



H.F. 1647
(Lanning)

S.F. 1369
(Rosen)

Executive Summary of Commission Staff Materials

Affected Pension Plan(s): Major Statewide General Employees Retirement Plan
Relevant Provisions of Law: Minnesota Statutes, Section 356.215, Subdivision 8
General Nature of Proposal: Revising Salary Scale and Payroll Growth Actuarial Assumptions
Date of Summary: May 9, 2011

Specific Proposed Changes

Sets the interest, salary scale, and payroll growth actuarial assumptions for the various statewide and major local retirement plans by revising the specified salary scale and payroll growth actuarial assumptions for MSRS-General, PERA-General, and TRA to match the assumption changes proposed by the actuarial consulting firm retained by MSRS-General, PERA-General, and TRA (Mercer), reviewed by the actuarial consulting firm retained by the Legislative Commission on Pensions and Retirement (Milliman), and approved under Minnesota Statutes, Section 356.215, Subdivision 18, on July 8, 2010, by the Pension Commission.


Policy Issues Raised by the Proposed Legislation

1. The appropriateness of an update in the current statutory actuarial assumptions as to salary increases and covered payroll growth reflecting the changes approved by the Pension Commission on July 8, 2010, rather than the elimination of any statutory salary increase and payroll growth actuarial assumptions.
2. The need for additional scrutiny of the salary increase and payroll growth actuarial assumption changes approved by the Commission on July 8, 2010, in light of the highly critical review of the proposed actuarial assumption changes by Milliman in its review of Mercer's experience studies.
3. The lack of salary increase and payroll growth actuarial assumption change recommendations for MSRS-Correctional, the State Patrol Retirement Plan, the Judges Retirement Plan, PERA-P&F, PERA-Correctional, DTRFA, and SPTRFA.

Technical Amendment

H1647-3A corrects a typographical error in the MSRS-General salary scale assumption detail for 11 and 12 years of service.



TO: Members of the Legislative Commission on Pensions and Retirement
FROM: Lawrence A. Martin, Executive Director 
RE: H.F. 1647 (Lanning); S.F. 1369 (Rosen): Major Statewide General Employees Retirement Plan; Revising Salary Scale and Payroll Growth Actuarial Assumptions
DATE: April 4, 2011

General Summary of H.F. 1647 (Lanning); S.F. 1369 (Rosen)

H.F. 1647 (Lanning); S.F. 1369 (Rosen) amends Minnesota Statutes, Section 356.215, Subdivision 8, setting the interest, salary scale, and payroll growth actuarial assumptions for the various statewide and major local retirement plans, by revising the specified salary scale and payroll growth actuarial assumptions for the General State Employees Retirement Plan of the Minnesota State Retirement System (MSRS-General), the General Employees Retirement Plan of the Public Employees Retirement Association (PERA-General), and the Teachers Retirement Association (TRA) to match the assumption changes proposed by the actuarial consulting firm retained by MSRS-General, PERA-General, and TRA, Mercer, reviewed by the actuarial consulting firm retained by the Legislative Commission on Pensions and Retirement, Milliman, and approved under Minnesota Statutes, Section 356.215, Subdivision 18, on July 8, 2010, by the Legislative Commission on Pensions and Retirement.

Relevant Background Information

Background information relevant to the subject matter of the proposed retirement legislation is contained in the following attachments:

- **Attachment A** contains background information on Minnesota public pension plan actuarial reporting requirements.
- **Attachment B** contains background information on economic and demographic actuarial assumption establishment and revision.
- **Attachment C** contains background information on the historical development of actuarial reporting requirements.
- **Attachment D** contains background information on the provision of actuarial services to the Legislature and the various retirement plans.
- **Attachment E** contains background information on the July 8, 2010, salary increase and payroll growth actuarial assumption changes.

Discussion and Analysis

H.F. 1647 (Lanning); S.F. 1369 (Rosen) relates to MSRS-General, PERA-General, and TRA, and updates the statutory tables for those three funds to reflect the July 8, 2010, Commission action on recommended changes in the salary increase and covered payroll increase assumptions.

The proposed legislation raises several pension and related public policy issues that may merit consideration and discussion by the members of the Commission, as follows:

1. Appropriateness of Updating the Current Statutory Salary Increase and Payroll Growth Actuarial Assumptions Rather than Elimination. The policy issue is the appropriateness of an update in the current statutory actuarial assumptions as to salary increases and covered payroll growth reflecting the changes approved by the Legislative Commission on Pensions and Retirement on July 8, 2010, rather than the elimination of any statutory salary increase and payroll growth actuarial assumptions. Since 1967 (Laws 1967, Ch. 729), the actuarial reporting law applicable to the statewide and major local defined benefit retirement plans has contained a salary increase assumption and, since 1984 (Laws 1984, Ch. 564, Sec. 43), when the amortization procedure for most defined benefit retirements plans was shifted from level dollar amortization to level percentage of an increasing covered payroll amortization, the actuarial reporting law has contained a covered payroll increase assumption. In 2008 (Laws 2008, Ch. 349, Art. 10, Sec. 15), at the request of the various defined benefit retirement plan administrators, salary increase and payroll increase actuarial assumption changes after July 1, 2010, were permitted with Commission approval rather than statute change, or without Commission approval if the Commission did not act on an assumption change request within one year of the receipt

of the request. Arguably, the July 8, 2010, salary increase and payroll increase actuarial assumption changes approved by the Commission were questionable because the assumption change request occurred before July 1, 2010, and because the change was requested effective for July 1, 2010, rather than after July 1, 2010. The July 8, 2010, salary increase and payroll increase actuarial assumption change results in several pages of statutory actuarial assumption rates that are no longer current or applicable, representing a useless printing task for the Revisor of Statutes and providing misinformation to the public and to other statute users. Either the renditions of the assumptions should be updated as acted upon by the Commission, or any rendition of salary increase and payroll increase actuarial assumptions for the statewide and major local retirement plans should be eliminated from statute.

2. Need for Additional Commission Review of the 2010 Salary Increase Actuarial Assumption Changes. The policy issue is the need for additional scrutiny of the salary increase actuarial assumption changes approved by the Commission on July 8, 2010, in light of the highly critical review of the proposed actuarial assumption changes by Milliman in its review of Mercer's experience studies. Milliman concurred with the replacement of the current age-based actuarial assumption, but expressed concern that the proposed assumption was based only on four years' worth of experience, which may not be representative of long-term salary increases, that the proposed assumption formulation process did not address the separate components of the assumption, that the salary increase assumption contains a negative merit salary scale at certain service periods, that the revised assumption does not contain much conservatism, and that further study to identify the precise per year of service value is needed. In in-person presentation of its review by Milliman did not forcefully identify this doubt and concern on the part of Milliman. If the Milliman reservation had been more clearly presented to the Commission on July 8, 2010, the Commission may have spent a longer period of consideration of Milliman's review and may have required a clear presentation by Mercer of its basis for the revised assumptions before approving the assumption changes. Revisiting the Milliman review of the merit salary scale actuarial assumption changes used for the July 1, 2010, actuarial valuations may be in order.
3. Need for Additional Commission Review of the 2010 Payroll Growth Actuarial Assumption Changes. The policy issue is the need for additional scrutiny of the payroll growth actuarial assumption changes approved by the Commission on July 8, 2010, in light of the highly critical review of the proposed actuarial assumption changes by Milliman in its review of Mercer's experience studies. When Mercer recommended lowering the payroll growth actuarial assumption from 4.5% annually to 4.0% annually, Milliman indicated its concern because Mercer's proposed merit salary scale assumption included negative rates for certain durations and concluded that Mercer's proposed assumption was too high. Milliman recommended that Mercer perform additional analysis for each retirement plan to determine the appropriate assumption. Ultimately, the Commission was asked by the three retirement plans to approve a 3.75% payroll increase assumption, but no formal additional actuarial analysis by Mercer appears ever to have been prepared for review by Milliman or the Commission. The process of preparing experience studies and formulating actuarial assumption change recommendations is intended to be a transparent process, but the last-minute shifts by the retirement plans on the interest rate assumptions, the salary scale assumptions, and the payroll growth assumptions were not accompanied by any additional analysis or explanation by the retirement plans, Mercer, or Milliman. The Commission may wish to review the process leading up to the July 8, 2010, actuarial assumption change ratification in hopes of positively impacting upcoming actuarial assumption reviews.
4. Need for Additional Salary Increase and Payroll Growth Actuarial Assumption Changes. The policy issue is the apparent lack of a firm schedule for the Commission to review the salary increase and payroll growth actuarial assumption change recommendations for the Correctional Employees Retirement Plan of the Minnesota State Retirement System (MSRS-Correctional), the State Patrol Retirement Plan, the Judges Retirement Plan, the Public Employees Police and Fire Retirement Plan (PERA-P&F), the Local Government Correctional Service Retirement Plan (PERA-Correctional), the Duluth Teachers Retirement Fund Association (DTRFA), and the St. Paul Teachers Retirement Fund Association (SPTRFA). As part of the Commission's consideration of the Mercer recommendations for assumption changes for MSRS-General, PERA-General, and TRA, the Commission staff raised the question about the retirement plans' intentions concerning the preparation of assumption changes for the various smaller-sized retirement plans to complement those presented to the Commission for MSRS-General, PERA-General, and TRA. The Minnesota State Retirement System (MSRS) and Public Employees Retirement Association (PERA) administrators indicated that it was their intent to have their retained actuary, Mercer, review the actuarial assumptions for the smaller-sized retirement plans that they administered. However, no additional actuarial assumption change recommendations have been forwarded by the various retirement plan administrators, especially the statutory actuarial assumption rates relating to salary increase and payroll growth. A failure to promptly modify the salary increase, payroll growth, and mortality assumptions for the seven remaining defined benefit

retirement plans means that the actuarial work for those retirement plans likely misstates their liabilities. Since the future post-retirement adjustments of these retirement plans are dependent on the funding ratios of the plans, derived from the plans' actuarial accrued liability figures, this assumption change failure could result in a premature resumption of full future post-retirement adjustments if liabilities are understated.

Background Information on Minnesota Public Pension Plan Actuarial Reporting Requirements

With the creation of defined benefit public pension plan liabilities, there arises a need to provide financing to match the liabilities and to create a trust fund for the accumulated assets. The method of financing depends primarily on the nature of the benefit plan as either a defined contribution plan or a defined benefit plan and the liability which is undertaken as a consequence. Since the obligation undertaken with a defined benefit plan is to provide a benefit of a predetermined amount at and after the time of retirement, the financing method will be more complex and will allow more variations. There are a number of possible financing budget estimation methods which have been developed by actuaries which can be utilized.

The actual or ultimate cost of a pension plan is the total amount of any retirement annuities, disability benefits and survivor benefits eventually paid plus the total amount of any administrative costs eventually paid. The actual or ultimate cost will result 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 will be paid from investment returns from the portion to be funded from periodic contributions and affects the timing of the financing and the amount of the financing burden which will be borne by the pension plan employer or employers.

Virtually every 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 public pension plans which are included in this requirement are the General State Employees Retirement Plan of the Minnesota State Retirement System (MSRS-General), the Correctional State Employees Retirement Plan of the Minnesota State Retirement System (MSRS-Correctional), the General Employee Retirement Plan of the Public Employees Retirement Association (PERA-General), the Public Employees Police and Fire Retirement Plan (PERA-P&F), the Teachers Retirement Association (TRA), the State Patrol Retirement Plan, the St. Paul Teachers Retirement Fund Association (SPTRFA), the Duluth Teachers Retirement Fund Association (DTRFA), the Minneapolis Employees Retirement Fund (MERF), the University of Minnesota Faculty Retirement Plan and Supplemental Retirement Plan, the Judges Retirement Plan, and the various local police and firefighters relief associations.

