



State of Alaska

Public Employees' Retirement System (PERS)

Teachers' Retirement System (TRS)

Public Employees' Defined Contribution Retirement System (PERS DCR)

Teachers' Defined Contribution Retirement System (TRS DCR)

Judicial Retirement System (JRS)

National Guard and Naval Militia Retirement System (NGNMRS)

Actuarial Experience Study for the Period
July 1, 2017 to June 30, 2021

July 2022



July 15, 2022

State of Alaska
The Alaska Retirement Management Board
The Department of Administration, Division of Retirement and Benefits
P.O. Box 110203
Juneau, AK 99811-0203

Dear Members of The Alaska Retirement Management Board and The Department of Administration:

We were engaged by the Alaska Retirement Management Board (ARMB) to study the economic and demographic experience of active and retired members of the State of Alaska Public Employees' Retirement System (PERS), Teachers' Retirement System (TRS), Public Employees' Defined Contribution Retirement System (PERS DCR), Teachers' Defined Contribution Retirement System (TRS DCR), Judicial Retirement System (JRS), and National Guard and Naval Militia Retirement System (NGNMRS) for the 4-year period July 1, 2017 to June 30, 2021¹.

Alaska Statutes 37.10.220(a)(9) require an experience study of the economic and demographic experience of active and retired members of the State of Alaska retirement Systems be performed not less than once every 4 years (except for healthcare assumptions which are to be reviewed annually as part of the annual actuarial valuations). The results of the experience study provide information to assist the ARMB in assessing whether to adopt new actuarial assumptions for measuring the Systems' pension and postretirement healthcare benefit obligations.

This report (a) provides details of the Systems' experience for the period July 1, 2017 to June 30, 2021, (b) outlines proposed actuarial assumptions for the ARMB to consider adopting effective for the June 30, 2022 actuarial valuations, and (c) illustrates the estimated cost impacts of the assumptions adopted by the ARMB at the June 2022 meeting. The experience study was prepared in accordance with generally accepted actuarial principles and procedures.

The ARMB and staff of the State of Alaska may use this report for the review of the experience of the Systems and for the assessment of the estimated cost impacts of assumption changes. Use of this report for any other purpose or by anyone other than the ARMB and State of Alaska staff may not be appropriate and may result in mistaken conclusions because of failure to understand applicable assumptions, methods, or inapplicability of the report for that purpose. Because of the risk of misinterpretation of results, you should ask Buck to review any statement you wish to make on the results contained in this report. Buck will not accept any liability for any such statement made without the review by Buck.

¹ The experience of JRS was not studied due to the small size of the plan and a lack of statistically significant data.

Where presented, references to “funded ratio” and “unfunded actuarial accrued liability” typically are measured on an actuarial value of assets basis. It should be noted that the same measurements using market value of assets would result in different funded ratios and unfunded actuarial accrued liabilities. Moreover, the funded ratio presented is appropriate for evaluating the need and level of future contributions but makes no assessment regarding the funded status of the Systems if the Systems were to settle (i.e., purchase annuities) for a portion or all of their liabilities.

Actuarial Standard of Practice No. 56 (ASOP 56) provides guidance to actuaries when performing actuarial services with respect to designing, developing, selecting, modifying, using, reviewing, or evaluating models. For this report, Buck used the following:

- internally developed and third-party models to compare actual versus assumed experience and to determine proposed assumptions for valuing the liabilities in the third-party software,
- models to analyze investment returns and inflation rates,
- third-party software to calculate each system’s liabilities and costs based on current and proposed assumptions, and
- internally developed models that apply applicable funding methods and policies to the liabilities derived from the output of the third-party software and other inputs, such as plan assets and contributions, to determine contribution rates.

Buck has an extensive review process for annual valuations in which the results of the liability calculations are checked using detailed life sample output, changes from year to year are summarized by source, and significant deviations from expectations are investigated. Other outputs and the internal models are similarly reviewed in detail and at a higher level for accuracy, reasonability, and consistency with prior results. The models used for annual valuations are used for this report, and any adaptations for this report are checked and reviewed by experts within Buck who are familiar with applicable funding methods, as well as the manner in which the model generates its output. If significant changes are made to the internal models, extra checking and review are completed.

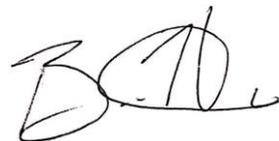
The experience study was performed under the overall direction of David Kershner, who meets the Qualifications of the American Academy of Actuaries to render the actuarial opinions herein. He is a Fellow of the Society of Actuaries, an Enrolled Actuary, a Member of the American Academy of Actuaries, and a Fellow of the Conference of Consulting Actuaries.

We would be pleased to discuss the results shown in this report at your convenience. We can be reached at (602) 803-6174 (David), (260) 423-1072 (Brett), (215) 586-1227 (Steve), and (917) 891-1286 (Stuart) to answer any questions about the report.

Respectfully submitted,



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The undersigned actuary is an Associate of the Society of Actuaries, an Enrolled Actuary, a Member of the American Academy of Actuaries, and a Fellow of the Conference of Consulting Actuaries. He is responsible for all healthcare-related assumptions, and hereby affirms his qualification to render opinions in such matters in accordance with the Qualification Standards of the American Academy of Actuaries.



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The undersigned actuary is a Fellow of the Society of Actuaries, an Enrolled Actuary, a Member of the American Academy of Actuaries, and a Fellow of the Conference of Consulting Actuaries. He is responsible for all investment-related assumptions, and hereby affirms his qualification to render opinions in such matters in accordance with the Qualification Standards of the American Academy of Actuaries.



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Introduction

Assumptions are a key element in an actuarial valuation. In order to perform an actuarial valuation of the assets and liabilities of the Systems, the actuary must adopt assumptions with respect to each of the following:

- Investment return on the Systems' funds over the period benefits to current members will be paid, including inflation during the same period.
- The relative increases in the salary of a member from the date of the valuation to the date of separation from active service.
- The expected mortality rates among retired persons (healthy and disabled).
- The probabilities of members separating from active service due to termination of employment, death, and disability.
- The ages at which members will retire.
- The rate at which separating members will elect to receive a refund of their contributions.
- The number of dependents, marriage at retirement, age of spouse at retirement, etc.
- Assumptions specific to postretirement healthcare benefits.

The actuarial valuation is the method by which the annual funding requirement is determined. Actuarial assumptions do not directly impact the total cost of a retirement program, but they are a key variable in determining the timing of that cost and the allocation of the cost between current and future contributions. For actuarial valuations, the actuary should select reasonable assumptions that share the following characteristics:

- they are appropriate for purpose of the measurement,
- they reflect the actuary's professional judgement,
- they take into account current and historical data that is relevant to selecting the assumption for the measurement date, to the extent such relevant data is reasonably available,
- they reflect the actuary's estimate of future experience, the actuary's observation of the estimates inherent in market data (if any), or a combination thereof, and
- they are expected to have no significant bias.

In accordance with Alaska Statutes 37.10.220(a)(9), the Alaska Retirement Management Board (ARMB) requests an actuarial experience study at least once every 4 years. The purpose of the current study is to measure actual experience under the Systems during the 4-year period July 1, 2017 to June 30, 2021, compare this experience to the current assumptions, and propose changes to the assumptions to better match future expected experience. The last experience study was performed in 2018 based on experience during the 4-year period July 1, 2013 to June 30, 2017.

Methodology

Data is supplied annually to the actuary by the State of Alaska Department of Administration, Retirement and Benefits Division for purposes of the annual actuarial valuations. This data includes demographic characteristics of current and past members, including any changes in the members' status or relationship with the Systems. The data also includes a salary history for active members. These demographic changes and salary history are the basis for the experience study.

