



July 14, 2020

Mr. Doug Anderson, Executive Director  
Public Employees Retirement Association of Minnesota  
60 Empire Drive, Suite 200  
Saint Paul, Minnesota 55103

**Re: Proposed Assumption Changes – PERA PEPFP**

Dear Doug:

Enclosed is a supplemental actuarial valuation showing the estimated impact of changing the actuarial assumptions of the Public Employees Police and Fire Plan of the Public Employees Retirement Association (PERA PEPFP). Unless noted otherwise and to the best of our knowledge and belief, the calculations were completed in accordance with the requirements of Minnesota Statutes, Section 356.215, and the requirements of the Standards for Actuarial Work established by the Legislative Commission on Pensions and Retirement (LCPR).

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of the actuary's assignment, the actuary did not perform an analysis of the potential range of such future measurements.

The purpose of this report is to estimate the impact of new actuarial assumptions. This report should not be relied on for any other purpose, is intended for use by the PERA Board and staff and may be provided to other parties only in its entirety and only with the permission of the Board. GRS is not responsible for the unauthorized use of this report. Determinations of the financial results associated with the benefits described in this report in a manner other than the intended purpose may produce significantly different results.

The valuation was based upon information furnished by PERA, concerning Retirement System benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. The signing actuaries are independent of the plan sponsor.

Please call if you have any questions regarding the calculations enclosed.

Sincerely,

A handwritten signature in black ink that reads "Bonita J. Wurst".

Bonita J. Wurst, ASA, EA, FCA, MAAA

A handwritten signature in black ink that reads "Brian B. Murphy".

Brian B. Murphy, FSA, EA, FCA, MAAA, PhD

BJW/BBM:sc  
Enclosures

# Public Employees Police and Fire Plan of Minnesota

## Executive Summary

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**Requested By:** Mr. Doug Anderson, Executive Director  
Public Employees Retirement Association of Minnesota

**Date:** July 14, 2020

**Submitted By:** Bonita J. Wurst, ASA, EA, FCA, MAAA and Brian B. Murphy, FSA, EA, FCA, MAAA, PhD  
Gabriel, Roeder, Smith & Company

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This report contains an actuarial valuation of proposed changes in actuarial assumptions for the Public Employees Police and Fire Plan. Please see our report, *Public Employees Police and Fire Plan of Minnesota 4-Year Experience Study*, dated July 14, 2020, for a full description of the proposed changes.

Bonita J. Wurst and Brian B. Murphy are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

**The date of the valuation was June 30, 2019.** This means that the results of the supplemental valuations indicate what the June 30, 2019 valuation would have shown if the proposed assumptions had been in effect on that date. Supplemental valuations do **not** predict the result of future actuarial valuations. Rather, supplemental valuations give an indication of the probable long-term cost of the **assumption change only** without comment on the complete end result of the future valuations.

Unless noted otherwise, data, plan provisions and actuarial methods were consistent with those used in the regular actuarial valuation of the PERA PEPFP on the valuation date as prescribed by Minnesota Statutes Section 356.215, the requirements of the Standards for Actuarial Work established by the Legislative Commission on Pensions and Retirement (LCPR) and the Trustees for the June 30, 2019 PERA PEPFP Valuation.

This report does not reflect the recent and still developing impact of COVID-19, which is likely to influence demographic experience and economic expectations, at least in the short term. We will continue to monitor these developments and their impact on retirement plans.

Results in this report are shown on an Actuarial Value of Assets (AVA) basis.

## Public Employees Police and Fire Plan of Minnesota Calculations as of June 30, 2019

A brief summary of the data, as of June 30, 2019, used in this valuation is presented below:

<b>Active Members</b>			
<b>Number</b>	<b>Projected Annual Earnings</b>	<b>Average in Years</b>	
		<b>Age</b>	<b>Service</b>
11,763	\$1,037,888,000	40.4	12.4

<b>Retired Members</b>		<b>Deferred Vested Members</b>		<b>Non-Vested Members</b>	
<b>Number</b>	<b>Average Annual Benefits</b>	<b>Number</b>	<b>Average Annual Benefits*</b>	<b>Number</b>	<b>Average Member Contributions*</b>
11,031	\$50,614	1,620	\$20,513	1,145	\$2,970