The annual actuarial valuation is required to 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 is also to include a calculation of the additional rate of support 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, amortization contribution, and changes in membership. An exhibit setting forth 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 quadrennial experience study periodically prepared for MSRS-General, PERA-General, and TRA is required to furnish experience data and an actuarial analysis which substantiates the actuarial assumptions upon which the annual valuations are based. The quadrennial experience study is required to contain an actuarial analysis of the experience of the largest retirement plans and a comparison of that plan experience with the actuarial assumptions in force for the most recent annual actuarial experience.

The purpose of the quadrennial experience studies is to provide the Commission and the retirement plan administrations with a periodic opportunity to review the accuracy of the current actuarial assumptions of the three largest retirement plans, compared to the experience for the most recent period and to revise those actuarial assumptions based on the recommendation of the retained consulting actuary and on input from plan administrators, their actuarial consultants, and others. The actuarial valuation process, as corrected or refined by the quadrennial experience process, is intended to provide policymakers and others with an accurate picture of the funded condition and financial requirements of a public pension

plan and the process is not aided if it relies on incorrect or inadequate assumptions. If a trend line is established in recent experience, that trend line should be reflected in a plan's actuarial assumptions, even if those assumptions make the financing position of the plan appear worse than it would under different assumptions.

Minnesota public pension plan actuarial assumptions are specified in part in statute (the economic assumptions, interest/investment return, individual salary increase, and payroll growth) and are determined in part by other parties, with Commission approval (the balance of all actuarial assumptions, generally, the demographic assumptions). Economic assumptions are required to project the amount of benefits that will be payable. Demographic assumptions are required to project when benefits will be payable. Demographic assumptions are used to project the development of the population covered by the pension plan and hence when the benefits to be provided will be paid. The demographic assumptions project when a member is likely to progress between the various categories of membership (active, deferred, or retired) and how long the person stays in each category. The types of economic assumptions used to measure obligations under a defined benefit pension plan include the following:

- i. inflation;
- ii. investment return (sometimes referred to as the valuation interest rate);
- iii. compensation progression schedule; and
- iv. other economic factors (e.g., Social Security, cost-of-living adjustments, growth of individual account balances, and variable conversion factors).

The types of demographic assumptions used to measure pension obligations include, but are not necessarily limited to, the following:

- i. retirement;
- ii. mortality;
- iii. termination of employment;
- iv. disability and disability recovery;
- v. election of optional forms of benefits; and
- vi. other assumptions, such as administrative expenses; household composition; marriage, divorce, and remarriage; open group assumptions; transfers; hours worked; and assumptions regarding missing or incomplete data.

The actuarial assumption selection process should result in actuarial assumptions that are reasonable in light of the particular characteristics of the defined benefit plan that is the subject of the measurement. 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. For any given measurement, two or more reasonable actuarial assumptions may be identified for the same contingency.

Background Information on Economic and Demographic Actuarial Assumption Establishment and Revision

1. In General. Actuarial valuations are budgeting tools for recognizing pension costs and involve projecting future benefit expenditures and forecasting future economic and non-economic, or demographic, events. In determining the annual cost of a defined benefit pension plan and its financial health actuarially, there are two important factors, the actuarial cost method and the actuarial assumptions. Minnesota has considered the question of the appropriate actuarial cost method since the mid-1960s and requires in Minnesota Statutes, Sections 69.77, 69.773, and 356.215, the use of the Entry Age Normal Actuarial Cost Method.

In order to gauge the adequacy of actuarial assumptions, quadrennial experience studies are performed automatically for the three major retirement plans and are performed for the remaining statewide and major local retirement plans based upon ad hoc Commission action. Additionally, each actuarial valuation of a statewide or major local retirement plan is required to contain an actuarial gain and loss analysis, focusing on the major economic and demographic experience items, to assist in determining the continued accuracy of the various actuarial assumptions.

Experience studies are intended to provide the Commission with an opportunity to review the accuracy of the current actuarial assumptions, compared to the experience for a recent period and to revise those actuarial assumptions based on the recommendation of a consulting actuary and on input from plan administrators and others. The actuarial valuation process, as corrected or refined by the quadrennial experience process, is intended to provide policymakers and others with an accurate picture of the funded condition and financial requirements of a public pension plan and the process is not aided if it relies on incorrect or inadequate assumptions. If a trend line is established in recent experience, that trend line should be reflected in a plan's actuarial assumptions, even if those assumptions make the financing position of the plan appear worse than it would under different assumptions.

Minnesota public pension plan actuarial assumptions are specified in part in statute (interest/investment return, individual salary increase, and payroll growth) and are determined in part by other parties, with Commission approval (the balance of all actuarial assumptions, generally, the demographic assumptions). Economic assumptions function to project the **amount** of benefits that will be payable. Demographic assumptions function to project **when** benefits will be payable. Demographic assumptions are used to project the development of the population of the pension scheme and hence **when** the benefits to be provided will be paid. The demographic assumptions project when a member is likely to progress between the various categories of membership (active, deferred, or retired) and how long the person stays in each category. The types of economic assumptions used to measure obligations under a defined benefit pension plan include the following:

- (i) inflation;
- (ii) investment return (sometimes referred to as the valuation interest rate);
- (iii) compensation schedule; and
- (iv) other economic factors (e.g., Social Security, cost-of-living adjustments, growth of individual account balances, and variable conversion factors).

The types of demographic assumptions used to measure pension obligations include, but are not necessarily limited to, the following:

- (i) retirement;
- (ii) mortality;
- (iii) termination of employment;
- (iv) disability and disability recovery;
- (v) election of optional forms of benefits; and
- (vi) other assumptions, such as administrative expenses; household composition; marriage, divorce, and remarriage; open group assumptions; transfers; hours worked; and assumptions regarding missing or incomplete data.

The actuarial assumption selection process should result in assumptions that are reasonable in light of the particular characteristics of the defined benefit plan that is the subject of the measurement. A reasonable 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. For any given measurement, two or more reasonable assumptions may be identified for the same contingency.

2. Interest/Investment Rate Actuarial Assumption. Because Minnesota public pension plan benefits are paid out over time and are paid from funds that are invested to obtain investment returns, future obligations are discounted for those future interest or investment earnings. In selecting the interest/investment rate actuarial assumption, the appropriate investment data should be reviewed, including the current yields to maturity of fixed income securities such as government securities and corporate bonds; any forecasts of inflation and of total returns for each asset class; historical investment data, including real risk-free returns, the inflation component of the return, and the real return or risk premium for each asset class; and the historical plan performance.

The interest/investment rate actuarial assumptions can be arrived at using one of two methods, either the building block method or the cash-flow matching method. Under the building-block method, the expected future investment return of each asset class is assembled as a combination of the components of investment return. These components are factors such as inflation and the real rate of return for the class. The best-estimate investment return range is determined by identifying a best-estimate range of expected future real returns for each broad asset class applicable to the plan, such as cash and cash equivalents, fixed income securities and equities, an average weighted real-return range reflecting the plan's expected asset class mix is computed and that range is combined with the expected inflation range. Under the cash flow matching method, the expected future investment return range is a combination of the internal rate of return on a bond portfolio with interest and principal payment approximately matching the plan's expected disbursements, and a risk adjustment range. The best-estimate investment return range is determined:

- by projecting the plan's benefit and expense disbursements to be valued in the measurement;
- by identifying a highly diversified portfolio available as of the measurement date of non-callable, high-quality corporate or U.S. government bonds with interest and principal payments approximately matching the projected disbursements;
- by computing the bond portfolio's internal rate of return;
- by establishing a risk adjustment range for the plan that reflects the uncertainties in the projected benefits and expenses, the expected returns on future contributions, the reinvestment of interest and principal payments not fully needed to pay current benefits, any mismatches between the benefit disbursement stream and the high-quality bond portfolio's interest and principal payment stream, and the current and expected future plan investments in equities or other asset classes besides high-quality bonds; and
- then by combining these figures.

3. Compensation/Salary Scale Actuarial Assumption. Compensation is a factor in determining participants' benefits in Minnesota public pension plans other than volunteer firefighter relief associations. Generally, a participant's compensation will change over the long term in accordance with inflation, productivity growth, and merit scale increases. The assumption used to measure the anticipated year-to-year change in compensation is referred to as the *compensation* or *salary scale*. It may be a single rate assumption, or, alternatively, it may be a select and ultimate rate assumption and vary by age and/or service, consistent with the merit scale component; or vary over future years, consistent with the inflation component.

In selecting the compensation or salary scale assumption, the appropriate compensation data should be reviewed, including the plan sponsor's current compensation practice and any anticipated changes in this practice; the current compensation distributions by age and/or service; historical compensation increases and the practices of the plan sponsor/sponsors; and historical national wage and productivity increases.

The compensation or salary scale assumption is generally constructed using a building-block method, which combines the best-estimate ranges for the components of compensation scale. These components include inflation, productivity growth, and merit scale.

4. Retirement Age Assumption. With only a few exceptions, where length of service is the determining factor, Minnesota public pension plan members are required to attain a specified minimum age at which retirement benefits are payable if the member also terminates active employment. The retirement age assumptions relate to the specific age at which retirement benefits are likely to begin or the ages with a specific probability of retirement benefit commencement. In selecting the retirement age assumptions, in addition to data on the past experience of the plan membership, consideration should be given to the factors of the plan design, where specific incentives may influence when participants retire; the design of and the date of anticipated payment from Social

Security and Medicare; and the availability of other employer-sponsored post-retirement benefit programs.

5. Turnover/Termination of Employment Assumptions. The termination of public employment by a Minnesota public pension plan member determines the amount of the person's accrued service credit. Minnesota public pension plans utilize service credit in determining retirement benefit amounts. The termination/withdrawal/turnover assumption predicts the amount of service credit to be acquired by plan members and also predicts the extent of any gain expected to be accrued from plan members who terminate without vesting. In selecting the termination assumption, in addition to data on the past experience of the plan, consideration should be given to the factors of employer-specific or job-related factors such as occupation, employment policies, work environment, unionization, hazardous conditions, and location of employment; and applicable plan provisions, such as any early retirement benefits, the vesting schedule, or the payout options.
6. Mortality Assumptions. Generally, Minnesota public retirement plan benefits terminate upon the death of the recipient, or if a joint-and-survivor optional annuity form was chosen, upon the death of the survivor. The mortality assumption is the measure of the expected lifetimes of active members, retired members, deferred retirees, disabilitants, and survivors. In addition to data on the past experience of the plan, in selecting the mortality assumptions, consideration should be given to the likelihood and extent of mortality improvement in the future.
7. Disability Assumption. Except for the Legislators Retirement Plan, the Elected State Officers Retirement Plan, and some volunteer firefighter relief associations, Minnesota public pension plans pay disability benefits. The disability assumption is a prediction of the occurrence of disabilities, which constitute a premature commencement of benefits. In selecting the disability assumption, in addition to analyzing the data on the past experience of the plan, consideration should be given to the plan's definition of disability and the potential for recovery.
8. Optional Annuity Form Election Assumption. Most statewide and major local Minnesota public pension plans provide optional annuity forms, whereby the number adjusts the timeframe over which the benefit will be paid in return for a modification in the amount of the benefit. Many of these plans have a subsidized bounceback joint-and-survivor optional annuity form, the selection of which will increase the liability of the plan. The optional annuity form election assumption implements expectations about the future selections of optional annuity forms. In addition to analyzing the data on the past experience of the plan, in selecting the optional annuity form election assumption, consideration should be given to the benefit forms and benefit commencement dates available under the plan and the degree to which particular benefit forms may be subsidized.
9. Payroll Increase Assumption. Except for the Legislators Retirement Plan, the Elected State Officers Retirement Plan, and the Minneapolis Employees Retirement Fund Division of the Public Employees Retirement Association, the various statewide and major local retirement plans amortize their unfunded actuarial accrued liabilities on the basis of a level percentage of an increasing covered payroll rather than on the basis of a level dollar amount. The covered payroll increase actuarial assumption specifies the level of the annual increase in the total covered payroll from the valuation date until the amortization target date for the calculation of that level percentage of covered payroll contribution requirement. In selecting the assumption, the inflation assumption is a primary determinant, adjusted for known or expected changes in active plan membership numbers.
10. Time Horizon for Setting Actuarial Assumptions. The actuarial assumption selection or revision process should result in assumptions that are reasonable in light of the particular characteristics of the defined benefit plan that is the subject of the measurement. A reasonable 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. For any given measurement, two or more reasonable assumptions may be identified for the same contingency. At a minimum, when a revision of an actuarial assumption is considered, the new actuarial assumption should be consistent with the recent experience in that area unless experience is in flux, and then the new actuarial assumption should attempt to reasonably anticipate the progression of any identifiable trend.