Tabulations were compiled that show the distribution by age and/or service of the liability (Actuarial Accrued Liability) of members who were exposed during the 4-year period to the events of termination of employment, retirement, death, and disability. A member is considered exposed to an event if he or she meets the age and/or service requirements for that event. The tabulations for mortality, retirement, and ultimate withdrawal (for PERS, TRS and NGNMRS) were weighted by the liability for each member. All other assumptions were weighted by headcounts. The assumed rates of occurrence for each event, which are currently used in the annual actuarial valuations, were then applied to the members exposed to determine the liability of members expected to separate from service for each category.

The liability of members who actually separated from service due to termination of employment, retirement, death, or disability were then compared to the expected liability. Data may be grouped by age and/or service increments to provide statistically significant results.

The expected and actual salaries as of the end of each year were compared to actual salaries as of the end of each previous year. These comparisons produce average annual increases in both expected and actual salaries for the 4-year period.

The results of the experience study are the basis for the actuary's proposed assumption changes. The actuary must also take into account any benefit changes that occurred during the experience period. If a change in benefit levels or benefit eligibility was made during the experience period, the actuary should consider the impact the change may have on the data used in the analysis. There have been no significant changes in the Systems' benefits during the 4-year period ending June 30, 2021.

In addition to comparing actual to expected experience and adjusting the results for special plan benefits and economic conditions, the actuary must consider future expectations of experience due to future plan changes or expected changes in the economy.

To summarize, the actuary's proposed assumptions are based on the following:

- comparison of actual to expected experience,
- adjustment for special plan benefits and past economic conditions, and
- adjustment for future plan changes and economic conditions.

Actuarial Standards of Practice

The Actuarial Standards Board issues Actuarial Standards of Practice that all actuaries must follow. The Actuarial Standards of Practice that are applicable to the experience study include No. 4 (Measuring Pension Obligations and Determining Pension Plan Costs or Contributions), No. 6 (Measuring Retiree Group Benefit Obligations), No. 27 (Selection of Economic Assumptions for Measuring Pension Obligations), and No. 35 (Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations).

The experience study was performed in accordance with all applicable Actuarial Standards of Practice.

Section 1: Demographic Assumptions

This section compares actual demographic experience during the 4-year period ending June 30, 2021 with expected experience, which is based on the current demographic assumptions that have been in effect since the June 30, 2018 actuarial valuations.

A. Healthy Mortality

The mortality assumption is used to project the life expectancy of active and retired members.

The table below shows the Actuarial Accrued Liability (AAL) for actual and expected deaths of healthy PERS/PERS DCR and TRS/TRS DCR active members during the 4-year period ending June 30, 2021¹.

- “Current expected” means the expected AAL due to deaths during the 4-year period based on the current assumptions.
- “New expected” means the AAL that would have been expected due to deaths during the 4-year period using the proposed assumptions.
- “Actual” means the AAL due to actual deaths that occurred during the 4-year period.

We have also shown the expected, actual, and proposed number of deaths (headcounts) during the 4-year period.

Healthy Mortality (Pre-Commencement)

Group	Actuarial Accrued Liability					Headcounts		
	Current Expected (CE)	Actual (A)	A/CE	New Expected (NE)	A/NE	Current Expected	Actual	New Expected
PERS/PERS DCR								
Male	\$ 30,819,510	\$ 22,408,190	73%	\$ 20,258,000	111%	142	115	100
Female	\$ 15,710,100	\$ 14,786,130	94%	\$ 11,302,560	131%	92	72	68
Total	\$ 46,529,610	\$ 37,194,320	80%	\$ 31,560,560	118%	234	187	168
TRS/TRS DCR								
Male	\$ 6,079,860	\$ 4,216,010	69%	\$ 4,672,350	90%	17	18	14
Female	\$ 7,085,220	\$ 4,130,060	58%	\$ 5,431,930	76%	25	11	20
Total	\$ 13,165,080	\$ 8,346,070	63%	\$ 10,104,280	83%	42	29	34

In 2019, the Society of Actuaries published the results of a major mortality study that was based exclusively on public sector pension plan experience during calendar years 2008-2013. The standard base mortality tables from that study are called “Pub-2010”, with different tables for Teachers, General employees, and Safety employees.

¹ There was insufficient experience for JRS and NGNMRS.

In their Pub-2010 mortality study report dated January 2019, the Society of Actuaries stated “For the measurement of most pension obligations, tables weighted by amount (salary for active employees and benefit amount for those in payment status) generally produce the most appropriate results. On the other hand, headcount-weighted tables might be more appropriate for applications such as the measurement of obligations for retirement programs with benefit structures uncorrelated with income, such as many retiree medical or retiree life insurance programs.” They concluded “Therefore, it would not necessarily be inappropriate – or inconsistent – to use amount-weighted tables to measure pension obligations and the corresponding headcount-weighted tables to measure most postretirement medical obligations, even when the two covered populations are identical.”

The mortality assumption also includes a mortality improvement scale, which projects future changes in mortality rates. Consistent with the 2017 experience study, we are proposing a “generational” mortality improvement scale, which projects future changes in mortality by age and year of birth (those born more recently are expected to live longer). The Society of Actuaries generally publishes annual updates to their mortality improvement scales. The most recently-published generational improvement scale is called “MP-2021”.

The active mortality experience during the 4-year period was not credible. Accordingly, we are proposing the following pre-commencement mortality assumptions based on the Pub-2010 tables with no adjustments:

Group	Employee Base Table	Mortality Improvement
PERS/PERS DCR – Peace/Fire	Pub-2010 Safety	MP-2021
PERS/PERS DCR – Others	Pub-2010 General	MP-2021
TRS/TRS DCR	Pub-2010 Teachers	MP-2021
JRS	Pub-2010 General Above-Median ¹	MP-2021
NGNMRS	Pub-2010 Safety	MP-2021

For pension benefits, we proposed the *amount*-weighted versions of the Pub-2010 tables. For healthcare benefits, we proposed the *headcount*-weighted versions of the Pub-2010 tables. Please note that the pension benefits under NGNMRS do not vary based on the salary of the participant. We considered both versions of the Pub-2010 Safety tables for NGNMRS and concluded that the *amount*-weighted version was a better fit to actual experience.

We proposed annually updating the mortality improvement scale to the most recently published mortality improvement scale as of the valuation date.

¹ Above-Median Income table based on the salary of the active participant.

The table below shows the experience (AAL and headcounts) for actual and expected deaths of healthy PERS/PERS DCR, TRS/TRS DCR, and NGNMRS retired members and beneficiaries during the 4-year period ending June 30, 2021¹.