*\* Reflects 33% Combined Service Annuity load for Deferred Vested members and 2% Combined Service Annuity load for Non-Vested members.*

# Public Employees Police and Fire Plan of Minnesota

## Step 1 – Change Mortality Assumptions

### Calculations as of June 30, 2019

Recently, the Society of Actuaries published a mortality study that was specific to public sector retirement systems. This is a very comprehensive study and there are numerous mortality tables created for each classification of employee (General members, Public Safety, Teachers, Survivors, Juvenile, headcount-weighted, benefit-weighted, above median income, below median income). One of the key findings of the study is that there is a high correlation between longevity and income and education. Consistent with the SOA study, PEPFP members with higher benefits generally appear to experience longer lifespans, resulting in lower mortality rates.

Fully generational tables, which are utilized for the PERA valuations, help take into account future improvements in mortality that are expected to occur. The Society of Actuaries updates the projection scale annually and the latest published table is called the MP-2019 Projection Scale.

#### **Present Mortality Assumptions:**

- Healthy pre-retirement: RP-2014 employee generational mortality table projected with mortality improvement scale MP-2018 from a base year of 2006.
- Healthy post-retirement: RP-2014 annuitant generational mortality table projected with mortality improvement scale MP-2018 from a base year of 2006. Male rates are adjusted by a factor of 0.96.
- Disabled: RP-2014 annuitant generational mortality table projected with mortality improvement scale MP-2018 from a base year of 2006. Male rates are adjusted by a factor of 0.96.

#### **Proposed Mortality Assumptions:**

- Healthy pre-retirement: Pub-2010 Public Safety Employee Mortality Tables, adjusted for mortality improvements using projection scale MP-2019.
- Healthy post-retirement: Pub-2010 Healthy Retired Public Safety Mortality Tables, adjusted for mortality improvements using projection scale MP-2019. Male rates are multiplied by a factor of 0.98.
- Disabled: Pub-2010 Public Safety Disabled Retiree Mortality Tables, adjusted for mortality improvements using projection scale MP-2019. Male rates are multiplied by a factor of 1.05.

# Public Employees Police and Fire Plan of Minnesota

## Step 1 – Change Mortality Assumptions

### Calculations as of June 30, 2019

#### Actuarial Statement

The financial effect of the proposal is shown below:

	Valuation Baseline	Update Mortality	Change from Baseline
Normal Cost Rate, % of Pay	20.9%	21.0%	0.1%
Amortization of Unfunded Accrued Liability, % of Pay	7.2%	7.4%	0.2%
Expenses, % of Pay	0.1%	0.1%	0.0%
Total Required Contribution, % of Pay	28.2%	28.5%	0.3%
Actuarial Accrued Liability, 000s	\$9,909,153	\$9,944,210	\$35,057
Funded Ratio, AVA Basis	87.4%	87.1%	(0.3%)

# Public Employees Police and Fire Plan of Minnesota

## Step 2 – Change Other Demographic Assumptions

### Calculations as of June 30, 2019

Our report, the *Public Employees Police and Fire Plan of Minnesota 4-Year Experience Study*, dated July 14, 2020, contained several recommended changes to demographic assumptions, including changes to retirement, withdrawal and disability rates, the assumed percent married for female new retirees and form of payment elections.

**Present Demographic Assumptions:** See the *Public Employees Retirement Association of Minnesota Public Employees Police and Fire Plan Actuarial Valuation Report as of July 1, 2019*, dated November 14, 2019, for a complete description of the present demographic assumptions.

**Proposed Demographic Assumptions:** Change demographic assumptions as follows (please see our experience study report noted above for a full description of the proposed assumptions):

- Retirement:
  - Slight adjustments in assumed unreduced retirements (i.e., Normal Retirement), resulting in slightly more projected normal retirements in total.
  - Lower early retirement rates at ages 50-53, resulting in fewer projected early retirements in total.
  
- Withdrawal:
  - Proposed rates are service-based.
  - Generally, proposed rates are higher than current rates, especially for early years of service.
  
- Disability:
  - Increased rates of disability for ages 25-44 and decreased rates of disability for ages 50+.
  - Extend the disability incidence assumption to the earlier of age 55 with 20 years of service or age 70.
  - Overall, proposed rates result in more projected disabilities.
  