In particular with respect to mortality, in addition to data on the past experience of the plan, in selecting the mortality assumptions, consideration should be given to the likelihood and extent of mortality improvement in the future.

Where a retirement plan is closed to new members, such as the Minneapolis Employees Retirement Fund (MERF), the Minneapolis Firefighters Relief Association (MFRA), or the Minneapolis Police

Relief Association (MPRA), the consideration of an appropriate mortality table may be different because of that fact. The consideration is shaped by the fact that the total covered population is known, that the population is somewhat less susceptible to developments in longevity compared to plans with open active memberships due to a likely greater average age, and that any mortality losses will be required to be funded relatively quickly due to relatively short remaining amortization periods.

11. Context in Which Actuarial Assumptions are Set; Complications. Changing actuarial assumptions, when the quadrennial experience study indicates a need to do so, is not always an easy proposition. In the 1993-1995 round of experience studies, several assumptions that were identified for modification by the Commission actuary ultimately were not modified because of opposition from pension plan actuaries and administrators and several assumption changes were subject to dispute because of apparent stylistic disagreements among actuaries and because of the actuarial cost impact of the change on the potential for additional future benefit increases.

Frequently in the past, actuarial assumptions have been changed in combination with benefit improvements (principally 1973 and 1989 for the statewide plans) or in combination with contribution restructurings (1984 for the statewide and major local plans; 1991 for the Minneapolis Employees Retirement Fund (MERF)).

Background Information on the Historical Development of Actuarial Reporting Requirements

Since the creation of the Legislative Commission on Pensions and Retirement as an interim commission in 1955, data has been required to be provided to the state by the various public pension plans in the state, as follows:

- Laws 1957, Special Session, Chapter 11. The initial actuarial reporting law enacted by the Minnesota Legislature was Laws 1957, Special Session, Chapter 11. The 1957 actuarial reporting law was an uncoded temporary law that was applicable only to actuarial valuations prepared as of January 1, 1958. No prior generally applicable law required specific actuarial reporting to the Legislature or to any other public office or official. The 1957 actuarial reporting law required census tabulations of active members and benefit recipients, an actuarial balance sheet disclosing assets, liabilities and the actuarial full funding deficit, a statement of actuarial assumptions, an indication of the normal support rate for currently accruing liabilities and an indication of the 1997 target date amortization requirement. The 1957 actuarial reporting law was unspecific on the manner in which the actuarial calculation was to be prepared, leading to disputes when some funds prepared valuations on a basis other than the entry age normal actuarial method. The 1957 actuarial reporting law was broadly applicable to all statewide general and public safety pension plans, all local general employee plans, all local police relief associations and all local salaried firefighter relief associations. Problems with the 1957 actuarial reporting law led the Commission to refine the actuarial reporting requirements and procedures and to recommend a general ongoing actuarial reporting law in the years between 1958 and 1965. The actuarial reporting under the 1957 special law was due by January 6, 1959.
- Laws 1965, Chapters 359 and 751. Laws 1965, Chapter 359, was the initial codification of the general employee pension plan actuarial reporting law. Laws 1965, Chapter 751, was an uncoded temporary law applicable to local police and paid firefighters relief association actuarial valuations prepared as of December 31, 1964. The general employee pension plan actuarial reporting law required an indication of the level normal cost, an actuarial balance sheet disclosing assets, accrued liabilities and unfunded accrued liability as well as specific required reserve figures and an indication of the 1997 target date amortization requirement. The general employee pension plan actuarial reporting law required that the actuarial valuation normal cost and accrued liabilities to be prepared using the Entry Age Normal Cost (Level Normal Cost) Method, that the actuarial method be used to value all aspects of the benefit plan and known future benefit changes, that the actuarial valuation be prepared on the basis of a 3% interest assumption and other appropriate assumptions and that assets not include any present value of future amortization contributions. The general employee pension plan actuarial reporting law required annual actuarial valuations for the State Employees Retirement Fund, the Public Employees Retirement Fund, and the State Police Officers Retirement Fund. The general employee pension plan actuarial reporting law also required the preparation of an experience study validating the actuarial assumptions used in the valuation. The local police and paid fire actuarial reporting law was based on the 1957 actuarial reporting law with the additional clarification of a 3% interest rate assumption, the requirement of normal cost and accrued liabilities calculated on the basis of the entry age normal cost method and the reporting of the amount for the amortization of the unfunded accrued liability by the 1997 target date. The local police and paid fire actuarial reporting law was applicable to all police and paid firefighters relief associations. The actuarial reporting under the 1965 general law was due five months after the close of the fiscal year covered by the valuation. No experience studies were required by the 1965 general law.
- Laws 1967, Chapter 729, was a revision in the 1965 local police and paid fire actuarial reporting law. The 1967 local police and paid fire actuarial reporting law was a coded general statute requiring actuarial valuations as of December 31, 1967, and each four years thereafter. It was also made applicable volunteer firefighters relief associations and very small active membership police and paid firefighters relief associations. A 3% salary rate assumption was added. A 2007 target date amortization requirement replaced the prior 1997 target date amortization requirement for police and paid fire plans, leaving the 1997 requirement for volunteer and smaller active membership police and paid fire relief associations. An addition of a requirement to the calculated normal cost for amortizing net actuarial experience gains or losses was also added.
- Laws 1969, Chapter 289, revised the 1965 general employee pension plan actuarial reporting law by making the requirement applicable to the Minneapolis Employees Retirement Fund (MERF) and to the three first class city teacher retirement fund associations. It also provided for an interest rate assumption to 3.5% as well as 3.0% for comparison purposes and added a salary assumption of 3.5% for funds with a final salary based benefit plan.
- Laws 1973, Chapter 653, Section 45, modified the general employee pension plan actuarial reporting law by increasing the interest assumptions from 3.5% to 5%.

- Laws 1975, Chapter 192, recodified the general employee pension plan actuarial reporting law, previously coded as Minnesota Statutes 1974, Sections 356.21, 356.211, and 356.212, as Minnesota Statutes, Section 356.215. The actuarial valuation reports under the 1975 general law were due five months after the close of the fiscal year covered by the valuation. The experience studies under the 1975 general law were also due five months after the period covered by the experience study.
- Laws 1978, Chapter 563, Sections 9, 10, 11, and 31, repealed the separate local police and fire relief association actuarial reporting law, Minnesota Statutes 1976, Sections 69.71 to 69.76, and required the local police and fire relief associations to report under the general employee pension plan actuarial reporting law with specific adaptations, coded as Minnesota Statutes, Section 356.216. It also amended the actuarial reporting law by requiring specific reporting of entry age and retirement age assumptions and the provision of a summary of the benefit plan provisions on which the actuarial valuation is based.
- Laws 1979, Chapter 184, modified the actuarial reporting law by replacing the 1997 amortization target date with a 2009 amortization target date and establishing a procedure for extending that target date in the event of substantial unfunded actuarial accrued liabilities resulting from benefit increases, actuarial cost method changes or actuarial assumption changes.
- Laws 1981, Chapter 224, Sections 169 and 170. Laws 1981, Chapter 224, Section 169, largely revised the language usage and style of the actuarial reporting law. The 1981 general law also clarified that actuarial valuation reports and experience studies were due on the first day of the sixth month occurring after the end of the previous fiscal year. It also provided that actuarial valuations and experience studies were to be filed with the Legislative Reference Library rather than with the Secretary of the Minnesota Senate and with the Chief Clerk of the Minnesota House of Representatives. Additionally, the 1981 law clarified that amortization contribution requirements were required to be calculated on a level dollar basis.
- Laws 1984, Chapter 564, Section 43, substantially modified the actuarial reporting law. Actuarial valuations are required to comply with the Standards for Actuarial Work adopted by the Commission. The interest rate assumption was modified, with a post-retirement interest rate of 5% and a pre-retirement interest rate of 8% for the major, statewide plans. The actuarial balance sheet requirement was also substantially modified, and was expanded to include reporting of current and expected future benefit obligations, current and expected future assets and current and expected future unfunded liabilities. The amortization contribution requirement was also modified, with a change from a level dollar annual amortization procedure to a level percentage of future covered payroll amortization procedure for the major, statewide and local general employee plans other than MERF.
- Laws 1987, Chapter 259, Section 55, revised the language and style of the actuarial reporting provision, specified the particular interest and salary increase actuarial assumptions for the legislators retirement plan and elected state officers retirement plan, set the amortization target date for MERF at 2017 and exempted MERF from the process for automatically revising the target date upon benefit increases or assumption changes, required approval by the Legislative Commission on Pensions and Retirement for any demographic actuarial assumption changes, and reset the deadline date for experience studies from December 1 to June 1.
- Laws 1989, Chapter 319, Article 13, Sections 90 and 91, increased the interest rate actuarial assumption from 8.0% to 8.5% for all statewide and major local retirement plans other than MERF and extended the amortization full funding target date from 2009 to 2020 for all statewide and major local retirement plans other than MERF.
- Laws 1991, Chapter 269, Article 3, Sections 3 to 19, updated the actuarial valuation reporting requirements to accommodate governmental pension plan generally accepted accounting changes, required actuarial valuations or experience studies prepared by an actuary other than the actuary retained by the Legislative Commission on Pensions and Retirement to submit the document to the Commission, and modified some of the services performed by the Commission-retained actuary to reduce the cost of retirement plan-reimbursed actuarial services compensation.
- Laws 1991, Chapter 345, Article 4, Sections 3 and 4, reset the interest and salary actuarial assumptions for the MERF at 6% and 4% respectively and extended the MERF amortization target date from 2017 to 2020.
- Laws 1993, Chapter 336, Article 4, Section 1, defines administrative expenses for purposes of inclusion of administrative expenses as part of actuarial cost calculations.
- Laws 1993, Chapter 352, Section 7, provided, for the Public Employees Police and Fire Plan (PERA-P&F), for the reverse amortization of the amount of assets in excess of the plan's actuarial accrued liability.

