

**Appendix A**  
**to the Standards for Actuarial Work**

**ACTUARIAL ASSUMPTIONS**

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Updated August 25, 2023

## Minnesota State Retirement System (MSRS) Plans

### MSRS General Employees Retirement Plan

Update approved by the Commission on March 3, 2020; effective July 1, 2020.

Inflation 2.25% per year

Payroll growth 3.00% per year

Salary increases/  
Merit & seniority  
pay increases Reported salary at valuation date increased according to the rate table, to current fiscal year and annually for each future year. Prior fiscal year salary is annualized for members with less than one year of service during the year.

Year	Salary Increase	Merit & Seniority Pay Increase
1	13.00%	10.00%
2	9.00	6.00
3	5.80	2.80
4	5.40	2.40
5	5.00	2.00
6	4.90	1.90
7	4.80	1.80
8	4.60	1.60
9	4.50	1.50
10	4.20	1.20
11	4.10	1.10
12	4.00	1.00
13	3.90	0.90
14	3.80	0.80
15	3.70	0.70
16	3.60	0.60
17	3.50	0.50
18	3.50	0.50
19	3.50	0.50
20	3.40	0.40
21	3.30	0.30
22	3.30	0.30
23	3.20	0.20
24	3.20	0.20
25	3.20	0.20
26	3.20	0.20
27	3.10	0.10
28	3.10	0.10
29+	3.00	0.00

#### Mortality rates

Active  
*healthy pre-retirement* Pub-2010 General Employee Mortality Table, projected with mortality improvement scale MP-2018. Rates are multiplied by a factor of 0.97 for males and 1.06 for females.

Retiree  
*healthy post-retirement* Pub-2010 General Retired Mortality Table, projected with mortality improvement scale MP-2018. Rates are multiplied by a factor of 1.04 for males and 1.10 for females.

Disabled Pub-2010 General/Teacher Disabled Retiree Mortality Table, projected with mortality improvement scale MP-2018. Rates are set forward two years for males and set forward five years for females.

## Minnesota State Retirement System (MSRS) Plans

### MSRS State Patrol Retirement Plan

Update approved by the Commission on February 23, 2021; effective July 1, 2021.

Inflation 2.25% per year

Payroll growth 3.00% per year

Salary increases/  
Merit & seniority  
pay increases Reported salary at valuation date increased according to the rate table, to current fiscal year and annually for each future year. Prior fiscal year salary is annualized for members with less than one year of service during the year.

Year	Salary Increase	Merit & Seniority Pay Increase
1	12.50%	9.50%
2	8.50	5.50
3	7.50	4.50
4	7.25	4.25
5	7.00	4.00
6	6.75	3.75
7	6.50	3.50
8	5.50	2.50
9	5.00	2.00
10	4.50	1.50
11	4.25	1.25
12	4.00	1.00
13	4.00	1.00
14	4.00	1.00
15	4.00	1.00
16	3.75	0.75
17	3.50	0.50
18	3.50	0.50
19	3.50	0.50
20	3.50	0.50
21	3.40	0.40
22	3.30	0.30
23	3.20	0.20
24	3.10	0.10
25+	3.00	0.00

#### Mortality rates

Active  
*healthy pre-  
retirement* Pub-2010 General Employee Mortality Table, adjusted for mortality improvements using projection scale MP-2019.

Retiree  
*healthy post-  
retirement* Pub-2010 Healthy Retired General Mortality Table, adjusted for mortality improvements using projection scale MP-2019.

Disabled Pub-2010 General Disabled Retiree Mortality Table, adjusted for mortality improvements using projection scale MP-2019.

## Minnesota State Retirement System (MSRS) Plans

### MSRS Correctional State Employees Retirement Plan

Update approved by the Commission on February 23, 2021; effective July 1, 2021.

Inflation 2.25% per year

Payroll growth 3.00% per year

Salary increases/  
Merit & seniority  
pay increases Reported salary at valuation date increased according to the rate table, to current fiscal year and annually for each future year. Prior fiscal year salary is annualized for members with less than one year of service during the year.