Healthy Mortality (Post-Commencement)

Group	Actuarial Accrued Liability					Headcounts		
	Current Expected (CE)	Actual (A)	A/CE	New Expected (NE)	A/NE	Current Expected	Actual	New Expected
PERS/PERS DCR – Peace/Fire								
Male	\$ 72,182,220	\$ 68,589,380	95%	\$ 69,014,350	99%	179	200	179
Female	\$ 12,703,620	\$ 9,121,650	72%	\$ 12,346,260	74%	53	54	56
Total	\$ 84,885,840	\$ 77,711,030	92%	\$ 81,360,610	96%	232	254	235
PERS/PERS DCR – Others								
Male	\$ 287,298,460	\$ 269,971,260	94%	\$ 271,510,300	99%	1,243	1,433	1,228
Female	\$ 225,904,001	\$ 208,501,010	92%	\$ 201,831,855	103%	1,548	1,639	1,461
Total	\$ 513,202,461	\$ 478,472,270	93%	\$ 473,342,155	101%	2,791	3,072	2,689
TRS/TRS DCR								
Male	\$ 163,403,440	\$ 146,051,490	89%	\$ 148,610,806	98%	449	445	427
Female	\$ 169,039,290	\$ 137,859,630	82%	\$ 142,778,643	97%	594	550	532
Total	\$ 332,442,730	\$ 283,911,120	85%	\$ 291,389,449	97%	1,043	995	959
NGNMRS								
Male	\$ 161,640	\$ 95,990	59%	\$ 135,330	71%	23	14	20
Female	\$ 18,390	\$ 12,540	68%	\$ 15,860	79%	3	1	2
Total	\$ 180,030	\$ 108,530	60%	\$ 151,190	72%	26	15	22

The retiree/beneficiary mortality experience during the 4-year period was partially credible. Accordingly, we are proposing the following post-commencement mortality assumptions based on the Pub-2010 tables:

Group	Retiree Base Table	Mortality Improvement
PERS/PERS DCR – Peace/Fire	Pub-2010 Safety	MP-2021
PERS/PERS DCR – Others	Pub-2010 General ²	MP-2021
TRS/TRS DCR	Pub-2010 Teachers ³	MP-2021
JRS	Pub-2010 General Above-Median ⁴	MP-2021
NGNMRS	Pub-2010 Safety	MP-2021

¹ There was insufficient experience for JRS.

² 98% male / 106% female for pension, and 101% male / 110% female for healthcare.

³ 97% male / 97% female for pension, and 98% male / 100% female for healthcare.

⁴ Above-Median Income table based on the benefit of the retired participant.

For beneficiaries, the Pub-2010 Contingent Survivor tables will be used¹.

For pension benefits, we proposed the *amount*-weighted versions of the Pub-2010 tables. For healthcare benefits, we proposed the *headcount*-weighted versions of the Pub-2010 tables.

We proposed annually updating the mortality improvement scale to the most recently published mortality improvement scale as of the valuation date.

At the June 2022 meeting, the ARMB adopted our proposed healthy mortality assumptions.

B. Disabled Mortality

The disabled mortality experience during the 4-year period was not credible. Accordingly, we proposed the following disabled mortality assumptions based on the Pub-2010 tables with no adjustments:

Group	Disabled Base Table	Mortality Improvement
PERS/PERS DCR – Peace/Fire	Pub-2010 Safety Disabled Retiree	MP-2021
PERS/PERS DCR – Others	Pub-2010 Non-Safety Disabled Retiree	MP-2021
TRS/TRS DCR	Pub-2010 Non-Safety Disabled Retiree	MP-2021
JRS	Pub-2010 Non-Safety Disabled Retiree	MP-2021
NGNMRS	Pub-2010 Safety Disabled Retiree	MP-2021

For pension benefits, we proposed the *amount*-weighted versions of the Pub-2010 tables. For healthcare benefits, we proposed the *headcount*-weighted versions of the Pub-2010 tables.

We proposed annually updating the mortality improvement scale to the most recently published mortality improvement scale as of the valuation date.

At the June 2022 meeting, the ARMB adopted our proposed disabled mortality assumptions.

C. Termination of Employment

The termination assumption is used to project the ages at which active members are expected to terminate employment.

The current assumptions for termination of employment use a “select and ultimate” table, except for JRS. During the select period (the first few years of a member’s employment), the assumption is based on years of service. After the select period, the assumption is based on age.

Termination rates for participants with less than 5 years of service (PERS) or 8 years of service (TRS) were not studied since these Systems were closed to new entrants as of July 1, 2006. There was insufficient experience for NGNMRS participants with less than 5 years of service. Therefore, we proposed no changes to the select termination rates for PERS, TRS, and NGNMRS.

The following tables show the AAL for actual and expected terminations during the 4-year period ending June 30, 2021².

- “Current expected” means the expected AAL due to terminations during the 4-year period based on the current assumptions.

¹ Adjustments to the Contingent Survivor rates:

- PERS/PERS DCR Others: 102% male / 108% female for pension, and 101% male / 108% female for healthcare.
- TRS/TRS DCR: 100% male / 95% female for pension, and 100% male / 94% female for healthcare.

² For the DCR plans, only headcounts are shown since the experience was analyzed on a headcount basis.

- “New expected” means the AAL that would have been expected due to terminations during the 4-year period using the proposed assumptions.
- “Actual” means the AAL due to actual terminations that occurred during the 4-year period.

We have also shown the expected, actual, and proposed number of terminations (headcounts) during the 4-year period.

Ultimate Period – Liability-Weighted¹

Group	Actuarial Accrued Liability					Headcounts		
	Current Expected (CE)	Actual (A)	A/CE	New Expected (NE)	A/NE	Current Expected	Actual	New Expected
PERS – Peace/Fire								
Male	\$ 27,698,271	\$ 20,852,220	75%	\$ 20,833,538	100%	64	50	48
Female	\$ 6,808,465	\$ 6,168,852	91%	\$ 6,124,034	101%	19	21	17
Total	\$ 34,506,736	\$ 27,021,072	78%	\$ 26,957,572	100%	83	71	65
PERS – Others								
Male	\$ 110,943,964	\$ 107,455,020	97%	\$ 108,330,347	99%	424	487	415
Female	\$ 146,873,743	\$ 143,582,550	98%	\$ 144,045,957	100%	667	819	655
Total	\$ 257,817,707	\$ 251,037,570	97%	\$ 252,376,304	99%	1,091	1,306	1,070
TRS								
Male	\$ 17,620,217	\$ 24,864,606	141%	\$ 24,578,379	101%	56	82	79
Female	\$ 51,008,270	\$ 49,143,677	96%	\$ 49,615,662	99%	183	188	179
Total	\$ 68,628,487	\$ 74,008,283	108%	\$ 74,194,041	100%	239	270	258
PERS DCR – Peace/Fire¹								
Total	n/a	n/a	n/a	n/a	n/a	280	293	291
PERS DCR – Others¹								
Total	n/a	n/a	n/a	n/a	n/a	2,928	3,037	3,086
TRS DCR¹								
Total	n/a	n/a	n/a	n/a	n/a	744	798	795
NGNMRS								
Male	\$ 1,336,522	\$ 1,124,047	84%	\$ 1,136,109	99%	1,115	1,058	912
Female	\$ 372,456	\$ 260,278	70%	\$ 260,752	100%	328	327	250
Total	\$ 1,708,978	\$ 1,384,325	81%	\$ 1,396,861	99%	1,443	1,385	1,162

¹ Experience was analyzed only on a headcount basis for the DCR plans.

Select Period – Headcount-Weighted

Group	Headcounts				
	Current Expected (CE)	Actual (A)	A/CE	New Expected (NE)	A/NE
PERS DCR – Peace/Fire					
< 1 year	116	112	97%	113	99%
1 year	139	119	86%	128	93%
2 years	94	100	106%	100	100%
3 years	77	95	122%	89	107%
4 years	70	80	114%	78	103%
PERS DCR – Others					
< 1 year	1,920	2,097	109%	2,076	101%
1 year	2,934	3,042	104%	3,017	101%
2 years	1,781	1,850	104%	1,818	102%
3 years	1,116	1,199	107%	1,216	99%
4 years	763	914	120%	904	101%
TRS DCR					
< 1 year	21	28	136%	29	97%
1 year	513	618	120%	620	100%
2 years	363	429	118%	425	101%
3 years	276	290	105%	288	101%
4 years	216	262	122%	252	104%
5 years	141	215	153%	194	111%

The current and proposed termination rates are shown in the Appendix.