- Laws 1995, Chapter 141, Article 3, Sections 14 and 15, implemented an age-related salary increase assumption for the General State Employees Retirement Plan of the Minnesota State Retirement System (MSRS-General), the General Employees Retirement Plan of the Public Employees Retirement Association (PERA-General), and the Teachers Retirement Association (TRA), and set fund-specific payroll growth actuarial assumption rates for MSRS-General, PERA-General, and TRA.
- Laws 1997, Chapter 233, Article 1, Sections 2 and 57, required, two years after the quadrennial experience studies, that the actuary retained by the Legislative Commission on Pensions and Retirement conduct quadrennial projection valuations for MSRS-General, PERA-General, TRA, and for any other plans for which the Commission determines a study of this type would be beneficial. These quadrennial projection valuations were required to be conducted in consultation with the Commission's executive director, the retirement fund directors, the state economist, the state demographer, the Commissioner of Finance, and the Commissioner of Employee Relations. The results were required to be reported in the same manner as the quadrennial experience studies. The quadrennial projection valuation cost was required to be paid by retirement plans, with the costs allocated among all plans for which the actuary retained by the Commission performs annual actuarial valuations.
- Laws 1997, Chapter 241, Article 4, Section 1, revised the salary increase assumption for the State Patrol Retirement Plan, the Correctional Employees Retirement Plan of the Minnesota State Retirement System (MSRS-Correctional), PERA-P&F, and the first class city teacher retirement plans, and added a payroll growth assumption to the MSRS-General, MSRS-Correctional, State Patrol, Legislators, Elected State Officers, and Judges Plans; to PERA-General and PERA-P&F; to TRA; and to the first class city teacher retirement plans.
- Laws 1998, Chapter 390, Article 8, Section 2, changed the requirement for a quadrennial projection valuation from the three major statewide retirement plans to one of the statewide or major local retirement plans.
- Laws 1999, Chapter 222, Article 4, Section 14, set the calculated overfunding credit for PERA-P&F if the plan has assets in excess of its actuarial accrued liability at the 30-year level percentage of covered pay amortization requirement applicable if the excess assets were an unfunded liability and reset as a new 30-year period for each valuation year.
- Laws 2000, Chapter 461, Article 1, again substantially modified the actuarial reporting law. Salary assumptions and post-retirement interest rate assumptions were reset, and the actuarial value of assets also was changed to an approach that approaches, but smoothes, market values.
- First Special Session Laws 2001, Chapter 10, Article 11, Section 18, exempted PERA-General from the automatic amortization target date resetting provisions of Minnesota Statutes, Section 356.215, and sets a 2031 amortization target date for PERA-General.
- Laws 2003, Chapter 392, Articles 9 and 11, the select and ultimate salary increase assumptions (i.e., rates varying based on both age and length of service) for MSRS-General, PERA-General, TRA, the Duluth Teachers Retirement Fund Association (DTRFA), the Minneapolis Teachers Retirement Fund Association (MTRFA) and the St. Paul Teachers Retirement Fund Association (SPTRFA) were revised based on the 2000 experience studies. The structure of Minnesota Statutes, Section 356.215, also was reorganized and revised as part of a recodification of Minnesota Statutes, Chapter 356.
- Laws 2004, Chapter 223, Section 7, replaced a single contracting consulting actuary retained by the Legislative Commission on Pensions and Retirement to prepare the annual actuarial valuations of the various statewide and major local retirement plans with a single contracting consulting actuary retained jointly by the administrators of the seven retirement systems with Commission ratification.
- First Special Session Laws 2005, Chapter 8, Article 11, Section 2, set the interest and salary actuarial assumptions for the Bloomington Fire Department Relief Association at 6% and 4% respectively.
- Laws 2008, Chapter 349, Article 10, Sections 7 to 15
 - The requirement that the pension funds to jointly retain an actuary to provide actuarial reports for the pension plans was revised by removing the requirement of having a joint actuary and the governing board of each pension plan system was authorized to retain its own actuary.
 - The Commission was authorized to contract with an actuarial firm to audit or review the actuarial valuations, experience studies, and actuarial cost analysis prepared by the actuaries retained by the various pension plan governing boards, with a \$140,000 initial appropriation provided to cover the cost of the contract.

- The definition of approved actuary, for purposes of retaining and providing actuarial valuations, was revised by removing authority to be retained if the individual had 15 years of experience serving major public retirement plans in lieu of being a fellow in the Society of Actuaries. Obsolete language in the actuarial value of assets provision was removed.
 - The provision which had required actuarial valuations to be filed with the Legislative Commission on Pensions and Retirement, Commissioner of Finance, and Legislative Reference Library no later than six months after the end of the fiscal year was revised by removing valuation reporting deadlines.
 - The salary assumption and payroll growth assumption for the Elective State Officers Retirement Plan was removed (because the plan is closed and has no active members).
 - The salary growth assumptions for other plans were revised by reducing the MSRS-General select period to five years rather than ten; by revising the select calculation for DTRFA to 8% per year in years one to seven, 7.25% per year for years seven and eight, and 6.5% for years eight and nine; by increasing the percentage rate from 0.3% to 0.6% for MSRS-General and PERA-General; and by reducing the ultimate salary increase assumptions for the plans, at least in some age ranges, except for the State Patrol Retirement Plan, the Local Government Correctional Service Retirement Plan (PERA-Correctional), and SPTRFA.
 - The payroll growth assumptions were decreased from 5.0% to 4.5% for MSRS-General, MSRS-Correctional, the State Patrol Retirement Plan, the Legislators Retirement Plan, TRA, and DTRFA; and from 5.0% to 4.0% for the Judges Retirement Plan; and from 6.0% to 4.5% for PERA-General, PERA-P&F, and PERA-Correctional.
 - After July 1, 2010, the salary and payroll growth assumptions were permitted to be revised by the governing boards of the applicable plan and become effective if the Legislative Commission on Pensions and Retirement does not take action to overrule the plan proposed change within one year.
 - The full funding dates for MSRS-Correctional, the Judges Retirement Plan, and PERA-P&F were reset to June 30, 2038. The full funding date for SPTRFA was reset as a rolling period 25 years from the year of the valuation, and the annual actuarial valuation was required to contain an exhibit indicating the SPTRFA funding ratio and contribution deficiency/sufficiency based on market value.
 - The MERF actuarial valuation, with respect to its Retirement Benefit Fund, and MSRS, PERA, and TRA plan actuarial valuations with respect to the Minnesota Post Retirement Investment Fund (Post Fund), must include an exhibit indicating the contribution necessary to amortize the unfunded liability of the Retirement Benefit Fund or the Post Fund, as applicable.
- Laws 2009, Chapter 169, Article 1, Sections 70 and 71
 The actuarial value of assets computation provision is revised by redefining the actuarial value of assets to use a consistently applied 8.5% investment earnings assumptions and by incorporating a five-year phase in of market value asset recognition for the dissolved former Minnesota Post Retirement Investment Fund.

 The provision specifying how amortization contributions are to be determined for most plans is revised by eliminating an obsolete requirement relating to the Minnesota Post Retirement Investment Fund.
 - Laws 2010, Chapter 359, Articles 1, Sections 68 and 69; 9, Section 1; 11, Sections 19 and 20; and 12, Sections 23 and 24
 - A service-related future salary increase assumption replaces the select and ultimate future salary increase assumption for PERA-General.
 - The amortization target date of MSRS-General was reset to 2040 and of the MERF Division of PERA was reset to 2031.
 - The deadline date for the filing actuarial valuation reports was reimposed as the last day of the sixth month occurring after the end of the previous fiscal year.
 - The modified single rate future salary increase assumption applicable to MERF was eliminated as part of the administrative consolidation of the retirement plan with PERA.
 - MERF was removed from the requirement for filing a separate annual financial report and the PERA-General actuarial valuation was required to include a valuation of the MERF Division.

Background Information on the Provision of Actuarial Services to the Legislature and the Various Retirement Plans

Since the creation of the Legislative Commission on Pensions and Retirement as an interim commission in 1955, the Commission has retained a consulting actuary to provide necessary actuarial consulting services. In 1955, the various retirement plans only had infrequent actuarial valuations or had no previous actuarial valuations at all and the retirement plans had unclear or irregular relationships with consulting actuarial firms.

For the period 1955-1984, the consulting actuary retained by the Commission functioned chiefly as the actuarial advisor to the Commission, presenting information on actuarial procedures, techniques and principles, recommending improvements in regulation or procedure of an actuarial nature and reviewing actuarial valuations, benefit increase actuarial cost estimates and experience studies for consistency, accuracy and conformance to sound actuarial technique.

Before 1965, actuarial valuations were irregular or infrequent and were frequently limited to total actuarial accrued liability calculations without actuarial contribution requirement determinations (e.g. Minnesota State Retirement System (MSRS) valuations in 1957, 1958, 1959, 1962, 1963, and 1964; Public Employees Retirement Association (PERA) valuations in 1955, 1958, and 1963; Teachers Retirement Association (TRA) valuations in 1958, 1959, and 1964). The first class city general employee retirement plans have been required by statute to prepare annual actuarial valuations only since 1969, with infrequent and sometimes incomplete actuarial valuations before 1969 (e.g. Minneapolis Employees Retirement Fund (MERF) 1958, 1967 and 1968; Duluth Teachers Retirement Fund Association (DTRFA) valuations in 1952 and 1955; Minneapolis Teachers Retirement Fund Association (MTRFA) valuations in 1957 and 1964; and St. Paul Teachers Retirement Fund Association (SPTRFA) valuations in 1958). The Commission, by a special law it recommended, first required the preparation of actuarial valuations by the various statewide retirement plans and their consulting actuaries in 1957. The 1957 special law was not explicit about the actuarial method or assumptions for the preparation of the actuarial valuations, allowing for considerable latitude in interpretation on the part of the retirement fund and its consulting actuary and producing results that were not considered fully appropriate by the 1957 Commission. In 1965, the Commission recommended and the Legislature enacted a statutory actuarial reporting law that specified numerous actuarial procedure elements to address the perceived deficiencies in the 1957 special law.

From 1965 to 1984, the various Minnesota public pension plans were required to have prepared annual actuarial valuations meeting the requirements of Minnesota Statutes, Section 356.215, and they retained consulting actuaries to perform these valuations (the statewide plans in 1965 and the first class city retirement plans in 1969). The consulting actuaries were required to be approved actuaries, meaning that the actuary had minimum credentials (fellowship in the Society of Actuaries) or had a minimum length of experience. The various public pension plans also were required to have prepared experience studies meeting the requirements of Minnesota Statutes, Section 356.215, every four years, covering the prior five year period, which task was also performed by the retained consulting actuaries. The consulting actuaries retained by the various public pension plans each operated under contract with the particular pension plan, with the contract's duration, specific requirements, and compensation unregulated by the Commission or state law.

In 1984, apparently in reaction to various irreconcilable actuarial cost estimates for the Rule of 85 temporary normal retirement provision proposal supplied by the various actuaries of the various pension plans, and after the Commission apparently considered the possibility of the retention of an actuary as a member of the Commission staff, and with the concurrence of the state Department of Finance, the procedure for the provision of regular actuarial services for the statewide and major local pension plans was changed. Under Minnesota Statutes 1984, Section 3.85, Subdivision 11, the Commission was required to retain a consulting actuarial firm to provide annual actuarial valuations, periodic experience study and periodic benefit increase costing services related to the various statewide and major Minnesota public pension plans. The Commission was also required to establish standards for the preparation of any required actuarial work. The various public pension plans were permitted, but not required, to retain a consulting actuary for the review of the work of the Commission-retained actuary and for other actuarial services.

Following the 1984 Legislative Session, the Commission held a competitive bidding process to select its consulting actuarial firm. A five member (three House members, two Senate members) Commission subcommittee, chaired by Representative John Sarna, undertook the process. A Request for Proposal was prepared and was provided to 17 actuarial firms on July 30, 1984. Ten actuarial firms submitted

proposals to the Commission subcommittee by the September 7, 1984 deadline date. The Commission subcommittee directed the Commission staff and actuary (then James Bordewick) to make the initial evaluation of the written proposals. Four finalists were selected to make in-person presentations to the Commission subcommittee, which occurred on November 8, 9 and 13, 1984. The four finalists were Milliman & Robertson, Inc., Peat, Marwick, Mitchell & Co., Towers, Perrin, Forster & Crosby, and The Wyatt Company. The Commission subcommittee recommended The Wyatt Company to the full Commission following evaluation of the in-person presentations and the Commission selected The Wyatt Company as the Commission retained actuary on a unanimous vote. On December 31, 1984, a contract for the provision of actuarial services between The Wyatt Company and the Commission was executed by Representative John Sarna and Mr. Allen Grosh. The contract provided for the development and updating of standards for actuarial work, the preparation of annual actuarial valuations, the preparation of annual cash flow projections and the provision of other consulting. Karen Dudley, the Commission Executive Director, drafted the initial contract in 1984, with the assistance of Joel Michael of the House Research Department and John Asmussen of the Office of the Legislative Auditor. The contract was potentially effective for a three-year period if the arrangement was reaffirmed by the Commission during each of the second and third option years. The Commission exercised its option to continue the contract with The Wyatt Company for Fiscal Year 1987 and Fiscal Year 1988 respectively.

