>7.66%</u>	<u>\$310,170,000</u>	<u>4.38%</u>	<u>\$177,394,000</u>	<u>12.04%</u>	<u>\$487,564,000</u>
Total Requirements	16.82%	\$681,087,000	5.80%	\$234,892,000	22.62%	\$915,979,000
Employee Contributions	5.50%	\$222,860,000		--	5.50%	\$222,860,000
Employer Contributions	5.69%	\$230,325,000		--	5.69%	\$230,325,000
Employer Add'l Cont.	0.00%	\$0		--	0.00%	\$0
Direct State Funding	0.44%	\$17,948,000		--	0.44%	\$17,948,000
Other Govt. Funding	0.06%	\$2,500,000		--	0.06%	\$2,500,000
Administrative Assessment	<u>0.00%</u>	<u>\$0</u>		--	<u>0.00%</u>	<u>\$0</u>
Total Contributions	11.70%	\$473,633,000		--	11.70%	\$473,633,000
Total Requirements	16.82%	\$681,087,000	5.80%	\$234,892,000	22.62%	\$915,979,000
Total Contributions	11.70%	\$473,633,000	--	--	11.70%	\$473,633,000
Deficiency (Surplus)	5.12%	\$207,454,000	5.80%	\$234,892,000	10.92%	\$442,346,000

The above results, although crude, provide some useful suggestion of the magnitude of the impact. The MSRS-General funding ratio, 87.3%, could fall to 78%. The total requirements to fund the plan could increase from about 11% of pay to over 15% of pay. This is due to an increase in the plan normal cost and the amortization requirement. The normal cost and amortization requirement changes because assets in the plan will grow much more slowly at a 7.5% return than they would at 8.5%. Thus, the actuarial work would indicate that contributions need to be substantially increased to make up the difference. PERA's funding ratio could fall from 76% to 68%. TRA's funding ratio, based on 2009 results, could fall from 77% to 68%, and its total requirements could go from 16.8% of payroll to over 22%. All three plans would have very large contribution deficiencies, as the total contributions payable under statute would not immediately change.

It is important to recognize that the actuarial work does not change the actual eventual assets needed to cover the retirement benefits and other benefits payable by the plan administration (other than impact on post-retirement adjustments previously discussed). The actuarial work provides a tool to use to accumulate sufficient assets over time to meet these obligations. Using a 7.5% investment return assumption is more pessimistic than the assumption in current law. If the actual returns to the fund are higher than the assumption, a gain occurs to the fund which lowers the computed contribution rates in future actuarial reports because more of the unfunded liability was retired than expected. The computed required contribution rates will follow a different pattern than if the current assumption were left in place.

Potential Amendments for Commission Consideration

In addition to the delete-everything amendment, the following amendments have been prepared for Commission consideration:

H1507-2A revises the pre-retirement interest rate assumption to 8.0% rather than the proposed 7.5%, and makes corresponding revisions in post-retirement interest rate assumptions where applicable.

H1507-3A, an alternative to -2A, revises the pre-retirement interest rate assumption to 8.25% rather than the proposed 7.5%, and makes corresponding revisions in post-retirement interest rate assumptions.

H1507-4A is an alternative to -2A or -3A. Under this amendment, investment return assumptions will be unchanged for a few years while the Legislature awaits information from SBI regarding the three-year annualized return it earns during the fiscal years 2013 through 2015 period. If the SBI return equals or exceeds 8.5%, the assumptions will remain unchanged. If the return is less than 8.5%, the one percentage point reduction in the investment return assumption proposed in the bill will be imposed, starting in 2016.

Background Information on Defined Benefit Plans and the Purpose of Actuarial Funding

Given the liabilities created by any defined benefit public pension plan, a financing/budgeting method is needed to cover the liabilities and to create a trust fund for the accumulated assets. Actuaries have developed several methods. Regardless of the method used, the actual or ultimate cost of a pension plan is the total amount of any refunds, retirement annuities, disability benefits, and survivor benefits eventually paid plus the total accumulated administrative costs. These actual costs will occur no matter what method of financing is employed to fund pension benefits. The financing or actuarial funding method merely separates out the portion of the actual or ultimate cost that is expected to be paid from investment returns from the portion expected to be funded from periodic contributions, and the methodology impacts the timing of the burden which may be borne by the pension plan employees and employers.