At the June 2022 meeting, the ARMB adopted our proposed termination assumptions.

D. Retirement

The retirement assumption is used to project the ages at which active members are expected to retire with reduced or unreduced benefits.

The tables below show the AAL for actual and expected retirements of PERS, TRS, and NGNMRS members during the 4-year period ending June 30, 2021.

- “Current expected” means the expected AAL due to retirements during the 4-year period based on the current assumptions.
- “New expected” means the AAL that would have been expected due to retirements during the 4-year period using the proposed assumptions.
- “Actual” means the AAL due to actual retirements that occurred during the 4-year period.

We have also shown the expected, actual, and proposed number of retirements (headcounts) during the 4-year period.

Reduced Retirement

Group	Actuarial Accrued Liability					Headcounts		
	Current Expected (CE)	Actual (A)	A/CE	New Expected (NE)	A/NE	Current Expected	Actual	New Expected
PERS – Peace/Fire								
Male	\$ 13,724,286	\$ 14,039,139	102%	\$ 14,163,543	99%	30	30	31
Female	\$ 2,886,038	\$ 2,819,923	98%	\$ 2,720,982	104%	7	7	7
Total	\$ 16,610,324	\$ 16,859,062	101%	\$ 16,884,525	100%	37	37	38
PERS – Others								
Male	\$ 133,336,153	\$ 160,991,502	121%	\$ 157,441,472	102%	327	360	386
Female	\$ 164,235,503	\$ 178,408,934	109%	\$ 179,148,310	100%	519	553	566
Total	\$ 297,571,656	\$ 339,400,436	114%	\$ 336,589,782	101%	846	913	952
TRS								
Male	\$ 15,625,007	\$ 14,949,949	96%	\$ 14,822,054	101%	41	38	39
Female	\$ 26,743,222	\$ 36,807,324	138%	\$ 35,417,252	104%	77	102	102
Total	\$ 42,368,229	\$ 51,757,273	122%	\$ 50,239,306	103%	118	140	141

Unreduced Retirement

Group	Actuarial Accrued Liability					Headcounts		
	Current Expected (CE)	Actual (A)	A/CE	New Expected (NE)	A/NE	Current Expected	Actual	New Expected
PERS – Peace/Fire								
Male	\$ 249,392,977	\$ 257,818,074	103%	\$ 265,407,687	97%	320	316	339
Female	\$ 40,812,200	\$ 46,089,218	113%	\$ 45,833,259	101%	66	69	73
Total	\$ 290,205,177	\$ 303,907,292	105%	\$ 311,240,946	98%	386	385	412
PERS – Others								
Male	\$ 543,357,869	\$ 621,089,257	114%	\$ 628,289,432	99%	1,230	1,301	1,429
Female	\$ 613,316,864	\$ 667,761,875	109%	\$ 660,317,850	101%	1,757	1,759	1,892
Total	\$1,156,674,733	\$1,288,851,132	111%	\$1,288,607,282	100%	2,987	3,060	3,321
TRS								
Male	\$ 256,879,319	\$ 265,167,602	103%	\$ 267,057,657	99%	429	422	447
Female	\$ 471,730,834	\$ 477,277,372	101%	\$ 467,672,079	102%	874	840	870
Total	\$ 728,610,153	\$ 742,444,974	102%	\$ 734,729,736	101%	1,303	1,262	1,317
NGNMRS								
Male	\$ 3,530,324	\$ 3,599,376	102%	\$ 3,607,241	100%	370	406	391
Female	\$ 547,313	\$ 632,703	116%	\$ 636,262	99%	61	76	74
Total	\$ 4,077,637	\$ 4,232,079	104%	\$ 4,243,503	100%	431	482	465

The current and proposed retirement rates are shown in the Appendix.

At the June 2022 meeting, the ARMB adopted our proposed retirement assumptions.

E. Disability

The disability assumption is used to project the ages at which healthy active members are expected to begin receiving disability benefits.

The disability experience during the 4-year period was not credible. Accordingly, we proposed no changes to the current disability rates for all plans.

At the June 2022 meeting, the ARMB adopted our proposed disability assumptions.

F. Other Demographic Assumptions

Occupational Death and Disability

PERS provides different benefits for members who become disabled or die due to occupational causes. TRS provides different benefits for members who die due to occupational causes.

The table below summarizes the experience for the 4-year period ending June 30, 2021, and the current and proposed assumptions:

	PERS Peace/Fire	PERS Others	TRS
Experience	72%	36%	n/a ¹
Current assumption	75%	40%	15%
Proposed assumption	70%	35%	15%

Spouse Age Difference

The age difference between husbands and wives is used in conjunction with the dependent spouse assumptions to value death benefits, expected optional form of payment elections, and postretirement healthcare benefits. The table below summarizes the experience for the 4-year period ending June 30, 2021, and the current and proposed assumptions.

	PERS Peace/Fire	PERS Others	TRS	JRS
Male Member / Female Spouse				
Experience	2.7 years older	3.5 years older	3.4 years older	2.5 years older
Current assumption	3 years older	3 years older	3 years older	4 years older
Proposed assumption	3 years older	3 years older	3 years older	4 years older
Female Member / Male Spouse				
Experience	2.6 years younger	1.8 years younger	1.7 years younger	4.4 years younger
Current assumption	2 years younger	2 years younger	2 years younger	4 years younger
Proposed assumption	2 years younger	2 years younger	2 years younger	4 years younger

Percent Married for Pension

This assumption is used to estimate the death benefits payable to a spouse upon the death of an active or deferred vested member in the pension valuation.

There was insufficient experience to analyze this assumption, so we proposed no changes to the current assumption.

¹ There was no experience indicating TRS members who died from occupational causes.

Dependent Spouse Medical Coverage Election

This assumption is used to determine the expected number of spouses who are eligible to elect participation in the postretirement healthcare valuation.

The table below summarizes the experience for the 4-year period ending June 30, 2021, and the current and proposed assumptions.

	PERS Peace/Fire		PERS Others		TRS		JRS	
	Male	Female	Male	Female	Male	Female	Male	Female
Experience	72%	45%	57%	46%	56%	47%	69%	17%
Current assumption	75%	50%	65%	60%	65%	60%	90%	70%
Proposed assumption ¹	75%	50%	60%	50%	60%	50%	80%	60%

Dependent Children

Healthcare benefits are valued only for members currently covering dependent children. Coverage for dependent children is currently assumed through age 23 (unless disabled, in which case coverage is assumed throughout the disabled child's life). The proposed dependent spouse medical coverage election assumption shown above has been set to include an allowance for future covered children.

Rehire Assumption (PERS and TRS)

The rehire assumption is used to estimate the liabilities that will be generated each year due to rehires.

Beginning with the June 30, 2016 valuations, a percentage load was added to the Normal Cost to account for anticipated rehires during the year. The original loads were based on a weighted average of the historical rehire losses as measured in the valuations for the 5-year period ending June 30, 2015. For the 2017 experience study, these rehire loads were updated based on the historical rehire losses as measured in the valuations for the 5-year period ending June 30, 2017.

The 4-year average ratios of (a) increases/decreases in Actuarial Accrued Liability due to actual rehires during the 4-year period ending June 30, 2021 to (b) the Normal Cost rehire loads from the valuations are approximately:

- Pension – PERS 82%
- Pension – TRS 77%
- Healthcare – PERS 14%
- Healthcare – TRS 2%

Based on these 4-year average ratios, the current and proposed rehire Normal Cost percentage loads are shown in the table below.