In 1987, as part of that year's State Departments appropriation bill, the cost of the annual actuarial valuations and periodic experience studies, previously borne almost entirely by the Commission out of its budget, was assessed against the various retirement funds on the basis of proportional membership.

In 1988, the Commission considered the question of the contract for the provision of actuarial services in light of the expiration of the contract with The Wyatt Company on June 30, 1988 and the Commission approved a recommendation by Representative Wayne Simoneau that the contract with The Wyatt Company, due for expiration on June 30, 1988, be extended to June 30, 1990, with a substantial redrafting of the contract language and a resetting of some actuarial compensation rates as recommended by Representative Simoneau.

In 1990, after a controversy over the actuarial services fees charged by the Wyatt Company that was raised by Jim Hacking, the Executive Director of the Public Employees Retirement Association (PERA) and after a request from Representative Wayne Simoneau to the Legislative Audit Commission for an audit of the Wyatt Company's contract with the Legislative Commission on Pensions and Retirement, the Commission rebid the actuarial services contract and the actuarial consulting firm of Milliman & Robertson, Inc., was retained by the Commission chosen from a group of seven bidders (four finalists). The actuarial services contract with Milliman & Robertson, Inc., was extended for one year in 1993 and in 1994, was renewed for two years after rebidding with one competitor in 1995, was extended for one year in 1997, was renewed for four years after rebidding without any other bidder competing in 1998, and was renewed for two years after rebidding with one competitor in 2002. In 2000 (Laws 200, Ch. 461, Art. 1, Sec. 1), the method for computing the recoupment amount for the Legislative Commission on Pensions and Retirement from the various retirement plans, eliminating the 1988 formula based on system status, plan status, and relative membership size in favor of an allocation based on the actuarial firm's records on the time spent on each plan's valuation.

In 2002, an issue arose between Milliman USA, the renamed actuarial firm of Milliman & Robertson, Inc., and the Commission over liability limitations, third-party reliance on actuarial work, and mandatory dispute arbitration. The issue limited the 2002 contract with Milliman USA to the two years that Milliman USA was willing to commit to without a positive resolution of the liability limitation and related issues. In 2004 (Laws 2004, Ch. 223), the actuarial services issues from 2002 and reductions in appropriations to the Commission resulted in the Executive Committee of the Commission recommending and the Commission approving legislation, subsequently enacted, providing for a replacement of a consulting actuarial firm retained by the Commission by a consulting actuarial firm retained jointly by the seven largest retirement system administrators, acting jointly, with the ratification of the choice by the Commission. The joint retirement administrators retained The Segal Company as the consulting actuarial firm.

In 2008 (Laws 2008, Ch. 349, Art. 10, Secs. 7, 8, 9, 17, and 18), the requirement that the pension funds jointly retain an actuary to provide actuarial reports for the pension plans was revised by removing the requirement of having a joint actuary and by providing that the governing board of each pension plan system retain its own actuary. The Commission was authorized to contract with an actuarial firm to audit or review the actuarial valuations, experience studies, and actuarial cost analyses prepared by the actuaries retained by the various pension plan governing boards, with an annual \$140,000 appropriation provided to cover the cost of the contract.

In 2009, the Legislative Commission on Pensions and Retirement issued a request for proposal for retention of a consulting actuarial firm as its actuarial advisor, reduced the responders to the request for proposal to four finalists, entertained presentations by those four finalists (Deloitte Consulting LLP; Hay Group, Inc.; Milliman, Inc.; and Pricewaterhouse Coopers LLP), selected Milliman, Inc. as its consultant, and entered into an actuarial services contract with Milliman, Inc. in late 2009. During Fiscal Year 2010, Milliman reviewed all of the actuarial valuations of the statewide and major local retirement plans, reviewed and recommended revisions in the Commission's Standards for Actuarial Work, and reviewed the experience studies and assumption change recommendations for the General State Employees Retirement Plan of the Minnesota State Retirement System (MSRS-General), the General Employees Retirement Plan of the Public Employees Retirement Association (PERA-General), and TRA. During Fiscal Year 2011, Milliman replicated in an actuarial audit the actuarial valuations of the MSRS-General, the PERA-General, and MERF and reviewed the actuarial valuations of the remaining statewide and major local retirement plans.

On March 30, 2011, because of significant recommended reductions in appropriations for the Commission in the pending House and Senate State Government finance bills, the Commission executive director exercised, on behalf of the Commission, its option to terminate the actuarial services contract for Fiscal Years 2012 and 2013 pending the achievement of greater certainty in likely appropriations and a potential future negotiated revision in actuarial contract duties with Milliman.

**Background Information on the
Salary Increase and Payroll Growth Actuarial Assumption Changes
Approved by the Commission on July 8, 2010**

Experience Study Recommendation

In the Fall of 2009, the consulting actuarial firm retained by the Minnesota State Retirement System (MSRS), the Public Employees Retirement Association (PERA), and the Teachers Retirement Association (TRA), Mercer, completed quadrennial experience studies of the General State Employees Retirement Plan of the Minnesota State Retirement System (MSRS-General), the General Employees Retirement Plan of the Public Employees Retirement Association (PERA-General), and the TRA, and proposed a substantial number of actuarial assumption changes, including changes in the salary increase and payroll growth actuarial assumptions for all three retirement plans, as follows:

MSRS-General

- Payroll Growth. Based on its recommended change in the Real Wage Growth assumption from 1.5% to 1.0%, Mercer recommended changing the current assumption from 4.5% to 4.0%.
- Salary Increases. The salary increase assumption is composed of three components, (1) inflation, (2) productivity, and (3) merit/promotion. The inflation and productivity components are combined to produce the assumed rate of wage inflation. This rate represents the “across the board” average annual increase in salaries shown in the experience data. The merit component includes the additional increases in salary due to individual performance, seniority, promotions, etc.

The Mercer proposed salary increase table had some rates that are less than the assumed payroll growth of 4.0% for service of 14 or more years, which implies a negative merit/promotion component. Actual experience for the past eight years supports the negative merit/promotion, with consistent plan experience below the national wage increase at advanced age and/or service. The salary increase assumption is typically correlated to years of service, especially at lower years of service.

Mercer reviewed the annual salary increases for the period July 1, 2004, through June 30, 2008, by both age and service. The data group was continuing active members with two consecutive full years of employment. For the salary analysis, Mercer excluded some of the most dramatic salary changes. Mercer excluded the lowest 2.5% and the highest 2.5% for a total of 5.0% of records excluded. While this was a relatively small group, their salary increases distorted the experience of the overall group of continuing active members. Mercer also excluded people with less than one year of service for the same reason.

Mercer recommended changing the salary increase rates from a five-year select and ultimate basis to a service-based table which reflects lower expected salary increases, as follows:

<u>Salary Scale</u> Current Assumption				<u>Salary Scale</u> Proposed Assumption			
Age	Ultimate*	Age	Ultimate*	Service	Ultimate	Service	Ultimate
20	5.75%	39	5.75%	1	10.52%	16	3.63%
21	5.75%	40	5.75%	2	8.06%	17	3.55%
22	5.75%	41	5.75%	3	6.90%	18	3.50%
23	5.75%	42	5.75%	4	6.18%	19	3.50%
24	5.75%	43	5.65%	5	5.68%	20	3.50%
25	5.75%	44	5.55%	6	5.29%	21	3.50%
26	5.75%	45	5.45%	7	4.99%	22	3.50%
27	5.75%	46	5.35%	8	4.74%	23	3.50%
28	5.75%	47	5.25%	9	4.53%	24	3.50%
29	5.75%	48	5.15%	10	4.35%	25	3.50%
30	5.75%	49	5.05%	11	4.20%	26	3.50%
31	5.75%	50	4.95%	12	4.06%	27	3.50%
32	5.75%	51	4.85%	13	3.94%	28	3.50%
33	5.75%	52	4.75%	14	3.83%	29	3.50%
34	5.75%	53	4.65%	15	3.73%	30+	3.50%
35	5.75%	54	4.55%				
36	5.75%	55	4.45%				
37	5.75%	56	4.35%				
38	5.75%	57+	4.25%				

* During a five-year select period, $0.60\% \times (5-T)$ where T is completed years of service is added to the ultimate rate for the current assumption.

PERA-General

- Payroll Growth. Based on its recommended change in the Real Wage Growth assumption, Mercer recommended changing the current assumption from 4.5% to 4.0%.
- Salary Increases. Mercer recommended changing the salary increase rates from a five-year select basis to a service-based table which reflects lower expected salary increases, including rates that are less than the assumed payroll growth of 4.0% for service of 13 or more years, which implies a negative merit/promotion component. Actual experience for the past eight years supports the negative merit/promotion, with consistent plan experience below the national wage increase at advanced age and/or service. The recommended table is as follows:

<u>Salary Scale</u> Current Assumption				<u>Salary Scale</u> Proposed Assumption			
Age	Ultimate*	Age	Ultimate*	Service	Ultimate	Service	Ultimate
20	5.40%	39	4.84%	1	12.03%	16	3.60%
21	5.40%	40	4.80%	2	8.90%	17	3.51%
22	5.40%	41	4.76%	3	7.46%	18	3.50%
23	5.40%	42	4.72%	4	6.58%	19	3.50%
24	5.40%	43	4.68%	5	5.97%	20	3.50%
25	5.40%	44	4.64%	6	5.52%	21	3.50%
26	5.36%	45	4.60%	7	5.16%	22	3.50%
27	5.32%	46	4.56%	8	4.87%	23	3.50%
28	5.28%	47	4.52%	9	4.63%	24	3.50%
29	5.24%	48	4.48%	10	4.42%	25	3.50%
30	5.20%	49	4.44%	11	4.24%	26	3.50%
31	5.16%	50	4.40%	12	4.08%	27	3.50%
32	5.12%	51	4.36%	13	3.94%	28	3.50%
33	5.08%	52	4.32%	14	3.82%	29	3.50%
34	5.04%	53	4.28%	15	3.70%	30+	3.50%
35	5.00%	54	4.24%				
36	4.96%	55	4.20%				
37	4.92%	56	4.16%				
38	4.88%	57+	4.12%				

* During a five-year select period, $0.60\% \times (5-T)$ where T is completed years of service is added to the ultimate rate.

TRA

- Payroll Growth. Based on its recommended change in the Real Wage Growth assumption, Mercer recommended changing the current assumption from 4.5% to 4.0%.
- Salary Increases. Mercer recommended changing the salary increase rates from a ten-year select basis to a service-based table which reflects lower expected salary increases at later years of service, including rates that are less than the assumed payroll growth of 4.0% for service of 21 or more years, which implies a negative merit/promotion component. Actual experience for the past four years supports the negative merit/promotion, with consistent plan experience below the national wage increase at advanced age and/or service. The recommended table is as follows:

<u>Salary Scale</u> Current Assumption				<u>Salary Scale</u> Proposed Assumption			
Age	Ultimate*	Age	Ultimate*	Service	Ultimate	Service	Ultimate
20	5.50%	43	4.90%	1	12.00%	16	5.00%
21	5.50%	44	4.80%	2	9.00%	17	4.75%
22	5.50%	45	4.70%	3	8.00%	18	4.50%
23	5.50%	46	4.60%	4	7.50%	19	4.25%
24	5.50%	47	4.50%	5	7.25%	20	4.00%
25	5.50%	48	4.50%	6	7.00%	21	3.90%
26	5.50%	49	4.50%	7	6.85%	22	3.80%
27	5.50%	50	4.50%	8	6.70%	23	3.70%
28	5.50%	51	4.50%	9	6.55%	24	3.60%
29	5.50%	52	4.50%	10	6.40%	25	3.50%
30	5.50%	53	4.50%	11	6.25%	26	3.50%
31	5.50%	54	4.50%	12	6.00%	27	3.50%
32	5.50%	55	4.50%	13	5.75%	28	3.50%
33	5.50%	56	4.50%	14	5.50%	29	3.50%
34	5.50%	57	4.50%	15	5.25%	30+	3.50%
35	5.50%	58	4.60%				
36	5.50%	59	4.70%				
37	5.50%	60	4.80%				
38	5.40%	61	4.90%				
39	5.30%	62	5.00%				
40	5.20%	63	5.10%				
41	5.10%	64+	5.20%				
42	5.00%						

* During a ten-year select period, $0.60\% \times (10-T)$ where T is completed years of service is added to the ultimate rate.