Virtually every Minnesota public pension plan is required to make annual financial and actuarial reports under Minnesota Statutes, Sections 356.20 and 356.215. The Standards for Actuarial Work, issued by the Commission, specify the detailed contents and format requirements for both the actuarial valuation reports and the experience studies. The annual actuarial valuation must include the determination of normal cost as a percentage of salary and accrued liability of the fund calculated according to the entry age normal cost method, with a prescribed pre- and post-retirement interest assumption, a prescribed salary assumption, and other assumptions as to mortality, disability, retirement, and withdrawal which are appropriate to the experience of the plan. A statement of administrative cost of the fund as a gross amount and as a percent of payroll is required. The actuary must also present an actuarial balance sheet, setting forth the accrued assets, the accrued liabilities (reserves for active members, deferred annuitants, inactive members without vested rights, and annuitants) and the unfunded actuarial accrued liability. The valuation must also include a calculation of the additional support rate required to amortize the unfunded accrued liability by the end of the applicable target full funding year. The actuary is required to provide an analysis of the increase or decrease in the unfunded accrued liability from changes in benefits, changes in actuarial assumptions, gains and losses from actual deviations from actuarial assumptions and changes in membership. An exhibit detailing the total active membership, additions and separations from active service during the year, total benefit recipients, additions to and separations from the annuity payroll, and a breakdown of benefit recipients into service annuitants, disabilitants, surviving spouses and children, and deferred annuitants is also required.

The economic assumptions used in actuarial valuations include the interest rate assumption (also called the investment return assumption), individual salary increase assumption, and payroll growth assumption. Many of the economic assumptions are specified in statute. The salary increase economic assumption is required to project the amount of benefits that will be payable, since ultimately the benefits payable by the plans depend upon the salary which plan members will have near the time of retirement. Total payroll coupled with the payroll growth assumption is needed to determine the expected payroll at points in time, upon which the contribution rates will be applied to help finance the plan. The interest assumption (investment return assumption) is needed to predict how fast assets in the fund are likely to grow to help cover the liabilities.

Demographic assumptions compose the other assumption group. These are generally determined by actuary recommendations with approval by the Commission. Demographic assumptions are used to project the development of the population covered by the pension plan. The demographic assumptions estimate the likelihood that an active member will remain in service to qualify for an annuity, when members are likely to terminate service and commence benefits, and the length of time that benefits are expected to be paid given estimates of mortality.

The actuarial assumptions should be a reasonable reflection of reality. A reasonable actuarial assumption is one that is expected to appropriately model the contingency being measured and is not anticipated to produce significant cumulative actuarial gains or losses over the measurement period. Most of the economic assumptions are infrequently changed, being revised only when the historical record, coupled with careful analysis of likely future situation, indicates that change is appropriate. For example, the rate of return assumption, 8.5% for the larger funds, has been in place since 1989. In contrast, demographic assumptions are subject to more frequent change.