- Form of Payment:
  - Minor changes to form of payment and percent married assumptions.

# Public Employees Police and Fire Plan of Minnesota

## Step 2 – Change Other Demographic Assumptions

### Calculations as of June 30, 2019

#### Actuarial Statement

The financial effect of the proposal is shown below:

	Valuation Baseline	Updated Mortality & Demographic Assumptions	Change from Baseline
Normal Cost Rate, % of Pay	20.9%	21.5%	0.6%
Amortization of Unfunded Accrued Liability, % of Pay	7.2%	7.4%	0.2%
Expenses, % of Pay	0.1%	0.1%	0.0%
Total Required Contribution, % of Pay	28.2%	29.0%	0.8%
Actuarial Accrued Liability, 000s	\$9,909,153	\$9,941,500	\$32,347
Funded Ratio, AVA Basis	87.4%	87.1%	(0.3%)

# Public Employees Police and Fire Plan of Minnesota

## Step 3 – Change Merit and Seniority / Payroll Growth Increase Assumptions

### Calculations as of June 30, 2019

Pay increases granted to active members typically consist of two pieces:

- An across-the-board, economic type of increase granted to most or all members of the group. This increase is typically tied to inflation or cost-of-living changes and is known as the payroll growth assumption, and
- An increase as a result of merit and seniority. This increase is typically related to performance of an individual and includes promotions and increased years of experience.

Our report, the *Public Employees Police and Fire Plan of Minnesota 4-Year Experience Study*, dated July 14, 2020, contained recommended changes to both the payroll growth assumption and merit and seniority increase assumptions:

- Lower the price inflation assumption from 2.50% to 2.25%.
- Maintain the current wage inflation assumption of 0.75%. When combined with the change in price inflation assumption, the assumed growth in payroll is reduced, from 3.25% to 3.00%
- Change the assumed merit and seniority increase rates. In general, the proposed merit and seniority rates are approximately 24 basis points lower in total than the current rates, with the most significant changes to assumed rates at the beginning of a member's career. When combined with the decrease in payroll growth assumption, the overall result is gross salary increase rates that are 49 basis points lower than the current assumption.

**Public Employees Police and Fire Plan of Minnesota**  
**Step 3 – Change Merit and Seniority / Payroll Growth Increase**  
**Assumptions**  
**Calculations as of June 30, 2019**

Proposed Salary Increase Assumptions:

Year	Gross Salary %	
	2019 Valuation	Proposed
1	12.25%	11.75%
2	10.50%	9.25%
3	8.75%	8.00%
4	7.75%	7.00%
5	6.25%	5.50%
6	5.75%	4.80%
7	5.25%	4.60%
8	5.00%	4.30%
9	4.75%	4.10%
10	4.50%	4.00%
11	4.25%	3.90%
12	4.15%	3.80%
13	4.05%	3.70%
14	3.95%	3.60%
15	3.85%	3.50%
16	3.75%	3.50%
17	3.75%	3.50%
18	3.75%	3.50%
19	3.75%	3.40%
20	3.75%	3.40%
21	3.65%	3.40%
22	3.55%	3.30%
23	3.45%	3.15%
24	3.35%	3.00%
<b>25+</b>	<b>3.25%</b>	<b>3.00%</b>

# Public Employees Police and Fire Plan of Minnesota

## Step 3 – Change Merit and Seniority / Payroll Growth Increase

### Assumptions

### Calculations as of June 30, 2019

#### Actuarial Statement

The financial effect of the proposal is shown below:

	Valuation Baseline	Updated Mortality, Demographic & Economic Assumptions	Change from Baseline
Normal Cost Rate, % of Pay	20.9%	20.7%	-0.2%
Amortization of Unfunded Accrued Liability, % of Pay	7.2%	7.4%	0.2%
Expenses, % of Pay	0.1%	0.1%	0.0%
Total Required Contribution, % of Pay	28.2%	28.2%	0.0%
Actuarial Accrued Liability, 000s	\$9,909,153	\$9,910,018	\$865
Funded Ratio, AVA Basis	87.4%	87.4%	-