Milliman Review of the Mercer Salary Increase and Payroll Growth Actuarial Assumption Change Recommendation

- **Wage Growth Assumption Change Generally.** Estimates of future salaries are based on two types of assumptions. Rates of increase in the general wage level of the membership are directly related to inflation while individual salary increases due to promotion and longevity (referred to as the merit scale) occur even in the absence of inflation. The merit scale was reviewed with the other demographic assumptions.

The current wage growth assumption is 1.5% above the price inflation rate, or 4.5% per year. Mercer recommended that the wage growth assumption be lowered to 4.0%.

Mercer considered historical changes in the National Average Wages based on statistics gathered by the Social Security Administration. In Milliman's experience analysis it also used this dataset for analysis, much as the Consumer Price Index (CPI) data is used for analyzing price inflation. There has been debate on the issue of whether public sector employees will receive, over the long term, the same rewards for productivity as employees in the private sector, where productivity is more readily measurable. It was Milliman's understanding that no definitive research has been completed on this topic. Nevertheless, it is Milliman's opinion that public sector employees must be rewarded, even if there is a time lag, with the same productivity increases as those participating in the remainder of the economy.

Another benchmark that Milliman often uses is the projections performed by the Office of the Chief Actuary of the Social Security Administration. That office produced three sets of assumptions: low, intermediate, and high. In the May 2009 report, the annual increase in the National Average Wage Index over the next 30 years under the intermediate cost assumption was 3.9%, 1.1% higher than the Social Security intermediate inflation assumption of 2.8% per year. The range for the assumed real wage inflation in the 2009 Trustees report was 0.5% to 1.7% per year.

In accordance with national actuarial practice standards, Mercer developed a best estimate range of 0.5% to 1.5% and then selected the recommended assumption of 1.0% from within the range. Milliman believed Mercer's recommendation of a 1.0% real wage growth (productivity) assumption is reasonable.

- **Payroll Increase Assumption Change Generally.** The unfunded actuarial accrued liability (or surplus) is amortized as a level percentage of payroll in determining the actuarial contribution rate. This means that the dollar amount of the unfunded actuarial accrued liability payment is assumed to increase at the same rate as covered payroll is assumed to increase. The result, if all assumptions are met, is that the unfunded actuarial accrued liability contribution rate will be a level rate over time. The aggregate covered payroll is generally expected to increase, without accounting for the possibility of an increase in membership.

Payroll growth increases lower than expected have a negative effect on determining the unfunded actuarial accrued liability contribution rate, as a greater percentage of pay will be required to fund the unfunded actuarial accrued liability over a smaller expected payroll. Likewise, payroll growth increases greater than expected have a positive effect on determining the unfunded actuarial accrued liability contribution rate, as a lower percentage of pay will be required to fund the unfunded actuarial accrued liability over a larger expected payroll.

The payroll growth assumption currently used in the valuation is 4.5%. Mercer recommended that the assumption be lowered to 4.0%, the same as the general wage growth assumption. It is most common for the payroll increase assumption to be set equal to the wage growth assumption. However, the current merit salary scale assumption includes negative merit rates for certain durations (and varying somewhat by fund). Given this assumption, Milliman was concerned that the proposed assumption of 4.0% is too high, i.e. the payroll growth assumption may not increase as fast as the general wage increase. The negative merit scale, which applies to a large number of active members and an even greater portion of total payroll, is likely to result in covered payrolls that do not increase at the general wage growth assumption (4.0%) even if all other assumptions are met. Milliman recommended that Mercer perform further analysis for each fund to determine what payroll growth assumption is appropriate if the recommended salary scale was adopted.

- **Salary Increase Assumption Change Generally.** Mercer commented that the observed salary increases had a stronger correlation to service than age in general and they recommended moving to a service-based table for all three funds. Milliman agreed that the change to a service-based table is reasonable

and in line with common actuarial practice for public retirement systems, but Milliman was concerned that the proposed salary scale is based on only four years of experience, which may not be representative of long-term salary increases. In addition, the way the salary increase assumption was developed does not directly address the separate components of the assumption (i.e. the total salary assumption includes a merit scale and the general wage growth assumption). Inflation and wage increase, in general, have been below the recommended assumption over the last decade and Milliman believed that this overall economic trend could have impacted the salary experience in the study period. In addition, the salary increase assumption contains a negative merit scale at certain service durations, which Milliman has rarely seen in its experience. These factors made Milliman less comfortable with a significant change in the assumption as is being proposed. In Milliman's opinion, the salary assumption being proposed does not appear to provide much conservatism. Milliman believed that the salary assumption should be studied further to determine the appropriate change, particularly if a new service-based assumption as to be implemented.

MSRS-General Merit Salary Scale Assumption Change Specifically

The salary increase assumption is actually the combination of the general wage growth assumption and the merit salary scale. While Milliman considered the general wage growth assumption to be an economic assumption, the merit scale is a demographic assumption.

The current salary increase assumption is a five-year select and ultimate scale, which anticipates higher salary increases in the first five years of employment (changed from a ten-year to a five-year select period in the 2005 experience study so the change is fairly recent). This is a commonly used approach in setting the salary increase assumption. The actual salary increases were higher than expected in the select period (7.49% vs. 6.84%) and lower than expected in the ultimate period (3.89% vs. 4.98%). Overall the actual increase was 4.63% compared to an expected increase of 5.36%. In the prior study, actual salary increases were lower than expected for both the select and ultimate period. The salary increases observed in the data for this study period are much higher in the select period. Insufficient detail in the 2005 report, conducted by Segal, makes it impossible to compare experience in the ultimate period.

Developing the merit salary assumption creates a challenge because the data provides only total salary increases, i.e. it does not separately report general wage increases and merit scale. However, Milliman typically attempts to "carve out" the actual general wage increase during the study period by considering salary increase for years of service over 25 or 30 as indicative of the general wage increase (this assumes there is no merit scale at that point in a person's career). By subtracting the general wage increase for the study period from the total salary increase, the merit scale for the study period can be isolated and analyzed. Once the merit scale is developed, it is added to the general wage increase to create the total salary increase assumption. Using this approach, there is no salary increase that is lower than the general wage increase. Although the merit scale might be 0%, it is never negative.

Because increases in salary are usually directly related to economic conditions, Milliman believed that the total salary experience observed should be evaluated in light of recent economic conditions. There often is a lag before the events in the general economy manifest themselves in the salary increases granted by employers. Consequently, Milliman reviewed the change in the CPI and the National Average Wage during the current study period and the prior four-year period (to address the potential delay in recognizing economic conditions). The results are shown below:

Period	Change in CPI	Change in National Average Wage
2004 – 2008	2.5%	3.8%
2000 – 2004	2.3%	2.9%

Based on Mercer's report, the actual observed experience during the study period indicated an overall salary increase of about 4.8%. Milliman believed that it is very likely that the lower price inflation and general wage increase in the period 2000-2004 impacted the observed salary experience rather than the economic experience which actually occurred during the study period. If this is the case, the overall merit scale would be about 1.8% (4.8% minus 3.0%). When the merit scale is added to the general wage growth assumption of 4.0%, the total overall salary increase assumption would be 5.8% rather than the recommended assumption which produces an overall salary increase of 4.8%. Milliman believed that either the total salary scale is reasonable, but the general wage growth assumption is too high, or that the total salary scale is too low given the general wage growth assumption.

Mercer commented that the observed salary increase had a stronger correlation to service than age in general and they recommended moving to a pure service-based table. Milliman agreed that the change to a service-based table was reasonable and in line with common actuarial practice for public retirement

systems, but Milliman was concerned that the proposed salary scale is based on only four years of experience and may not be representative of long-term salary increases. In addition, the way the salary increase assumption was developed does not directly address the separate components of the assumption (i.e. the total salary assumption includes a merit scale and the general wage growth assumption). As discussed above, wage increases, in general, have been below the 4.0% recommended assumption over the last decade and Milliman believed that this overall economic trend could have impacted the salary experience in the study period. These factors made Milliman less comfortable with the recommended change in the assumption. In Milliman's opinion, the salary assumption being proposed does not appear to provide much conservatism. Milliman believed that the salary assumption should be studied further to determine the appropriate change, particularly if a new service-based assumption was to be implemented.

Mercer's salary increase assumption has a negative merit scale for service over 12 years. In Milliman's experience with public pension plans, it is uncommon to see negative merit salary assumptions, particularly commencing at relatively low service durations. Although it may work mathematically, Milliman found it difficult to get comfortable with the concept. At a minimum, it raises a question as to whether the payroll growth assumption of 4.0%, which is used to calculate the amortization of the unfunded actuarial liability, is too high when a large portion of the members are assumed to receive a salary increase less than the 4.0% general wage growth assumption. Milliman recommended that the assumption used to amortize the unfunded actuarial liability be revisited if the proposed salary increase assumption is adopted. The MSRS board adopted a higher salary increase assumption than the recommended assumption shown in the Mercer experience study report. The rates at all ages are 0.25% higher than the rates shown in the Mercer experience study report. As a result, the overall salary increase rate in the board's assumption is 5.06% compared to 5.36% for the current assumption. Overall observed experience was 4.63%.

Mercer provided Milliman with the cost impact of each assumption change. The change to the salary increase assumption had the most significant impact in reducing costs. The estimated decrease in the contribution rate, based on the July 1, 2008, actuarial valuation, was 0.85%. Milliman recommended that there be further discussion on the salary increase assumption before any change is finalized.

Milliman noted that the MSRS board adopted a salary increase assumption that is 25 basis points higher at all ages than the recommended rates in the experience study report. In Milliman's opinion, this was a prudent move, although Milliman would have liked to see even more conservatism in the rates. The salary assumption adopted by the board provides some conservatism, but not a lot. In addition, it contains a negative merit scale, which in Milliman's experience is not common. Milliman believed that the salary assumption should be studied further to determine the appropriate change, particularly if a new service-based assumption is to be implemented.

PERA-General Merit Salary Scale Assumption Change Specifically

The salary increase assumption is actually the combination of the general wage growth assumption and the merit salary scale. While Milliman considered the general wage growth assumption to be an economic assumption, the merit scale is a demographic assumption.

The current salary increase assumption is a five-year select and ultimate scale, which anticipates higher salary increases in the first five years of employment (changed from a ten-year to a five-year select period in the 2005 experience study). This is a commonly used approach in setting the salary increase assumption. The actual salary increases were higher than expected in the select period (8.59% vs. 6.16%) and lower than expected in the ultimate period (3.98% vs. 4.46%). Overall the actual increase was 5.16% compared to an expected increase of 4.87%.

Developing the merit salary assumption creates a challenge because the data provides only total salary increases, i.e. it does not separately report general wage increases and merit scale. However, Milliman typically attempts to "carve out" the actual general wage increase during the study period by considering salary increase for years of service over 30 as indicative of the general wage increase (this assumes there is no merit scale at that point in a person's career). By subtracting the general wage increase for the study period from the total salary increase, the merit scale for the study period can be isolated and analyzed. Once the merit scale is developed, it is added to the general wage increase to create the total salary increase assumption. Using this approach, there is no salary increase that is lower than the general wage increase. Although the merit scale might be 0%, it is never negative.