Public Fund Survey Report¹
Investment Return Assumptions, by State and Plan

Plan Name	Investment Return Assumption	Actuarial Valuation Date
Alaska Teachers	8.25%	1/1/2008
Alaska PERS	8.25%	4/1/2008
Alabama Teachers	8.00%	6/30/2008
Alabama ERS	8.00%	6/30/2008
Arkansas Teachers	8.00%	6/30/2008
Arkansas PERS	8.00%	6/30/2008
Arizona Public Safety Personnel	8.50%	6/30/2008
Phoenix ERS	8.00%	6/30/2008
Arizona SRS	8.00%	6/30/2008
California Teachers	8.00%	6/30/2008
LA County ERS	7.75%	6/30/2008
Contra Costa County	7.80%	6/30/2008
San Diego County	8.25%	6/30/2008
California PERF	7.75%	6/30/2008
San Francisco City & County	7.75%	6/30/2008
Colorado State	8.00%	6/30/2008
Denver Schools	8.00%	6/30/2008
Colorado Municipal	8.00%	6/30/2008
Colorado School	8.00%	6/30/2008
Denver Employees	8.00%	6/30/2008
Colorado Affiliated Local	8.00%	6/30/2008
Colorado Fire & Police Statewide	8.00%	6/30/2008
Connecticut Teachers	8.50%	6/30/2008
Connecticut SERS	8.25%	6/30/2008
DC Police & Fire	7.50%	6/30/2008
DC Teachers	7.50%	7/1/2008
Delaware State Employees	8.00%	7/1/2008
Florida RS	7.75%	7/1/2008
Georgia ERS	7.50%	9/30/2008
Georgia Teachers	7.50%	9/30/2008
Hawaii ERS	8.00%	12/31/2008
Iowa PERS	7.50%	12/31/2008
Idaho PERS	7.75%	12/31/2008
Illinois Municipal	7.50%	12/31/2008
Illinois Teachers	8.50%	12/31/2008
Illinois SERS	8.50%	12/31/2008
Illinois Universities	8.50%	12/31/2008
Chicago Teachers	8.00%	12/31/2008
Indiana Teachers	7.50%	1/1/2009
Indiana PERF	7.25%	1/1/2009
Kansas PERS	8.00%	1/1/2009
Kentucky ERS	7.75%	1/1/2009
Kentucky County	7.75%	4/1/2009
Kentucky Teachers	7.50%	6/30/2009
Louisiana Teachers	8.25%	6/30/2009
Louisiana SERS	8.25%	6/30/2009
Massachusetts SERS	8.25%	6/30/2009
Massachusetts Teachers	8.25%	6/30/2009
Maryland PERS	7.75%	6/30/2009
Maryland Teachers	7.75%	6/30/2009
Maine State and Teacher	7.75%	6/30/2009
Maine Local	7.75%	6/30/2009
Michigan SERS	8.00%	6/30/2009
Michigan Public Schools	8.00%	6/30/2009
Michigan Municipal	8.00%	6/30/2009
Minnesota State Employees	8.50%	6/30/2009
Minnesota PERF	8.50%	6/30/2009
St. Paul Teachers	8.50%	6/30/2009
Duluth Teachers	8.50%	6/30/2009
Minnesota Teachers	8.50%	6/30/2009
Missouri DOT and Highway Patrol	8.25%	6/30/2009
St. Louis School Employees	8.00%	6/30/2009
Missouri Teachers	8.00%	6/30/2009
Missouri PEERS	8.00%	6/30/2009
Missouri Local	7.50%	6/30/2009

Plan Name	Investment Return Assumption	Actuarial Valuation Date
Missouri State Employees	8.50%	6/30/2009
Mississippi PERS	8.00%	6/30/2009
Montana Teachers	7.75%	6/30/2009
Montana PERS	8.00%	6/30/2009
North Carolina Local Government	7.25%	6/30/2009
North Carolina Teachers and State Employees	7.25%	6/30/2009
North Dakota PERS	8.00%	6/30/2009
North Dakota Teachers	8.00%	6/30/2009
Nebraska Schools	8.00%	6/30/2009
New Hampshire Retirement System	8.50%	6/30/2009
New Jersey Police & Fire	8.25%	6/30/2009
New Jersey PERS	8.25%	6/30/2009
New Jersey Teachers	8.25%	6/30/2009
New Mexico PERF	8.00%	6/30/2009
New Mexico Teachers	8.00%	6/30/2009
Nevada Regular Employees	8.00%	6/30/2009
Nevada Police Officer and Firefighter	8.00%	6/30/2009
NY State & Local Police & Fire	8.00%	6/30/2009
New York City ERS	8.00%	7/1/2009
New York State Teachers	8.00%	7/1/2009
NY State & Local ERS	8.00%	7/1/2009
New York City Teachers	8.00%	7/1/2009
Ohio School Employees	8.00%	7/1/2009
Ohio Police & Fire	8.25%	7/1/2009
Ohio Teachers	8.00%	7/1/2009
Ohio PERS	8.00%	7/1/2009
Oklahoma PERS	7.50%	7/1/2009
Oklahoma Teachers	8.00%	7/1/2009
Oregon PERS	8.00%	7/1/2009
Pennsylvania State ERS	8.00%	7/1/2009
Pennsylvania School Employees	8.00%	9/30/2009
Rhode Island ERS	8.25%	9/30/2009
Rhode Island Municipal	8.25%	10/1/2009
South Carolina Police	8.00%	10/1/2009
South Carolina RS	8.00%	12/31/2009
South Dakota PERS	7.75%	12/31/2009
TN State and Teachers	7.50%	12/31/2009
TN Political Subdivisions	7.50%	12/31/2009
Texas Teachers	8.00%	12/31/2009
Texas County & District	8.00%	12/31/2009
Houston Firefighters	8.50%	12/31/2009
Texas ERS	8.00%	12/31/2009
Texas Municipal	7.00%	12/31/2009
City of Austin ERS	7.75%	12/31/2009
Texas LECOS	8.00%	1/1/2010
Utah Noncontributory	7.75%	1/1/2010
Virginia Retirement System	7.50%	1/1/2010
Fairfax County Schools	7.50%	1/1/2010
Vermont Teachers	8.25%	2/28/2010
Vermont State Employees	8.25%	6/30/2010
Washington PERS 1	8.00%	6/30/2010
Washington LEOFF Plan 1	8.00%	6/30/2010
Washington PERS 2/3	8.00%	6/30/2010
Washington Teachers Plan 1	8.00%	6/30/2010
Washington Teachers Plan 2/3	8.00%	6/30/2010
Washington School Employees Plan 2/3	8.00%	6/30/2010
Washington LEOFF Plan 2	8.00%	7/1/2010
Wisconsin Retirement System	7.80%	7/1/2010
West Virginia Teachers	7.50%	8/31/2010
West Virginia PERS	7.50%	8/31/2010
Wyoming Public Employees	8.00%	8/31/2010