	Pension		Healthcare	
	PERS	TRS	PERS	TRS
Current assumption	18.77%	15.57%	17.09%	12.03%
Proposed assumption	15.30%	12.00%	2.40%	0.20%

¹ The proposed changes include an allowance for future covered children.

We proposed no rehire loads for the DCR plans for the following reasons:

- Applying a rehire load for the DCR plans would increase the DCR Normal Costs, thereby increasing the funding of the DCR trusts.
- The DCR trusts are currently over-funded, so they are able to absorb any reasonable liability losses due to rehires.
- We believe it is more prudent to deposit more contributions to the DB trusts rather than the DCR trusts.

Part-Time Service

Some PERS and TRS members are employed part-time. Members earn a portion of a year of service for their part-time employment. An assumption is made regarding the amount of service these members will earn during a year.

We reviewed members who were part-time to analyze this assumption. The table below summarizes the experience for the 4-year period ending June 30, 2021, and the current and proposed assumptions.

	PERS Peace/Fire	PERS Others	TRS
Experience (years)	n/a ¹	0.68	0.76
Current assumption (years)	1.00	0.75	0.75
Proposed assumption (years)	1.00	0.75	0.75

Unused Sick Leave (TRS only)

TRS members receive service credit for unused sick leave when they retire. An assumption is made to determine the expected amount of credit received by members when they retire.

The current assumption is that a TRS member will receive 4.50 days for each year of service. The experience for the 4-year period ending June 30, 2021 was 5.30 days. We proposed an assumption of 5.25 days.

Contribution Refunds

Vested members who terminate prior to being eligible for retirement have the option of withdrawing their contributions with interest or leaving their money in the System and receiving a deferred retirement annuity benefit.

The table below summarizes the experience for the 4-year period ending June 30, 2021, and the current and proposed assumptions (% of vested members who will withdraw their contributions at termination).

	PERS Peace/Fire	PERS Others	TRS
Experience	5%	4%	1%
Current assumption ²	10%	5%	0%
Proposed assumption ²	5%	5%	0%

¹ There are no PERS Peace/Fire members in the data who are classified as part-time.

² 100% of non-vested members are assumed to withdraw their contributions at termination.

Lump Sum Elections (NGNMRS only)

Members can elect to receive their NGNMRS benefits in the form of an annuity or as a lump sum.

The table below summarizes the experience for the 4-year period ending June 30, 2021, and the current and proposed assumptions.

	Actives	Terminated Vested
Experience	49%	52%
Current assumption	70%	70%
Proposed assumption	50%	50%

Alaska Cost-of-Living Adjustments (COLA)

Eligible benefit recipients who reside in Alaska receive a COLA. An assumption is made regarding how many members will remain in Alaska after retirement.

The table below summarizes the experience for the 4-year period ending June 30, 2021, and the current and proposed assumptions.

	PERS Peace/Fire	PERS Others	TRS
Experience	60%	65%	59%
Current assumption	65%	70%	60%
Proposed assumption	60%	65%	60%

Healthcare Participation

This assumption is used to project the likelihood that active members will elect to receive healthcare benefits upon retirement.

The table below summarizes the experience for the 4-year period ending June 30, 2021, and the current and proposed assumptions.

	PERS Peace/Fire		PERS Others		TRS	
	System Paid	Non-System Paid	System Paid	Non-System Paid	System Paid	Non-System Paid
Experience	96%	21%	98%	28%	94%	22%
Current assumption	100%	20%	100%	20%	100%	20%
Proposed assumption	100%	20%	100%	25%	100%	20%

Medicare Part B Only

This assumption is used to project the likelihood that members will not be eligible for Medicare Part A benefits.

The current assumption is 5% of actives hired before April 1, 1986 and current retirees who are not yet Medicare eligible will not be eligible for Medicare Part A. The experience for the 4-year period ending June 30, 2021 was 2%. We proposed changing this assumption from 5% to 2%.

Healthcare Morbidity

Morbidity rates (also called aging factors) are used to estimate utilization of healthcare benefits at each age to reflect the fact that healthcare utilization typically increases with age. Separate morbidity rates are used for medical and prescription drug benefits.

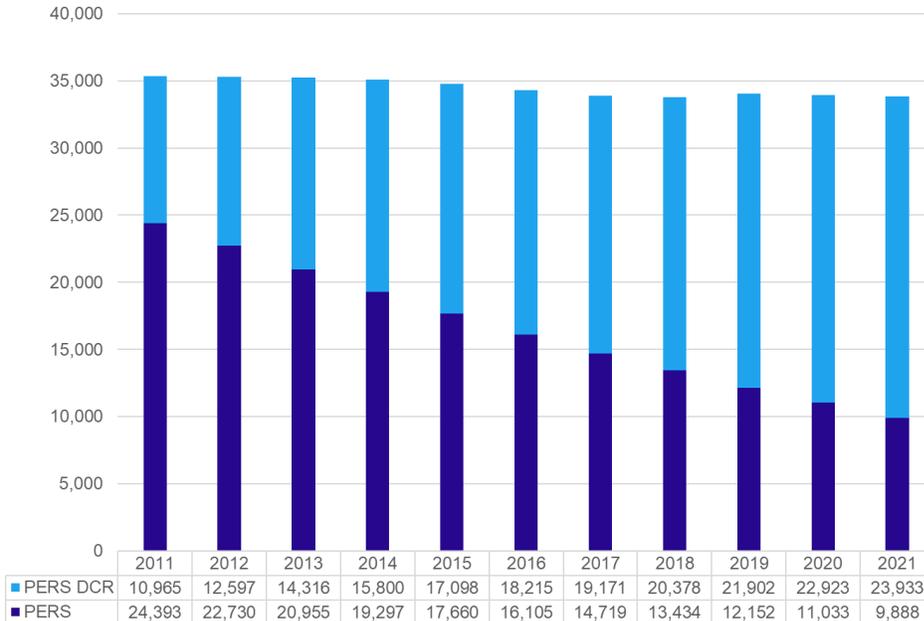
The current and proposed morbidity factors are summarized in the table below.

Age	Current		Proposed	
	Medical	Rx	Medical	Rx
0 – 44	2.0%	4.5%	2.0%	4.5%
45 – 54	2.5%	3.5%	2.5%	3.5%
55 – 64	2.5%	1.5%	2.5%	1.0%
65 – 74	3.0%	2.0%	2.0%	2.1%
75 – 84	2.0%	-0.5%	2.2%	-0.3%
85 – 94	0.3%	-2.5%	0.5%	-2.5%
95+	0.0%	0.0%	0.0%	0.0%

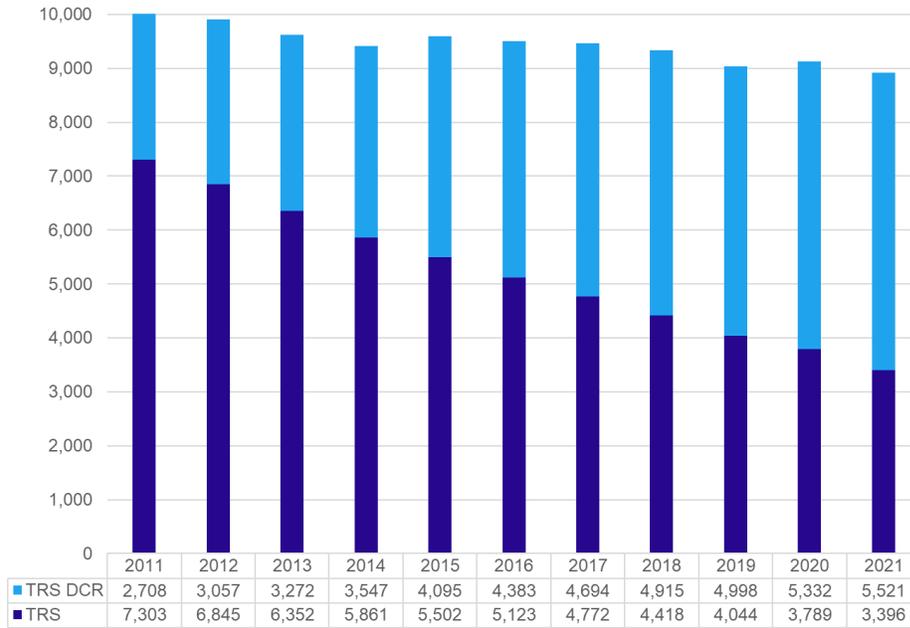
Active Population Growth

The graphs below show the number of DB and DCR active members for fiscal years 2011-2021.