Because increases in salary are usually directly related to economic conditions, Milliman believed that the total salary experience observed should be evaluated in light of recent economic conditions. There often is a lag before the events in the general economy manifest themselves in the salary increases granted by employers. Consequently, Milliman reviewed the change in the CPI and the National Average Wage

during the current study period and the prior four-year period (to address the potential delay in recognizing economic conditions). The results are shown below:

Period	Change in CPI	Change in National Average Wage
2004 – 2008	2.5%	3.8%
2000 – 2004	2.3%	2.9%

Based on Mercer’s report, the actual observed experience during the study period indicated an overall salary increase of about 5.2%. Milliman believed that it is very likely that the lower price inflation and general wage increase in the period 2000-2004 impacted the observed salary experience rather than the economic experience which actually occurred during the study period. If this is the case, the overall merit scale would be about 2.2% (5.2% minus 3.0%). When the merit scale is added to the general wage growth assumption of 4.0%, the total overall salary increase assumption would be 6.2% rather than the recommended assumption which produces an overall salary increase of 5.2%. Milliman believed that either the total salary scale is reasonable, but the general wage growth assumption is too high, or that the total salary scale is too low given the general wage growth assumption.

Mercer developed a salary increase assumption that has negative merit scale for service above 12 years. In Milliman’s experience, it is uncommon to see negative merit salary assumptions, particularly commencing at such low service levels. Although it may work mathematically, Milliman found it difficult to get comfortable with the concept. At a minimum, it raises a question as to whether the payroll growth assumption of 4.0%, which is used to calculate the amortization of the unfunded accrued liability, is too high when a portion of the members are assumed to receive a salary increase less than 4.0% general wage growth assumption. Milliman recommended that the assumption used to amortize the unfunded actuarial liability be revisited if the proposed salary increase assumption was adopted.

Mercer commented that the observed salary increase had a stronger correlation to service than age in general and they recommended moving to a pure service-based table. Milliman agreed that the change to a service-based table was reasonable and in line with common actuarial practice for public retirement systems, but Milliman was concerned that the proposed salary scale is based on only four years of experience and results in this study period may not be representative of long-term salary increases. In addition, the way the salary increase assumption was developed does not directly address the separate components of the assumption (i.e. the total salary assumption includes a merit scale and the general wage growth assumption). As discussed above, wage increases, in general, have been below the 4.0% recommended assumption over the last decade and Milliman believed that this overall economic trend could have impacted the salary experience in the study period. These factors made Milliman less comfortable with the recommended change in the assumption. In Milliman’s opinion, the salary assumption being proposed does not provide much conservatism. Milliman believed that the salary assumption should be studied further to determine the appropriate change, particularly if a new service-based assumption was to be implemented.

Given the importance of this assumption, Milliman recommended that there be further discussion on the general wage growth assumption and the merit scale.

TRA Merit Salary Scale Assumption Change Specifically

The salary increase assumption is actually the combination of the general wage growth assumption and the merit salary scale. While Milliman considered the general wage growth assumption to be an economic assumption, the merit scale is a demographic assumption.

The current salary increase assumption is a five-year select and ultimate scale, which anticipates higher salary increases in the first five years of employment (changed from a ten-year to a five-year select period in the 2005 experience study). This is a commonly used approach in setting the salary increase assumption. The actual salary increases were higher than expected in the select period (7.95% vs. 6.80%) and slightly lower than expected in the ultimate period (4.48% vs. 4.77%). Overall the actual increase was 6.20% compared to an expected increase of 5.72%.

Developing the merit salary assumption creates a challenge because the data provides only total salary increases, i.e. it does not separately report general wage increases and merit scale. However, Milliman typically attempts to “carve out” the actual general wage increase during the study period by considering salary increase for years of service over 30 as indicative of the general wage increase during the study period (this assumes there is no merit scale at that point in a person’s career). By subtracting the general wage increase for the study period from the total salary increase, the merit scale for the study period can be isolated and analyzed. Once the merit scale is developed, it is added to the general wage increase to

create the total salary increase assumption. Using this approach, there is no salary increase that is lower than the general wage increase. Although the merit scale might be 0%, it is never negative.

Because increases in salary are usually directly related to economic conditions, Milliman believed that the total salary experience observed should be evaluated in light of recent economic conditions. There often is a lag before the events in the general economy manifest themselves in the salary increases granted by employers. Consequently, Milliman reviewed the change in the CPI and the National Average Wage during the current study period and the prior four-year period (to address the potential delay in recognizing economic conditions). The results are shown below:

Period	Change in CPI	Change in National Average Wage
2004 – 2008	2.5%	3.8%
2000 – 2004	2.3%	2.9%

Based on Mercer's report, the actual observed experience during the study period indicated an overall salary increase of about 6.2%. Milliman believed that it is very likely that the lower price inflation and general wage increase in the period 2000-2004 impacted the observed salary experience rather than the economic experience which actually occurred during the study period. If this is the case, the overall merit scale would be about 3.2% (6.2% minus 3.0%). When the merit scale is added to the general wage growth assumption of 4.0%, the total overall salary increase assumption would be 7.2% rather than the recommended assumption which produces an overall salary increase of 6.2%. Milliman believed that either the total salary scale is reasonable, but the general wage growth assumption is too high, or that the total salary scale is too low given the general wage growth assumption.

Mercer developed a salary increase assumption that has negative merit scale for service above 20 years. In Milliman's experience, it is uncommon to see negative merit salary assumptions, particularly commencing at that service level. Although it may work mathematically, Milliman found it difficult to get comfortable with the concept. At a minimum, it raises a question as to whether the payroll growth assumption of 4.0%, which is used to calculate the amortization of the unfunded accrued liability, is too high when a portion of the members are assumed to receive a salary increase less than 4.0% general wage growth assumption. Milliman recommended that the assumption used to amortize the unfunded actuarial liability be revisited if the proposed salary increase assumption was adopted.

Mercer commented that the observed salary increase had a stronger correlation to service than age in general and they recommended moving to a pure service-based table. Milliman agreed that the change to a service-based table was reasonable and in line with common actuarial practice for public retirement systems, but Milliman was concerned that the proposed salary scale is based on only four years of experience and results in this study period may not be representative of long-term salary increases. In addition, the way the salary increase assumption was developed does not directly address the separate components of the assumption (i.e. the total salary assumption includes a merit scale and the general wage growth assumption). As discussed above, wage increases, in general, have been below the 4.0% recommended assumption over the last decade and Milliman believed that this overall economic trend could have impacted the salary experience in the study period. These factors made Milliman less comfortable with the recommended change in the assumption. In Milliman's opinion, the salary assumption being proposed does not provide much conservatism. Milliman believed that the salary assumption should be studied further to determine the appropriate change, particularly if a new service-based assumption was to be implemented.

Given the importance of this assumption, Milliman recommended that there be further discussion on the general wage growth assumption and the merit scale.

July 8, 2010, Legislative Commission on Pensions and Retirement Action on Proposed Actuarial Assumption Changes

Patrice Beckham and William Hogan, Milliman, presented Milliman's review of the 2004-2008 experience study reports for MSRS, PERA, and TRA and responded to questions from members and staff.

David Bergstrom, Executive Director, MSRS, testified in support of the proposed demographic assumption changes for MSRS to implement those changes in the 2010 actuarial valuations.

Mary Vanek, Executive Director, PERA, testified in support of the proposed demographic assumption changes for PERA, and asked members to carefully consider the proposed investment return assumption change from 8.5% to 8.0% as it would add roughly 2.2% of pay to the contribution requirement based on studies from two years ago.

Laurie Hacking, Executive Director, TRA, testified in support of the proposed demographic assumption changes for TRA and also urged caution when considering the proposed investment return assumption, which would increase TRA's required contribution rates by approximately 2.7% to 3% of pay.

Howard Bicker, Executive Director, State Board of Investment, testified that whether the investment return is 8.0% or 8.5%, it will be wrong. Mr. Bicker noted that over the past 30 years the State Board of Investment has compounded at 9.7% and last year's preliminary results show a 15.2% return. Mr. Bicker testified that the investment assumption is attainable, although there will be volatility.

Lawrence Martin, Executive Director, Legislative Commission on Pensions and Retirement, reviewed the motions to approve the demographic assumption changes, reminding members that the Commission has the authority to adopt the demographic assumption changes but that two of the proposed assumption changes are statutory and will need to be addressed during the next legislative session.

Mr. Bergstrom testified in support of the more conservative assumption changes for MSRS.

The Commission considered and approved seven motions representing the actuarial assumption changes based on the Mercer experience studies as requested by the three major statewide general retirement plans following discussion with the Commission-retained consulting actuary.

Mr. Martin asked the fund directors about their plans for formulating actuarial assumption changes with respect to their other plans.

Ms. Vanek testified that an experience study was being prepared for the Public Employees Police and Fire Retirement Plan (PERA-P&F) and that the recommendations will be reported to the PERA board in August 2010, assuming that any recommended assumption changes will be considered in 2011. Ms. Vanek also testified that they haven't looked at the local government correctional plan but that they will want the actuary to review, especially with respect to mortality.

Mr. Bergstrom testified that MSRS would likely not undertake a full-blown experience study but will look at mortality assumption and other similar changes.

1.1 moves to amend H.F. No. 1647; S.F. No. 1369 as follows:

1.2 Page 5, line 20, delete "1.45" and insert "4.45"

1.3 Page 5, line 21, delete "1.35" and insert "4.35"

This Document can be made available in alternative formats upon request

State of Minnesota HOUSE OF REPRESENTATIVES

EIGHTY-SEVENTH SESSION

HOUSE FILE No. 1647

May 3, 2011

Authored by Lanning

The bill was read for the first time and referred to the Committee on Government Operations and Elections

1.1 A bill for an act
1.2 relating to retirement; major general employee statewide retirement plans;
1.3 revising statutory salary scale actuarial assumptions; revising payroll growth
1.4 actuarial assumptions; amending Minnesota Statutes 2010, section 356.215,
1.5 subdivision 8.

1.6 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF MINNESOTA:

1.7 Section 1. Minnesota Statutes 2010, section 356.215, subdivision 8, is amended to read:

1.8 Subd. 8. Interest and salary assumptions. (a) The actuarial valuation must use
1.9 the applicable following preretirement interest assumption and the applicable following
1.10 postretirement interest assumption:

Table with 3 columns: plan, preretirement interest rate assumption, postretirement interest rate assumption. Rows include general state employees retirement plan, correctional state employees retirement plan, State Patrol retirement plan, etc.