Year	Salary Increase	Merit & Seniority Pay Increases
1	11.50%	8.50%
2	7.00	4.00
3	5.00	2.00
4	5.00	2.00
5	4.75	1.75
6	4.75	1.75
7	4.75	1.75
8	4.75	1.75
9	4.50	1.50
10	4.50	1.50
11	4.50	1.50
12	4.50	1.50
13	4.25	1.25
14	4.00	1.00
15	3.75	0.75
16	3.75	0.75
17	3.75	0.75
18	3.50	0.50
19	3.50	0.50
20	3.50	0.50
21	3.25	0.25
22	3.25	0.25
23	3.25	0.25
24	3.25	0.25
25+	3.00	0.00

#### Mortality rates

Active  
*healthy pre-  
retirement* Pub-2010 General Employee Mortality Table, adjusted for mortality improvements using projection scale MP-2019.

Retiree  
*healthy post-  
retirement* Pub-2010 Healthy Retired General Mortality Table, adjusted for mortality improvements using projection scale MP-2019.

Disabled Pub-2010 General Disabled Retiree Mortality Table, adjusted for mortality improvements using projection scale MP-2019.

## **Minnesota State Retirement System (MSRS) Plans**

### MSRS Legislators Retirement Plan

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*Update approved by the Commission on February 23, 2021; effective July 1, 2021.*

Inflation	2.25% per year
Payroll growth	N/A
Salary increases	4.25% per year
Merit & seniority pay increases	N/A
Mortality rates	
Active <i>healthy pre-retirement</i>	Pub-2010 General Employee Mortality Table, projected with mortality improvement scale MP-2018. Rates are multiplied by a factor of 0.97 for males and 1.06 for females.
Retiree <i>healthy post-retirement</i>	Pub-2010 General Retired Mortality Table, projected with mortality improvement scale MP-2018. Rates are multiplied by a factor of 1.04 for males and 1.10 for females.

### MSRS Judges Retirement Plan

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*Update approved by the Commission on February 23, 2021; effective July 1, 2021.*

Inflation	2.25% per year
Payroll growth	2.5% per year
Salary increases	2.5% per year
Merit & seniority pay increases	None
Mortality rates	
Active <i>healthy pre-retirement</i>	Pub-2010 General Employee Mortality Table, adjusted for mortality improvements using projection scale MP-2019.
Retiree <i>healthy post-retirement</i>	Pub-2010 Healthy Retired General Mortality Table, adjusted for mortality improvements using projection scale MP-2019.
Disabled	Pub-2010 General Disabled Retiree Mortality Table, adjusted for mortality improvements using projection scale MP-2019.

## **Public Employees Retirement Association (PERA) Plans**

### PERA General Employees Retirement Plan

*Update approved by the Commission on March 3, 2020; effective July 1, 2020.*

Inflation 2.25% per year

Payroll growth 3.00% per year

Salary increases/  
Merit & seniority  
pay increases Reported salary at valuation date increased according to the rate table, to current fiscal year and annually for each future year. Prior fiscal year salary is annualized for members with less than one year of service earned during the year.

Year	Salary Increase	Merit & Seniority Pay Increase
1	10.25%	7.25%
2	7.25	4.25
3	6.00	3.00
4	5.50	2.50
5	5.00	2.00
6	4.70	1.70
7	4.50	1.50
8	4.40	1.40
9	4.30	1.30
10	4.20	1.20
11	4.00	1.00
12	3.90	0.90
13	3.80	0.80
14	3.70	0.70
15	3.65	0.65
16	3.60	0.60
17	3.50	0.50
18	3.40	0.40
19	3.40	0.40
20	3.40	0.40
21	3.30	0.30
22	3.30	0.30
23	3.30	0.30
24	3.20	0.20
25	3.20	0.20
26	3.10	0.10
27+	3.00	0.00

#### Mortality rates

Active  
*healthy pre-retirement* Pub-2010 General Employee Mortality Table, projected with mortality improvement scale MP-2019. Rates are multiplied by a factor of 1.07 for males and 0.90 for females.

Retiree  
*healthy post-retirement* Pub-2010 Healthy General Retired Mortality Table, projected with mortality improvement scale MP-2019. Rates are multiplied by a factor of 1.02 for males and by a factor of 0.90 for females.