¹ Source: Public Fund Survey (www.publicfundsurvey.org), Key Actuarial Assumptions

1.1 moves to amend H.F. No. 1507; S.F. No., the delete everything
1.2 amendment (H1507-1A), as follows:

1.3 Page 1, line 11, delete "7.5%" and insert "8.0%" and delete "5.0%" and insert "5.5%"

1.4 Page 1, lines 12, 13, 14, 15, 16, 17, 18, 20, and 21, delete "7.5" and insert "8.0"
1.5 and delete "5.0" and insert "5.5"

1.6 Page 1, lines 22 and 23, delete "7.5" and insert "8.0" and delete "7.5" and insert "8.0"

1.1 moves to amend H.F. No. 1507; S.F. No., the delete everything
1.2 amendment (H1507-1A), as follows:

1.3 Page 1, line 11, delete "7.5%" and insert "8.25%" and delete "5.0%" and insert "
1.4 5.75%"

1.5 Page 1, lines 12, 13, 14, 15, 16, 17, 18, 20, and 21, delete "7.5" and insert "8.25"
1.6 and delete "5.0" and insert "5.75"

1.7 Page 1, lines 22 and 23, delete "7.5" and insert "8.25" and delete "7.5" and insert "
1.8 8.25"

1.1 moves to amend H.F. No. 1507; S.F. No., the delete everything
1.2 amendment (H1507-1A), as follows:

1.3 Page 1, lines 11 to 23, delete the new language and reinstate the stricken language

1.4 Page 6, after line 6, insert:

1.5 "Sec. 2. Minnesota Statutes 2010, section 356.215, is amended by adding a subdivision
1.6 to read:

1.7 Subd. 8a. Revised interest and salary assumptions. (a) Notwithstanding
1.8 subdivision 8, paragraph (a), if the three-year annualized return for fiscal years 2013
1.9 through 2015 for the State Board of Investment combined fund under section 11A.14 is
1.10 less than 8.5 percent, the actuarial valuation must use the following preretirement and
1.11 postretirement interest rate actuarial assumption beginning in fiscal year 2016, except as
1.12 modified by section 356.415, subdivision 3:

1.13	<u>preretirement</u> <u>interest</u>	<u>postretirement</u> <u>interest</u>
1.14	<u>rate assumption</u>	<u>rate assumption</u>
1.15	<u>plan</u>	
1.16	<u>7.5%</u>	<u>5.0%</u>
1.17	<u>7.5</u>	<u>5.0</u>
1.18	<u>7.5</u>	<u>5.0</u>
1.19	<u>7.5</u>	<u>5.0</u>
1.20	<u>7.5</u>	<u>5.0</u>
1.21	<u>7.5</u>	<u>5.0</u>
1.22	<u>7.5</u>	<u>5.0</u>
1.23	<u>7.5</u>	<u>5.0</u>
1.24		
1.25	<u>7.5</u>	<u>5.0</u>
1.26	<u>7.5</u>	<u>5.0</u>
1.27	<u>7.5</u>	<u>7.5</u>
1.28	<u>7.5</u>	<u>7.5</u>
1.29	<u>5.0</u>	<u>5.0</u>
1.30	<u>5.0</u>	<u>5.0</u>