PERS/PERS DCR



TRS/TRS DCR



The average percentage change in the total number of active members (DB/DCR) during the last 4 fiscal years (2018-2021) is -0.05% for PERS and -1.50% for TRS. The current active population growth assumption used for PERS/TRS projections is 0%. We proposed no change to this assumption.

At the June 2022 meeting, the ARMB adopted our proposed other demographic assumptions.

Section 2: Economic Assumptions¹

Buck’s capital market assumptions are based on an economic scenario generating model developed by Conning and Company called GEMS®. GEMS is an econometric model that incorporates historical data and uses hundreds of simulations to forecast future values for inflation and relevant asset classes.

We modeled GEMS under two approaches to develop inflation rates and investment returns:

- Approach #1 – The propensity for asset returns and inflation to revert to a level close to historical norms, recognizing the inherent difficulty in forecasting current conditions to persist for 30+ years. Under this approach, the expectation is that asset returns and inflation rates will reach a level close to historical averages.
- Approach #2 – Emerging demographic trends (such as aging workforce, increasing longevity, globalization of economy, and technological innovation transforming the workforce) that contribute to the “new normal” of low interest rates and a low asset return environment will persist well beyond the current business cycle. Under this approach, expectations around returns for “return generating” assets such as equities and real estate are approximately 50 to 100 basis points below that expected under Approach #1.

A. Inflation

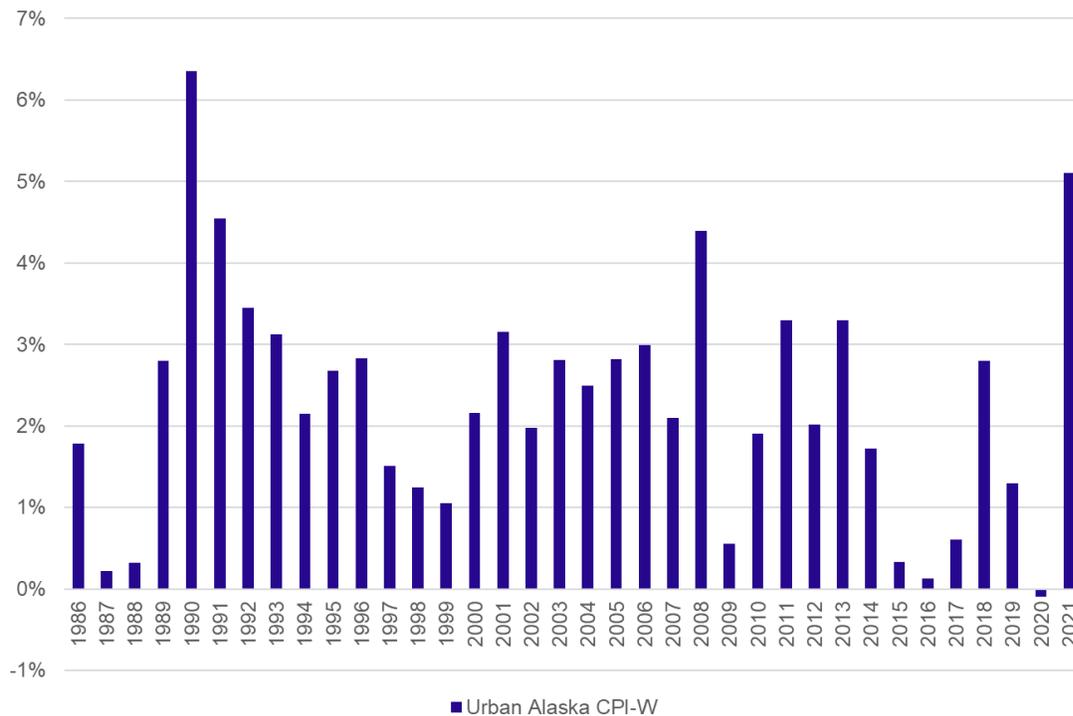
Inflation is a core component of several of the economic assumptions, including the investment return, salary increases, payroll growth rate, and healthcare trend rates.

The table below summarizes the average inflation rates measured by CPI-W (hourly wage earners and clerical workers) for the 4-year period ending June 30, 2021, including national inflation rates and inflation rates specific to Alaska.

FYE June 30	Average Inflation Rate (CPI-W)	
	National	Anchorage
2018	3.09%	2.83%
2019	1.44%	1.26%
2020	0.52%	-0.08%
2021	6.12%	6.20%
4-Year Arithmetic Average	2.79%	2.55%

¹ The current and proposed (adopted) economic assumptions are shown in the Appendix.

The graph below shows the historical inflation rates for the Consumer Price Index for Urban Alaska Wage Earners and Clerical Workers (CPI-W).



Our GEMS modeling of future inflation rates produced the following results:

- 10 years 1.85%
- 20 years 2.03%
- 30 years 2.08%

Based on our GEMS modeling, we proposed a long-term inflation rate between 2.00% and 2.25%.

At the June 2022 meeting, the ARMB adopted an inflation rate of 2.50%, which we believe is reasonable¹.

B. Investment Return

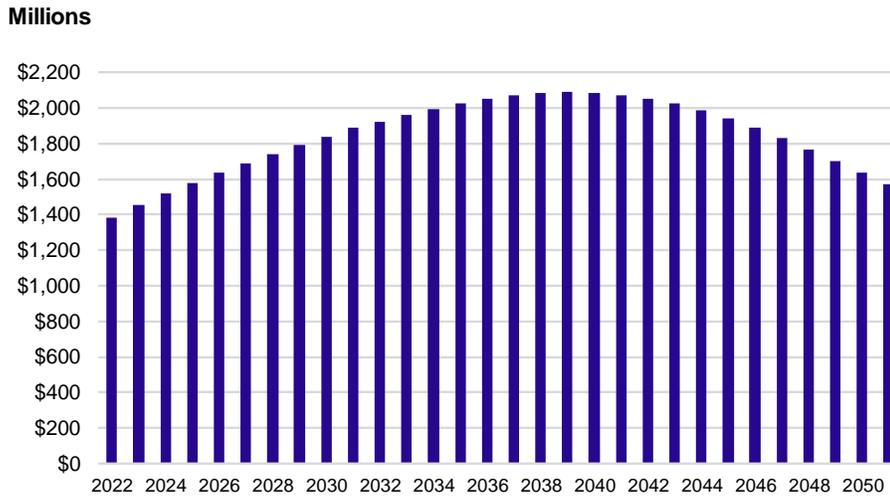
The investment return assumption is used to discount the projected benefits expected to be paid from each System. This assumption has the largest impact on each System’s Actuarial Accrued Liability and contribution rates.