Disabled Pub-2010 General/Teacher Disabled Retiree Mortality Table, projected with mortality improvement scale MP-2019. Rates are set forward two years for males and set forward four years for females.

## **Public Employees Retirement Association (PERA) Plans**

PERA Public Employees Police and Fire Retirement Plan

*Update approved by the Commission on February 23, 2021; effective July 1, 2021.*

Inflation 2.25% per year

Payroll growth 3.00% per year

Salary increases/  
Merit & seniority  
pay increases Reported salary at valuation date increased according to the rate table, to current fiscal year and annually for each future year. Prior fiscal year salary is annualized for members with less than one year of service earned during the year.

<u>Year</u>	<u>Salary Increase</u>	<u>Merit &amp; Seniority Pay Increase</u>
1	11.75%	8.75%
2	9.25	6.25
3	8.00	5.00
4	7.00	4.00
5	5.50	2.50
6	4.80	1.80
7	4.60	1.60
8	4.30	1.30
9	4.10	1.10
10	4.00	1.00
11	3.90	0.90
12	3.80	0.80
13	3.70	0.70
14	3.60	0.60
15	3.50	0.50
16	3.50	0.50
17	3.50	0.50
18	3.50	0.50
19	3.40	0.40
20	3.40	0.40
21	3.40	0.40
22	3.30	0.30
23	3.15	0.15
24+	3.00	0.00

### Mortality rates

Active  
*healthy pre-  
retirement* Pub-2010 Public Safety Employee Mortality Table, adjusted for mortality improvements using projection scale MP-2019.

Retiree  
*healthy post-  
retirement* Pub-2010 Healthy Retired Public Safety Mortality Table, adjusted for mortality improvements using projection scale MP-2019. Male rates are adjusted by a factor of 0.98.

Disabled Pub-2010 Public Safety Disabled Retiree Mortality Table, adjusted for mortality improvements using projection scale MP-2019. Male rates are adjusted by a factor of 1.05.

## **Public Employees Retirement Association (PERA) Plans**

### PERA Local Government Correctional Service Retirement Plan

*Update approved by the Commission on February 23, 2021; effective July 1, 2021.*

Inflation 2.25% per year

Payroll growth 3.00% per year

Salary increases/  
Merit & seniority  
pay increases Reported salary at valuation date increased according to the rate table, to current fiscal year and annually for each future year. Prior fiscal year salary is annualized for members with less than one year of service earned during the year.

Age	Salary Increase	Merit & Seniority Pay Increase
<=20	11.00%	8.00%
21	10.50%	7.50
22	10.00%	7.00
23	9.50%	6.50
24	8.50%	5.50
25	7.75%	4.75
26	7.25%	4.25
27	7.00%	4.00
28	6.75%	3.75
29	6.50%	3.50
30	6.00%	3.00
31	5.75%	2.75
32	5.65%	2.65
33	5.60%	2.60
34	5.55%	2.55
35	5.50%	2.50
36	5.35%	2.35
37	5.20%	2.20
38	5.05%	2.05
39	4.90%	1.90
40	4.75%	1.75
41	4.60%	1.60
42	4.45%	1.45
43	4.30%	1.30
44	4.15%	1.15
45	4.00%	1.00
46	3.95%	0.95
47	3.90%	0.90
48	3.85%	0.85
49	3.80%	0.80
50	3.75%	0.75
51	3.70%	0.70
52	3.65%	0.65
53	3.60%	0.60
54	3.55%	0.55
55	3.50%	0.50
56	3.40%	0.40
57	3.30%	0.30

## **Public Employees Retirement Association (PERA) Plans**

### PERA Local Government Correctional Service Retirement Plan

Age	Salary Increase	Merit & Seniority Pay Increase
58	3.20%	0.20
59	3.10%	0.10
60	3.00%	0.00
61	3.00%	0.00
62	3.00%	0.00
63	3.00%	0.00
64	3.00%	0.00
65+	3.00%	0.00

#### Mortality rates

Active  
*healthy pre-retirement* Pub-2010 Public Safety Mortality Table, adjusted for mortality improvements using projection scale MP-2019.