2.1	<u>Bloomington Fire Department Relief</u>		
2.2	<u>Association</u>	<u>6.0</u>	<u>6.0</u>
2.3	<u>local monthly benefit volunteer firefighters</u>		
2.4	<u>relief associations</u>	<u>5.0</u>	<u>5.0</u>

2.5 (b) The executive director of the State Board of Investment must report the
 2.6 annualized return specified in paragraph (a) by September 2015 to the executive director
 2.7 of the Legislative Commission on Pensions and Retirement, to the executive directors of
 2.8 the Minnesota State Retirement System, the Public Employees Retirement Association,
 2.9 and the Teachers Retirement Association, the chair and ranking minority member of the
 2.10 Government Operations and Elections committee of the house of representatives, and the
 2.11 chair and ranking minority member of the State Government Innovation and Veterans
 2.12 committee of the senate.

2.13 **EFFECTIVE DATE.** This section is effective the day following final enactment.

2.14 Sec. 3. **EXPIRATION; REPEALER.**

2.15 If the report required by Minnesota Statutes, section 356.215, subdivision 8a,
 2.16 indicates a three-year annualized return of 8.5 percent or greater, Minnesota Statutes,
 2.17 section 356.215, subdivision 8a, expires and is repealed effective January 1, 2016.

2.18 **EFFECTIVE DATE.** This section is effective the day following final enactment."

2.19 Amend the title accordingly

1.1 moves to amend H.F. No. 1507; S.F. No. as follows:

1.2 Delete everything after the enacting clause and insert:

1.3 "Section 1. Minnesota Statutes 2011 Supplement, section 356.215, subdivision 8,
1.4 is amended to read:

1.5 Subd. 8. **Interest and salary assumptions.** (a) The actuarial valuation must use the
1.6 applicable following preretirement interest assumption and, if section 356.415 does not
1.7 apply, the applicable following postretirement interest assumption:

1.8		preretirement	postretirement
1.9		interest	interest
1.10	plan	rate assumption	rate assumption
1.11	general state employees retirement plan	8.5% <u>7.5%</u>	6.0% <u>5.0%</u>
1.12	correctional state employees retirement plan	8.5 <u>7.5</u>	6.0 <u>5.0</u>
1.13	State Patrol retirement plan	8.5 <u>7.5</u>	6.0 <u>5.0</u>
1.14	legislators retirement plan	8.5 <u>7.5</u>	6.0 <u>5.0</u>
1.15	elective state officers retirement plan	8.5 <u>7.5</u>	6.0 <u>5.0</u>
1.16	judges retirement plan	8.5 <u>7.5</u>	6.0 <u>5.0</u>
1.17	general public employees retirement plan	8.5 <u>7.5</u>	6.0 <u>5.0</u>
1.18	public employees police and fire retirement plan	8.5 <u>7.5</u>	6.0 <u>5.0</u>
1.19	local government correctional service		
1.20	retirement plan	8.5 <u>7.5</u>	6.0 <u>5.0</u>
1.21	teachers retirement plan	8.5 <u>7.5</u>	6.0 <u>5.0</u>
1.22	Duluth teachers retirement plan	8.5 <u>7.5</u>	8.5 <u>7.5</u>
1.23	St. Paul teachers retirement plan	8.5 <u>7.5</u>	8.5 <u>7.5</u>
1.24	Fairmont Police Relief Association	5.0	5.0
1.25	Virginia Fire Department Relief Association	5.0	5.0
1.26	Bloomington Fire Department Relief		
1.27	Association	6.0	6.0
1.28	local monthly benefit volunteer firefighters		
1.29	relief associations	5.0	5.0

1.30 (b) ~~Before July 1, 2010~~ Except as specified in paragraph (d), the actuarial valuation
1.31 must use the applicable following single rate future salary increase assumption, the

2.1 applicable following modified single rate future salary increase assumption, or the
2.2 applicable following graded rate future salary increase assumption:

2.3 (1) single rate future salary increase assumption

2.4	plan	future salary increase assumption
2.5	legislators retirement plan	5.0%
2.6	judges retirement plan	4.0
2.7	Fairmont Police Relief Association	3.5
2.8	Virginia Fire Department Relief Association	3.5
2.9	Bloomington Fire Department Relief	
2.10	Association	4.0

2.11 (2) age-related select and ultimate future salary increase assumption or graded rate
2.12 future salary increase assumption