2.1	Minneapolis Fire Department Relief Association	6.0	6.0
2.2	Virginia Fire Department Relief Association	5.0	5.0
2.3	Bloomington Fire Department Relief Association	6.0	6.0
2.4	local monthly benefit volunteer firefighters relief		
2.5	associations	5.0	5.0

2.6 (b) Before July 1, 2010, the actuarial valuation must use the applicable following
 2.7 single rate future salary increase assumption, the applicable following modified single
 2.8 rate future salary increase assumption, or the applicable following graded rate future
 2.9 salary increase assumption:

2.10 (1) single rate future salary increase assumption

2.11	plan	future salary
2.12		increase assumption
2.13	legislators retirement plan	5.0%
2.14	judges retirement plan	4.0
2.15	Minneapolis Police Relief Association	4.0
2.16	Fairmont Police Relief Association	3.5
2.17	Minneapolis Fire Department Relief	
2.18	Association	4.0
2.19	Virginia Fire Department Relief Association	3.5
2.20	Bloomington Fire Department Relief	
2.21	Association	4.0

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

2.24	plan	future salary
2.25		increase assumption
2.26	general state employees retirement plan	select calculation and
2.27		assumption A
2.28	correctional state employees retirement plan	assumption G <u>E</u>
2.29	State Patrol retirement plan	assumption F <u>D</u>
2.30	public employees police and fire fund retirement plan	assumption B <u>A</u>
2.31	local government correctional service retirement plan	assumption F <u>D</u>
2.32	teachers retirement plan	assumption C
2.33	Duluth teachers retirement plan	assumption D <u>B</u>
2.34	St. Paul teachers retirement plan	assumption E <u>C</u>

2.35 The select calculation is: during the
 2.36 designated select period, a designated
 2.37 percentage rate is multiplied by the result
 2.38 of the designated integer minus T, where
 2.39 T is the number of completed years of
 2.40 service, and is added to the applicable

3.1 future salary increase assumption. The
 3.2 designated select period is five years and the
 3.3 designated integer is five for the general state
 3.4 employees retirement plan. The designated
 3.5 select period is ten years and the designated
 3.6 integer is ten for all other retirement plans
 3.7 covered by this clause. The designated
 3.8 percentage rate is: (1) 0.2 percent for the
 3.9 correctional state employees retirement plan,
 3.10 the State Patrol retirement plan, the public
 3.11 employees police and fire plan, and the local
 3.12 government correctional service plan; (2)
 3.13 0.6 percent for the general state employees
 3.14 retirement plan; and (3) 0.3 percent for the
 3.15 teachers retirement plan, the Duluth Teachers
 3.16 Retirement Fund Association, and the St.
 3.17 Paul Teachers Retirement Fund Association.
 3.18 The select calculation for the Duluth Teachers
 3.19 Retirement Fund Association is 8.00 percent
 3.20 per year for service years one through seven,
 3.21 7.25 percent per year for service years seven
 3.22 and eight, and 6.50 percent per year for
 3.23 service years eight and nine.

3.24 The ultimate future salary increase assumption is:

3.25	age	<u>A</u>	<u>B</u> / <u>A</u>	<u>C</u>	<u>D</u> / <u>B</u>	<u>E</u> / <u>C</u>	<u>F</u> / <u>D</u>	<u>G</u> / <u>E</u>
3.26	16	5.95%	11.00%	7.70%	8.00%	6.90%	7.7500%	7.2500%
3.27	17	5.90	11.00	7.65	8.00	6.90	7.7500	7.2500
3.28	18	5.85	11.00	7.60	8.00	6.90	7.7500	7.2500
3.29	19	5.80	11.00	7.55	8.00	6.90	7.7500	7.2500
3.30	20	5.75	11.00	5.50	6.90	6.90	7.7500	7.2500
3.31	21	5.75	11.00	5.50	6.90	6.90	7.1454	6.6454
3.32	22	5.75	10.50	5.50	6.90	6.90	7.0725	6.5725
3.33	23	5.75	10.00	5.50	6.85	6.85	7.0544	6.5544
3.34	24	5.75	9.50	5.50	6.80	6.80	7.0363	6.5363
3.35	25	5.75	9.00	5.50	6.75	6.75	7.0000	6.5000
3.36	26	5.75	8.70	5.50	6.70	6.70	7.0000	6.5000
3.37	27	5.75	8.40	5.50	6.65	6.65	7.0000	6.5000
3.38	28	5.75	8.10	5.50	6.60	6.60	7.0000	6.5000

4.1	29	5.75	7.80	5.50	6.55	6.55	7.0000	6.5000
4.2	30	5.75	7.50	5.50	6.50	6.50	7.0000	6.5000
4.3	31	5.75	7.30	5.50	6.45	6.45	7.0000	6.5000
4.4	32	5.75	7.10	5.50	6.40	6.40	7.0000	6.5000
4.5	33	5.75	6.90	5.50	6.35	6.35	7.0000	6.5000
4.6	34	5.75	6.70	5.50	6.30	6.30	7.0000	6.5000
4.7	35	5.75	6.50	5.50	6.25	6.25	7.0000	6.5000
4.8	36	5.75	6.30	5.50	6.20	6.20	6.9019	6.4019
4.9	37	5.75	6.10	5.50	6.15	6.15	6.8074	6.3074
4.10	38	5.75	5.90	5.40	6.10	6.10	6.7125	6.2125
4.11	39	5.75	5.70	5.30	6.05	6.05	6.6054	6.1054
4.12	40	5.75	5.50	5.20	6.00	6.00	6.5000	6.0000
4.13	41	5.75	5.40	5.10	5.90	5.95	6.3540	5.8540
4.14	42	5.75	5.30	5.00	5.80	5.90	6.2087	5.7087
4.15	43	5.65	5.20	4.90	5.70	5.85	6.0622	5.5622
4.16	44	5.55	5.10	4.80	5.60	5.80	5.9048	5.4078
4.17	45	5.45	5.00	4.70	5.50	5.75	5.7500	5.2500
4.18	46	5.35	4.95	4.60	5.40	5.70	5.6940	5.1940
4.19	47	5.25	4.90	4.50	5.30	5.65	5.6375	5.1375
4.20	48	5.15	4.85	4.50	5.20	5.60	5.5822	5.0822
4.21	49	5.05	4.80	4.50	5.10	5.55	5.5404	5.0404
4.22	50	4.95	4.75	4.50	5.00	5.50	5.5000	5.0000
4.23	51	4.85	4.75	4.50	4.90	5.45	5.4384	4.9384
4.24	52	4.75	4.75	4.50	4.80	5.40	5.3776	4.8776
4.25	53	4.65	4.75	4.50	4.70	5.35	5.3167	4.8167
4.26	54	4.55	4.75	4.50	4.60	5.30	5.2826	4.7826
4.27	55	4.45	4.75	4.50	4.50	5.25	5.2500	4.7500
4.28	56	4.35	4.75	4.50	4.40	5.20	5.2500	4.7500
4.29	57	4.25	4.75	4.50	4.30	5.15	5.2500	4.7500
4.30	58	4.25	4.75	4.60	4.20	5.10	5.2500	4.7500
4.31	59	4.25	4.75	4.70	4.10	5.05	5.2500	4.7500
4.32	60	4.25	4.75	4.80	4.00	5.00	5.2500	4.7500
4.33	61	4.25	4.75	4.90	3.90	5.00	5.2500	4.7500
4.34	62	4.25	4.75	5.00	3.80	5.00	5.2500	4.7500
4.35	63	4.25	4.75	5.10	3.70	5.00	5.2500	4.7500
4.36	64	4.25	4.75	5.20	3.60	5.00	5.2500	4.7500
4.37	65	4.25	4.75	5.20	3.50	5.00	5.2500	4.7500
4.38	66	4.25	4.75	5.20	3.50	5.00	5.2500	4.7500
4.39	67	4.25	4.75	5.20	3.50	5.00	5.2500	4.7500
4.40	68	4.25	4.75	5.20	3.50	5.00	5.2500	4.7500
4.41	69	4.25	4.75	5.20	3.50	5.00	5.2500	4.7500
4.42	70	4.25	4.75	5.20	3.50	5.00	5.2500	4.7500
4.43	71	4.25		5.20				

- 5.1 (3) service-related ultimate future salary increase assumption
- 5.2 general state employees retirement plan of the assumption A
- 5.3 Minnesota State Retirement System
- 5.4 general employees retirement plan of the Public assumption B
- 5.5 Employees Retirement Association
- 5.6 Teachers Retirement Association assumption C

5.7		general employees retirement		
5.8		plan of the Public Employees		
5.9	service length	Retirement Association A	<u>B</u>	<u>C</u>
5.10	1	12.03% <u>10.75%</u>	<u>12.25%</u>	<u>12.00%</u>
5.11	2	8.90 <u>8.35</u>	<u>9.15</u>	<u>9.00</u>
5.12	3	7.46 <u>7.15</u>	<u>7.75</u>	<u>8.00</u>
5.13	4	6.58 <u>6.45</u>	<u>6.85</u>	<u>7.50</u>
5.14	5	5.97 <u>5.95</u>	<u>6.25</u>	<u>7.25</u>
5.15	6	5.52 <u>5.55</u>	<u>5.75</u>	<u>7.00</u>
5.16	7	5.16 <u>5.25</u>	<u>5.45</u>	<u>6.85</u>
5.17	8	4.87 <u>4.95</u>	<u>5.15</u>	<u>6.70</u>
5.18	9	4.63 <u>4.75</u>	<u>4.85</u>	<u>6.55</u>
5.19	10	4.42 <u>4.65</u>	<u>4.65</u>	<u>6.40</u>
5.20	11	4.24 <u>1.45</u>	<u>4.45</u>	<u>6.25</u>
5.21	12	4.08 <u>1.35</u>	<u>4.35</u>	<u>6.00</u>
5.22	13	3.94 <u>4.25</u>	<u>4.15</u>	<u>5.75</u>
5.23	14	3.82 <u>4.05</u>	<u>4.05</u>	<u>5.50</u>
5.24	15	3.70 <u>3.95</u>	<u>3.95</u>	<u>5.25</u>
5.25	16	3.60 <u>3.85</u>	<u>3.85</u>	<u>5.00</u>
5.26	17	3.51 <u>3.75</u>	<u>3.75</u>	<u>4.75</u>
5.27	18	3.50 <u>3.75</u>	<u>3.75</u>	<u>4.50</u>
5.28	19	3.50 <u>3.75</u>	<u>3.75</u>	<u>4.25</u>
5.29	20	3.50 <u>3.75</u>	<u>3.75</u>	<u>4.00</u>
5.30	21	3.50 <u>3.75</u>	<u>3.75</u>	<u>3.90</u>
5.31	22	3.50 <u>3.75</u>	<u>3.75</u>	<u>3.80</u>
5.32	23	3.50 <u>3.75</u>	<u>3.75</u>	<u>3.70</u>
5.33	24	3.50 <u>3.75</u>	<u>3.75</u>	<u>3.60</u>
5.34	25	3.50 <u>3.75</u>	<u>3.75</u>	<u>3.50</u>
5.35	26	3.50 <u>3.75</u>	<u>3.75</u>	<u>3.50</u>
5.36	27	3.50 <u>3.75</u>	<u>3.75</u>	<u>3.50</u>
5.37	28	3.50 <u>3.75</u>	<u>3.75</u>	<u>3.50</u>
5.38	29	3.50 <u>3.75</u>	<u>3.75</u>	<u>3.50</u>
5.39	30 or more	3.50 <u>3.75</u>	<u>3.75</u>	<u>3.50</u>

- 5.40 (c) Before July 2, 2010, the actuarial valuation must use the applicable following
- 5.41 payroll growth assumption for calculating the amortization requirement for the unfunded
- 5.42 actuarial accrued liability where the amortization retirement is calculated as a level
- 5.43 percentage of an increasing payroll:

6.1	plan	payroll growth assumption
6.3	general state employees retirement plan of the	
6.4	<u>Minnesota State Retirement System</u>	4.50% <u>3.75%</u>
6.5	correctional state employees retirement plan	4.50
6.6	State Patrol retirement plan	4.50
6.7	legislators retirement plan	4.50
6.8	judges retirement plan	4.00
6.9	general employees retirement plan of the Public	
6.10	Employees Retirement Association	4.00 <u>3.75</u>
6.11	public employees police and fire retirement plan	4.50
6.12	local government correctional service retirement	
6.13	plan	4.50
6.14	teachers retirement plan	4.50 <u>3.75</u>
6.15	Duluth teachers retirement plan	4.50
6.16	St. Paul teachers retirement plan	5.00

6.17 (d) After July 1, 2010, the assumptions set forth in paragraphs (b) and (c) continue to
 6.18 apply, unless a different salary assumption or a different payroll increase assumption:

6.19 (1) has been proposed by the governing board of the applicable retirement plan;

6.20 (2) is accompanied by the concurring recommendation of the actuary retained under
 6.21 section 356.214, subdivision 1, if applicable, or by the approved actuary preparing the
 6.22 most recent actuarial valuation report if section 356.214 does not apply; and

6.23 (3) has been approved or deemed approved under subdivision 18:

6.24 **EFFECTIVE DATE.** This section is effective retroactively from June 30, 2010.