Retiree  
*healthy post-retirement* Pub-2010 Healthy Retired Public Safety Mortality Table, adjusted for mortality improvements using projection scale MP-2019. Male rates are adjusted by a factor of 0.98.

Disabled Pub-2010 Public Safety Disabled Retiree Mortality Table, adjusted for mortality improvements using projection scale MP-2019. Male rates are adjusted by a factor of 1.05.

**Teachers Retirement Association (TRA)**

Update approved by the Commission on March 2, 2020; effective July 1, 2020.

- Inflation 2.5% per year
- Payroll growth 3% per year
- Salary increases Reported salary for prior fiscal year, with new hires annualized, is increased according to the salary increase table shown in the rate table for current fiscal year and annually for each future year. See table of sample rates.

Service	Select Salary Increase Before July 1, 2028	Ultimate Salary Increase After June 30, 2028
1	8.85%	9.25%
2	7.10	7.50
3	6.60	7.00
4	6.35	6.75
5	6.35	6.75
6	6.20	6.60
7	6.05	6.45
8	5.90	6.30
9	5.75	6.15
10	5.60	6.00
11	5.35	5.75
12	5.10	5.50
13	4.85	5.25
14	4.60	5.00
15	4.35	4.75
16	4.10	4.50
17	3.85	4.25
18	3.65	4.05
19	3.55	3.95
20	3.45	3.85
21	3.35	3.75
22	3.25	3.65
23	3.15	3.55
24	3.05	3.45
25	2.95	3.35
26+	2.85	3.25

- Mortality rates
  - Active *healthy pre-retirement* RP-2014 White Collar Employee Mortality Table, male rates set back five years and female rates set back seven years. Generational projection uses the MP-2015 scale.
  - Retiree *healthy post-retirement* RP-2014 White Collar Annuitant Table, projected generationally with the MP-2015 projection scale, male rates set back three years and female rates set back three years, with further adjustments of the rates to fit the actual TRA experience:
    - Male rates under 70 are multiplied by 0.8, while the rates over 70 are multiplied by 1.478, with smoothing applied around age 70.
    - Female rates under 75 are multiplied by 0.85, while the rates over 75 are multiplied by 1.362, with smoothing applied around age 75.
 Generational projection uses the MP-2015 improvement scale.
  - Disabled RP-2014 Disabled Retiree Mortality Table, without adjustment or generational improvement.

**St. Paul Teachers Retirement Fund Association (SPTRFA)**

Update approved by the Commission on April 17, 2023; effective July 1, 2023.

Inflation 2.5% per year  
 Payroll growth 2.5% per year

Salary increases/ Merit & seniority pay increases	Year	Salary Increase	Merit & Seniority Pay Increases
	1	8.00%	5.50%
	2	6.75	4.25
	3	6.50	4.00
	4	6.25	3.75
	5	6.00	3.50
	6	5.75	3.25
	7	5.50	3.00
	8	5.25	2.75
	9	5.00	2.50
	10	4.75	2.25
	11	4.50	2.00
	12	4.25	1.75
	13	4.00	1.50
	14	3.75	1.25
	15	3.50	1.00
	16	3.40	0.90
	17	3.30	0.80
	18	3.20	0.70
	19	3.10	0.60
	20	2.90	0.40
	21	2.70	0.20
	22+	2.50	0.00

Mortality rates

Active *healthy pre-retirement*

Males: Pub-2010 Male Healthy Teacher Employee Mortality Table, adjusted for mortality improvements using projection scale MP-2021 from 2010.

Females: Pub-2010 Female Healthy Teacher Employee Mortality Table, adjusted for mortality improvements using projection scale MP-2021 from 2010.

Retiree *healthy and disabled*

Males: Pub-2010 Male Healthy Teacher Retiree Mortality Table, adjusted for mortality improvements using projection scale MP-2021 from 2010. Rates are multiplied by a factor of 1.03.

Females: Pub-2010 Female Healthy Teacher Retiree Mortality Table, adjusted for mortality improvements using projection scale MP-2021 from 2010. Rates are multiplied by a factor of 1.03.