Appendix B
to the Standards for Actuarial Work

RULES FOR CALCULATING ACCRUED LIABILITIES APPLICABLE TO LUMP SUM DEFINED BENEFIT VOLUNTEER FIREFIGHTER RELIEF ASSOCIATIONS

For calculating accrued liability
beginning with the 2022 calendar year

Application: This appendix applies to lump sum defined benefit plans ("plans") administered by volunteer firefighter relief associations ("relief associations") under Chapter 424A.

Authority: Minnesota Statutes, section 424A.092, subdivision 2, paragraph (a), was amended, effective May 28, 2020, to require each relief association to which this appendix applies to calculate the accrued liability for the relief association's plan using the method described in this appendix. The statute states:

> Subd. 2. **Determination of accrued liability**. (a) Beginning with the calculation performed in 2021 for the 2022 calendar year, each firefighters relief association which pays a lump-sum service pension shall determine the accrued liability of the special fund of the firefighters relief association relative to each active member of the relief association, calculated using the applicable appendix to the standards for actuarial work established by the Legislative Commission on Pensions and Retirement under section 3.85, subdivision 10.

Effective date: Beginning with the calculations performed in 2021 for the 2022 calendar year.

Method: A relief association must input data for active and deferred members, along with benefit level and other plan specific information, into an OSA Form SC spreadsheet. This spreadsheet is available through the State Auditor's website.

For each active and deferred member, the worksheet calculates an estimated actuarial liability based on the inputs and the assumptions described in this Appendix. The worksheet then aggregates the individual member liability estimates into a single plan liability amount. The estimated plan liability, along with additional financial information inputs, is then used to determine the annual required contribution under Minnesota Statutes, section 424A.092, subdivision 3.

Assumptions: The calculation of accrued liability for each relief association plan assumes the following:

- 3% discount rate
- No pre-retirement turnover or mortality
- Age 50 benefit commencement

Summary from the Commission Actuary: See attached memo, which provides background information and rationale for changes enacted in 2020.

Memo

To: Susan Lenczewski, Legislative Commission on Pensions and Retirement
Rose Hennesey-Allen, Minnesota Office of the State Auditor

From: Mark Schulte, Van Iwaarden Associates
Emily Knutson, Van Iwaarden Associates

Date: April 1, 2021

Re: **Actuarial Methodology for Volunteer Fire Relief Association Lump Sum Liability Estimates**

This memo summarizes the proposed methodology for calculating estimated pension liabilities for active members in Minnesota Volunteer Fire Relief Association (VFRA) lump sum pension plans. It is divided into three parts:

1. Background information
2. Proposed methods and rationale
3. Additional considerations

Section 1: Background Information

Minnesota VFRAs offering lump sum pension plans currently use a worksheet provided by the Office of the State Auditor (OSA) to estimate their accrued pension liabilities and statutory contribution rates. This worksheet was developed many years ago and is based on a statutory liability factor table[1] which assumes[2]:

- A lump sum benefit payable immediately after 20 years of service (regardless of age);
- A 3.0% interest rate assumption; and
- No pre-retirement turnover or mortality.

The OSA worksheet provided a reasonable liability estimate for many years because, until recently, Minnesota Statutes required at least 20 years of service for VFRA members to be 100% vested in their benefits. However, this requirement was changed in the 2019 Omnibus Retirement Bill. VFRAs can now set their 100% vesting threshold as low as 10 years. The earliest benefit commencement age remains unchanged at age 50.[3].

One possible shortfall of the current calculation methodology is that it could understate plan liabilities for members who are hired at older ages in plans with shorter vesting requirements. For example, suppose a VFRA implements a vesting schedule with 100% vesting after 10 years of service. If a member is hired at age 40 then they would be eligible to receive 100% of their accrued benefit at age 50, but the current worksheet would calculate their liability by automatically assuming retirement after 20 years of service (i.e., 10 years of interest discounting). This would produce a liability which is lower than the actual amount eligible to be paid.