## Public Employees Police and Fire Plan of Minnesota

### Steps 1-3 – All Changes

### Calculations as of June 30, 2019

A step-by-step summary of the changes due to the mortality assumption, other demographic assumptions and the economic assumption changes are summarized below:

	Valuation Baseline	Update Mortality	Add Changes to Demographic Assumptions	Add Changes to Economic Assumptions
Normal Cost Rate, % of Pay	20.9%	21.0%	21.5%	20.7%
Amortization of Unfunded Accrued Liability, % of Pay	7.2%	7.4%	7.4%	7.4%
Expenses, % of Pay	0.1%	0.1%	0.1%	0.1%
Total Required Contribution, % of Pay	28.2%	28.5%	29.0%	28.2%
Actuarial Accrued Liability, 000s	\$9,909,153	\$9,944,210	\$9,941,500	\$9,910,018
Funded Ratio, AVA Basis	87.4%	87.1%	87.1%	87.4%

It is important to remember that the 2019 General Plan experience study also showed that the probability of achieving the 7.5% return assumption is less than 50%. Therefore, although the required contribution rate is approximately the same as a result of this experience study and a sufficiency will appear to continue, it is important that the statutory rate be maintained at least at its present level.

# Public Employees Police and Fire Plan of Minnesota

## Calculations as of June 30, 2019

### Comments

**Comment 1** — The calculations are based upon assumptions regarding future events, which may or may not materialize. They are also based upon plan provisions that are outlined in this report. If you have reason to believe that the assumptions that were used are unreasonable, that the plan provisions are incorrectly described, that important plan provisions relevant to this proposal are not described, or that conditions have changed since the calculations were made, you should contact the author(s) of this report prior to relying on information in the report.

**Comment 2** — If you have reason to believe that the information provided in this report is inaccurate, or is in any way incomplete, or if you need further information in order to make an informed decision on the subject matter of this report, please contact the authors of the report prior to making such decision.

**Comment 3** — In the event that more than one change is being considered, it is very important to remember that the results of separate actuarial valuations cannot generally be added together to produce a correct estimate of the combined effect of all of the changes. The total can be considerably greater than the sum of the parts due to the interaction of various plan provisions with each other, and with the assumptions that must be used.

**Comment 4** — The reader of this report should keep in mind that actuarial calculations are mathematical estimates based on current data and assumptions about future events (which may or may not materialize). Please note that actuarial calculations can and do vary from one valuation year to the next, sometimes significantly if the group valued is very small (less than 30 lives). As a result, the cost impact of a benefit change may fluctuate over time, as the demographics of the group changes.

**Comment 5** — Review of the investment return assumption and actuarial methods is outside the scope of this experience study. Please refer to GRS' General Employees Retirement Plan experience study dated June 27, 2019. This report concluded that the current investment return assumption was within a reasonable range as of the date of the report, but that a rate near the median, such as 7.0%, would be likely to be sustainable for a longer period. It is important to note that, by lowering the assumed rate of inflation but not the assumed investment return rate, the investment return assumptions are actually more optimistic than before because the assumed real rate of return is higher than previously assumed. The 7.5% investment return assumption is required per Minnesota Statutes. If the investment return assumption is found to be out of compliance with Actuarial Standards, we would be required to issue a qualified report.

**Comment 6** — Early retirement benefits were changed effective June 30, 2014 and phased in for retirements prior to July 1, 2019. These changes may impact retirement behavior in the future and will be analyzed in the next experience study. Our recommendation to lower early retirement rates is consistent with the expected behavior changes.

**Comment 7** — The recommended change to the mortality assumption may result in a change to the plan's actuarially equivalent factors. An update to these factors has not been reflected in this study.

# Public Employees Police and Fire Plan of Minnesota Calculations as of June 30, 2019

## Comments (Concluded)

**Comment 8** — We have provided this analysis in the same format as that used when plan or assumption changes are considered by the Trustees. For any legislative proposals, it may be necessary to follow up with a more in-depth analysis to comply with the *Standards for Actuarial Work*. We will provide the additional information upon request.

**Comment 9** — Please see our report, the *General Employees Retirement Plan of Minnesota 4-Year Experience Study*, dated June 27, 2019, for recommended changes to the Standards for Actuarial Work.