2.13	plan	future salary increase assumption
2.14	correctional state employees retirement plan	assumption D
2.15	State Patrol retirement plan	assumption C
2.16	local government correctional service retirement plan	assumption C
2.17	Duluth teachers retirement plan	assumption A
2.18	St. Paul teachers retirement plan	assumption B

2.19 The select calculation is: during the
 2.20 designated select period, a designated
 2.21 percentage rate is multiplied by the result of
 2.22 the designated integer minus T, where T is
 2.23 the number of completed years of service,
 2.24 and is added to the applicable future salary
 2.25 increase assumption. The designated select
 2.26 period is five years and the designated
 2.27 integer is five for the general state employees
 2.28 retirement plan. The designated select period
 2.29 is ten years and the designated integer is ten
 2.30 for all other retirement plans covered by
 2.31 this clause. The designated percentage rate
 2.32 is: (1) 0.2 percent for the correctional state
 2.33 employees retirement plan, the State Patrol
 2.34 retirement plan, and the local government
 2.35 correctional service retirement plan; (2)
 2.36 0.6 percent for the general state employees
 2.37 retirement plan; and (3) 0.3 percent for the

3.1 teachers retirement plan, the Duluth Teachers
 3.2 Retirement Fund Association, and the St.
 3.3 Paul Teachers Retirement Fund Association.
 3.4 The select calculation for the Duluth Teachers
 3.5 Retirement Fund Association is 8.00 percent
 3.6 per year for service years one through seven,
 3.7 7.25 percent per year for service years seven
 3.8 and eight, and 6.50 percent per year for
 3.9 service years eight and nine.

3.10 The ultimate future salary increase assumption is:

3.11 age	A	B	C	D
3.12 16	8.00%	6.90%	7.7500%	7.2500%
3.13 17	8.00	6.90	7.7500	7.2500
3.14 18	8.00	6.90	7.7500	7.2500
3.15 19	8.00	6.90	7.7500	7.2500
3.16 20	6.90	6.90	7.7500	7.2500
3.17 21	6.90	6.90	7.1454	6.6454
3.18 22	6.90	6.90	7.0725	6.5725
3.19 23	6.85	6.85	7.0544	6.5544
3.20 24	6.80	6.80	7.0363	6.5363
3.21 25	6.75	6.75	7.0000	6.5000
3.22 26	6.70	6.70	7.0000	6.5000
3.23 27	6.65	6.65	7.0000	6.5000
3.24 28	6.60	6.60	7.0000	6.5000
3.25 29	6.55	6.55	7.0000	6.5000
3.26 30	6.50	6.50	7.0000	6.5000
3.27 31	6.45	6.45	7.0000	6.5000
3.28 32	6.40	6.40	7.0000	6.5000
3.29 33	6.35	6.35	7.0000	6.5000
3.30 34	6.30	6.30	7.0000	6.5000
3.31 35	6.25	6.25	7.0000	6.5000
3.32 36	6.20	6.20	6.9019	6.4019
3.33 37	6.15	6.15	6.8074	6.3074
3.34 38	6.10	6.10	6.7125	6.2125
3.35 39	6.05	6.05	6.6054	6.1054
3.36 40	6.00	6.00	6.5000	6.0000
3.37 41	5.90	5.95	6.3540	5.8540
3.38 42	5.80	5.90	6.2087	5.7087
3.39 43	5.70	5.85	6.0622	5.5622
3.40 44	5.60	5.80	5.9048	5.4078
3.41 45	5.50	5.75	5.7500	5.2500