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[1] See MN Statutes 424A.092 Subd. 2

[2] From LCPR memo LM092804-1 titled "Background Information on Volunteer Firefighter Relief Associations"

[3] See MN Statutes 424A.02 Subd. 1(a) and Subd. 2

Section 2: Proposed methods and rationale

In order to accommodate potentially shorter vesting schedules without systematically understating actuarial liability estimates, we propose a new method for calculating the liability discount factors. The proposed new method uses:

- Actuarial liability factors that adjust for each VFRA plan's vesting requirements;
- 3.0% liability discount rate;
- No pre-retirement turnover or mortality; and
- Age 50 benefit commencement age.

The exhibit below describes the rationale for each of these assumptions.

Actuarial liability factors that adjust for specific vesting schedules

This is the main change to the actuarial methodology for estimating lump sum liability factors. These factors are used to discount the value of future estimated lump sum liabilities into "today's dollars".

Instead of automatically discounting all lump sums over a 20-year period, liability factors will be based on how a member's current age and service compare to a VFRA pension plan's specific retirement age and 100% vesting requirements. Benefits will be discounted over a time period equal to the greater of (1) years until a member reaches age 50 or (2) years until a member reaches the plan's 100% vesting service requirement.

We believe this new methodology provides an improved approximation of actuarial liabilities without making the calculations unnecessarily complex.

3.0% liability discount rate

In most public sector actuarial funding valuations, the liability discount rate represents a pension plan's expected long-term investment return assumption. It's unclear how the current 3.0% discount rate assumption was developed, but it may have been intended as a general conservative estimate that could be used by a majority of VFRA pension plans.

We believe it's reasonable to continue using a 3.0% discount rate as a universal conservative assumption for all VFRA lump sum pension plans. Rationale for this conclusion are:

- It may be impractical for each individual VFRA lump sum plan to develop their own long-term investment return assumption.
- We calculated the expected return of a portfolio invested 100% in US corporate bonds to be roughly 3.0%[4]. This means that a 100% fixed income investment portfolio (which is likely more conservative than most VFRAs' actual investment strategies) would annually be expected to earn 3.0% over the long-term.
- Although the discount rate/investment return assumption is important for lump sum plans, it has less effect on their liabilities compared to annuity plans since annuities are paid over a much longer time period.

[4] Based on our 2020 capital market assumption model, an underlying 2.5% price inflation assumption, and estimated 1.0% annual investment fees.

No pre-retirement turnover or mortality assumptions

Assuming no pre-retirement turnover or mortality creates a more conservative liability estimate since it assumes each member will work a full career until they're 100% eligible to receive a pension benefit. It would be impractical for each VFRA to have their own turnover and mortality assumptions, and we believe that even general assumptions would add significant calculation complexity while not substantially improving the accuracy of the liability factor estimates.

Age 50 benefit commencement age

MN Statutes 424A.02 Subd. 1(a) defines the minimum benefit commencement age for VFRAs to be age 50. Since this is a uniform statutory requirement, the updated calculation worksheet assumes that active members retire at the later of age 50 or their projected full vesting age.

Please note that both the current and updated worksheets do not assume any interest discounting for terminated members with deferred vested benefits, even though these members cannot receive their retirement pensions until they're at least age 50. This is a conservative assumption, and the worksheet could be refined to apply interest discounting to terminated members with deferred benefits. However, we have not made this adjustment since these members generally are a small fraction of a plan's overall pension liability.

Section 3: Additional Considerations

We believe that the proposed methodologies will provide a reasonable estimate of VFRA lump sum pension liabilities. However, the LCPR and OSA should review the following additional considerations:

- Although the model could be refined so that it more closely resembles an actuarial valuation, this would require substantial additional programming and expense. An alternative would be to prepare full actuarial valuations to determine pension liabilities and statutory contribution rates for each VFRA pension plan, but this may not be a cost-effective option.

- We encourage the LCPR and OSA to periodically review the lump sum liability model to ensure that the underlying methods and assumptions remain consistent with best practices and contemporary actuarial assumptions.

- We recommend removing the current table of estimated actuarial factors from Minnesota Statutes and replacing them in the Appendix to the LCPR's Standards of Actuarial Work with a description of the underlying assumptions for the new factors.