In setting this assumption, we consider recent history, but also recognize that the last few years of returns may not be the best predictor of long-term expectations. Although PERS and TRS were closed to new entrants in 2006, the total projected pension and healthcare benefits expected to be paid are significant for many years to come. The following graphs show the projected pension and healthcare benefits expected to be paid from PERS and TRS during 2022-2051².

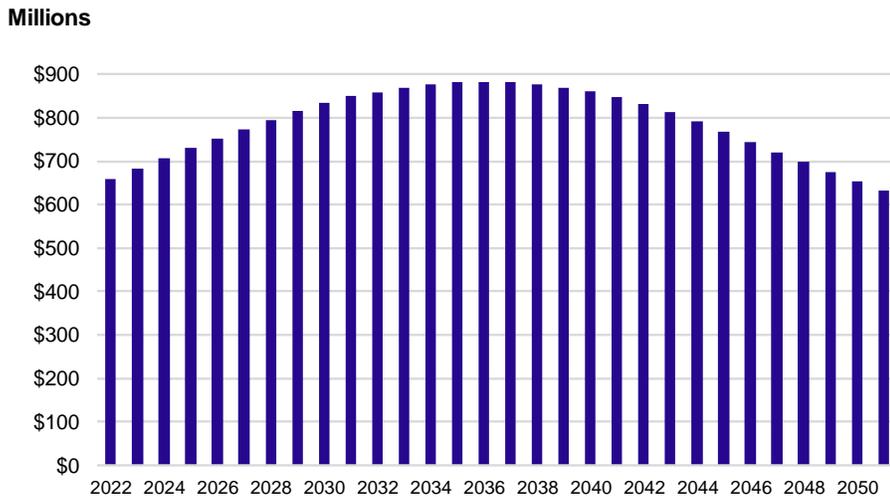
¹ The proposed salary increase rates, payroll growth rate, and healthcare trend rates, as well as the cost effects of the proposed assumptions shown in Section 4, are based on the adopted inflation rate of 2.50%.

² Based on the June 30, 2021 valuation projections.

PERS – Projected Pension and Healthcare Benefit Payments (2022-2051)



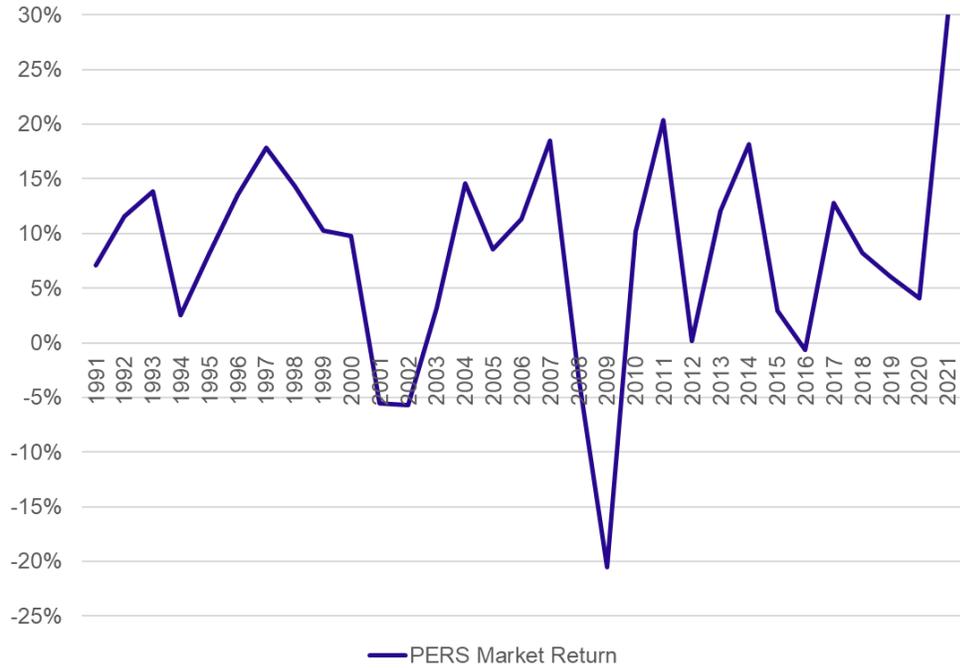
TRS – Projected Pension and Healthcare Benefit Payments (2022-2051)



Accordingly, we believe a time-horizon of 30 years is appropriate when evaluating the long-term investment return assumption.

The graph below shows the actual market value return history for PERS from 1991 to 2021¹.

PERS – Historical Market Rates of Return (1991-2021)



The following asset allocations were used in our analysis of the expected rates of return:

Asset Class	PERS/TRS/JRS	NGNMRS
US All Cap	27.00%	20.00%
Global Equity (non-US)	18.00%	13.00%
Global Equity	3.60%	3.60%
Aggregate Bonds	22.35%	46.10%
Private Equity	14.00%	8.00%
NCREIF	9.80%	4.90%
REIT	2.10%	1.05%
Infrastructure	2.10%	1.05%
Cash	1.05%	2.30%
Total	100.00%	100.00%

¹ Asset returns during these years for TRS were very similar.

We projected expected future investment returns under two methods:

- GEMS – Geometric nominal and real rates of return were projected for the next 30 years (returns beyond 30 years are assumed to be the same as the average return for year 30).
- Building Block – Geometric real returns by asset class are deconstructed into relevant components. The values for each component (e.g., inflation, risk-free return, and various equity and other risk premiums) are determined based on various factors, including GDP growth rates, historical values, risk premiums implied by current market conditions, and current consensus estimates, taking into account the investment horizon. Expected inflation is added to real returns to develop nominal returns.

The tables below show the results of our GEMS analysis under the two approaches described earlier in this section¹.

PERS/TRS/JRS	Approach #1			Approach #2		
	10-year	20-year	30-year	10-year	20-year	30-year
GEMS (Geometric Returns)						
Nominal Rate of Return	6.14%	6.72%	6.98%	5.38%	5.98%	6.23%
Inflation Rate	1.85%	2.03%	2.08%	1.85%	2.03%	2.08%
Real Rate of Return	4.29%	4.69%	4.90%	3.53%	3.95%	4.15%
Nominal Return Net of Investment Expenses²						
• Expected Value	6.02%	6.60%	6.86%	5.26%	5.86%	6.11%
• 65 th Percentile	7.54%	7.81%	7.88%	6.78%	7.06%	7.13%
• 35 th percentile	4.81%	5.50%	5.96%	4.05%	4.76%	5.21%

NGNMRS	Approach #1			Approach #2		
	10-year	20-year	30-year	10-year	20-year	30-year
GEMS (Geometric Returns)						
Nominal Rate of Return	4.77%	5.48%	5.77%	4.25%	4.98%	5.27%
Inflation Rate	1.85%	2.03%	2.08%	1.85%	2.03%	2.08%
Real Rate of Return	2.92%	3.45%	3.69%	2.40%	2.95%	3.19%
Nominal Return Net of Investment Expenses²						
• Expected Value	4.65%	5.36%	5.65%	4.13%	4.86%	5.15%
• 65 th Percentile	5.71%	6.24%	6.33%	5.19%	5.74%	5.83%
• 35 th percentile	3.79%	4.55%	5.01%	3.28%	4.06%	4.51%

¹ Investment expenses are estimated to be 12 basis points based on information provided by the State's Department of Revenue.