4.1	46	5.40	5.70	5.6940	5.1940
4.2	47	5.30	5.65	5.6375	5.1375
4.3	48	5.20	5.60	5.5822	5.0822
4.4	49	5.10	5.55	5.5404	5.0404
4.5	50	5.00	5.50	5.5000	5.0000
4.6	51	4.90	5.45	5.4384	4.9384
4.7	52	4.80	5.40	5.3776	4.8776
4.8	53	4.70	5.35	5.3167	4.8167
4.9	54	4.60	5.30	5.2826	4.7826
4.10	55	4.50	5.25	5.2500	4.7500
4.11	56	4.40	5.20	5.2500	4.7500
4.12	57	4.30	5.15	5.2500	4.7500
4.13	58	4.20	5.10	5.2500	4.7500
4.14	59	4.10	5.05	5.2500	4.7500
4.15	60	4.00	5.00	5.2500	4.7500
4.16	61	3.90	5.00	5.2500	4.7500
4.17	62	3.80	5.00	5.2500	4.7500
4.18	63	3.70	5.00	5.2500	4.7500
4.19	64	3.60	5.00	5.2500	4.7500
4.20	65	3.50	5.00	5.2500	4.7500
4.21	66	3.50	5.00	5.2500	4.7500
4.22	67	3.50	5.00	5.2500	4.7500
4.23	68	3.50	5.00	5.2500	4.7500
4.24	69	3.50	5.00	5.2500	4.7500
4.25	70	3.50	5.00	5.2500	4.7500
4.26	(3) service-related ultimate future salary increase assumption				
4.27	general state employees retirement plan of the			assumption A	
4.28	Minnesota State Retirement System				
4.29	general employees retirement plan of the Public			assumption B	
4.30	Employees Retirement Association				
4.31	Teachers Retirement Association			assumption C	
4.32	public employees police and fire retirement plan			assumption D	
4.33	service				
4.34	length	A	B	C	D
4.35	1	10.75%	12.25%	12.00%	13.00%
4.36	2	8.35	9.15	9.00	11.00
4.37	3	7.15	7.75	8.00	9.00
4.38	4	6.45	6.85	7.50	8.00
4.39	5	5.95	6.25	7.25	6.50
4.40	6	5.55	5.75	7.00	6.10
4.41	7	5.25	5.45	6.85	5.80
4.42	8	4.95	5.15	6.70	5.60
4.43	9	4.75	4.85	6.55	5.40

5.1	10	4.65	4.65	6.40	5.30
5.2	11	4.45	4.45	6.25	5.20
5.3	12	4.35	4.35	6.00	5.10
5.4	13	4.25	4.15	5.75	5.00
5.5	14	4.05	4.05	5.50	4.90
5.6	15	3.95	3.95	5.25	4.80
5.7	16	3.85	3.85	5.00	4.80
5.8	17	3.75	3.75	4.75	4.80
5.9	18	3.75	3.75	4.50	4.80
5.10	19	3.75	3.75	4.25	4.80
5.11	20	3.75	3.75	4.00	4.80
5.12	21	3.75	3.75	3.90	4.70
5.13	22	3.75	3.75	3.80	4.60
5.14	23	3.75	3.75	3.70	4.50
5.15	24	3.75	3.75	3.60	4.50
5.16	25	3.75	3.75	3.50	4.50
5.17	26	3.75	3.75	3.50	4.50
5.18	27	3.75	3.75	3.50	4.50
5.19	28	3.75	3.75	3.50	4.50
5.20	29	3.75	3.75	3.50	4.50
5.21	30 or more	3.75	3.75	3.50	4.50

5.22 ~~(c) Before July 2, 2010~~ Except as specified in paragraph (d), the actuarial
5.23 valuation must use the applicable following payroll growth assumption for calculating
5.24 the amortization requirement for the unfunded actuarial accrued liability where the
5.25 amortization retirement is calculated as a level percentage of an increasing payroll:

5.26	plan	payroll growth assumption
5.27	general state employees retirement plan of the	
5.28	Minnesota State Retirement System	3.75%
5.29	correctional state employees retirement plan	4.50
5.30	State Patrol retirement plan	4.50
5.31	legislators retirement plan	4.50
5.32	judges retirement plan	4.00
5.33	general employees retirement plan of the Public	
5.34	Employees Retirement Association	3.75
5.35	public employees police and fire retirement plan	3.75
5.36	local government correctional service retirement plan	4.50
5.37	teachers retirement plan	3.75
5.38	Duluth teachers retirement plan	4.50
5.39	St. Paul teachers retirement plan	5.00

5.40 ~~(d) After July 1, 2010,~~ The assumptions set forth in paragraphs (b) and (c) ~~continue~~
5.41 ~~to apply;~~ for the applicable retirement plan unless a different salary assumption or a
5.42 different payroll increase assumption:

- 6.1 (1) has been proposed by the governing board of the applicable retirement plan;
- 6.2 (2) is accompanied by the concurring recommendation of the actuary retained under
- 6.3 section 356.214, subdivision 1, if applicable, or by the approved actuary preparing the
- 6.4 most recent actuarial valuation report if section 356.214 does not apply; and
- 6.5 (3) has been approved or deemed approved under subdivision 18.

6.6 **EFFECTIVE DATE.** This section is effective the day following final enactment."

6.7 Amend the title accordingly