² The 65th and 35th percentiles are the endpoints of a "range of reasonableness" for the investment return assumption.

The tables below show the results of the Building Block method under the two approaches described earlier in this section.

PERS/TRS/JRS	Approach #1			Approach #2		
	10-year	20-year	30-year	10-year	20-year	30-year
Building Block (Arithmetic Returns)						
Inflation Rate	1.86%	2.04%	2.09%	1.86%	2.04%	2.09%
Real Rate of Return	4.75%	5.22%	5.44%	3.99%	4.48%	4.70%
Nominal Return	6.61%	7.26%	7.53%	5.85%	6.52%	6.79%
Less Investment Expenses	-0.12%	-0.12%	-0.12%	-0.12%	-0.12%	-0.12%
Nominal Return Net of Investment Expenses	6.49%	7.14%	7.41%	5.73%	6.40%	6.67%

NGNMRS	Approach #1			Approach #2		
	10-year	20-year	30-year	10-year	20-year	30-year
Building Block (Arithmetic Returns)						
Inflation Rate	1.86%	2.04%	2.09%	1.86%	2.04%	2.09%
Real Rate of Return	3.16%	3.73%	3.98%	2.65%	3.23%	3.48%
Nominal Return	5.02%	5.77%	6.07%	4.51%	5.27%	5.57%
Less Investment Expenses	-0.12%	-0.12%	-0.12%	-0.12%	-0.12%	-0.12%
Nominal Return Net of Investment Expenses	4.90%	5.65%	5.95%	4.39%	5.15%	5.45%

Based on our analysis, we proposed an investment return between 7.00% and 7.25% for PERS/TRS/JRS, and 5.75% for NGNMRS.

At the June 2022 meeting, the ARMB adopted an investment return assumption of 7.25% for PERS/TRS/JRS, and 5.75% for NGNMRS.

C. Individual Salary Increases

The salary increase assumption is used to project each active member's pay from its current amount until expected retirement.

We reviewed the salary increases that active members of PERS and TRS received during the 4-year period ending June 30, 2021. The average annual increases and expected salary increases are summarized in the table below.

	2018	2019	2020	2021
PERS – Peace/Fire				
Actual	2.1%	9.9%	3.4%	3.6%
Expected	3.1%	3.0%	3.0%	2.9%
PERS – Others				
Actual	1.6%	4.2%	1.9%	3.2%
Expected	3.0%	3.0%	3.0%	2.9%
TRS				
Actual	1.9%	2.5%	2.5%	4.7%
Expected	2.9%	2.9%	2.9%	2.9%
PERS DCR – Peace/Fire				
Actual	6.1%	9.8%	6.5%	5.4%
Expected	5.7%	5.6%	5.5%	5.4%
PERS DCR – Others				
Actual	5.2%	4.9%	4.5%	5.2%
Expected	5.2%	5.1%	5.0%	4.9%
TRS DCR				
Actual	4.2%	4.7%	4.6%	6.6%
Expected	4.9%	4.7%	4.6%	4.5%

Based on this analysis, we proposed salary increase rates as shown in the Appendix (reflecting the adopted inflation rate of 2.50%).

At the June 2022 meeting, the ARMB adopted our proposed salary increase rates.

D. Payroll Growth Rate

To calculate the total contribution rate for PERS and TRS, the Unfunded Actuarial Accrued Liability is amortized over 25-year closed “layers” on a level percent of pay basis (based on total DB and DCR payroll). Because pay is expected to increase, an assumption is made for the rate at which total payroll is expected to increase.

The tables below show the increases in total payroll for PERS and TRS active members (DB and DCR) during the 4-year period ending June 30, 2021.

PERS DB/DCR

Fiscal Year	Total Earnings (000's)	% Increase in Total Earnings vs. Prior Year
2017	\$ 2,244,324	n/a
2018	\$ 2,254,499	0.5%
2019	\$ 2,327,729	3.2%
2020	\$ 2,352,227	1.1%
2021	\$ 2,384,394	1.4%

TRS DB/DCR

Fiscal Year	Total Earnings (000's)	% Increase in Total Earnings vs. Prior Year
2017	\$ 724,298	n/a
2018	\$ 720,819	-0.5%
2019	\$ 707,382	-1.9%
2020	\$ 722,347	2.1%
2021	\$ 728,516	0.9%

The current payroll growth rate is set equal to the inflation rate plus 25 basis points. We proposed no changes to this assumption.

At the June 2022 meeting, the ARMB adopted our proposed payroll growth rate assumption.

E. Healthcare Cost Trend Rates

The healthcare cost trend rates (HCCTR) are used to project the baseline per capita costs into the future. Separate trend rates are used for each major healthcare benefit category (medical, prescription drugs, and EGWP).

The HCCTR are reviewed annually as part of the actuarial valuation process. We have also reviewed them as part of the experience study since the inflation rate and other related assumptions are being evaluated.

We have used the Getzen model, developed by the Society of Actuaries, to set the HCCTR for the Systems' valuations since 2012.

In evaluating the HCCTR, we considered:

- Alaska plan experience
- Buck 2021 National Health Care Trend Survey
- Segal 2021 Medical Plan Cost Survey
- Federal Open Market Committee June 2021 forecast
- Congressional Budget Office July 2021 10-year projection
- NASRA trend rate data for US statewide systems
- Callan June 2021 ARMB meeting 10-year projection of real GDP rate

The current and proposed HCCTR are shown in the Appendix (reflecting the adopted inflation rate of 2.50%).

At the June 2022 meeting, the ARMB adopted our proposed healthcare cost trend rates.

Section 3: Actuarial Methods

A. Actuarial Cost Method

Liabilities and contributions are currently determined using the Entry Age Normal Actuarial Cost Method, level percent of pay basis.

We proposed no changes to the actuarial cost method.

B. Asset Valuation Method

The current asset valuation method recognizes market gains and losses 20% per year. The Actuarial Value of Assets was re-initialized to Market Value of Assets as of June 30, 2014, and 5-year smoothing was phased in starting in FY2015¹.

We proposed no changes to the asset valuation method.

C. Amortization Method

Based on Alaska Statutes², the Unfunded Actuarial Accrued Liability (UAAL) for PERS and TRS is amortized on a level percent of pay basis over a closed 25-year period that began June 30, 2014.

Effective June 30, 2018, the ARMB adopted a 25-year “layered” UAAL amortization method for PERS and TRS:

- Layer #1 equals the sum of (a) the UAAL at June 30, 2018 based on the 2017 valuation, plus (b) the FY18 experience gain/loss. Layer #1 is amortized over the remainder of the 25-year closed period that was originally established in 2014³.
- Layer #2 equals the change in UAAL at June 30, 2018 due to the 2017 experience study and EGWP implementation. Layer #2 is amortized over a separate closed 25-year period that started in 2018.
- Future layers are created each year based on the difference between actual and expected UAAL occurring that year, and are amortized over separate closed 25-year periods.

The UAAL for the DCR plans and JRS is amortized on a level percent of pay basis over closed 25-year periods.

The UAAL for NGNMRS is amortized on a level dollar basis over a period equal to 20 years less the average total military service of active members.

We proposed no changes to the amortization method.

¹ For the DCR plans, JRS and NGNMRS, the smoothed value is constrained to a range of 80% to 120% of the fair value.

² AS 37.10.220(a)(8)(B).

³ Layer #1 is referred to as “initial amount” in the actuarial valuation reports.

Section 4: Cost Effects of Proposed (Adopted) Assumptions

The cost effects of the proposed (adopted) assumptions are based on the most recent valuations that have been reviewed and adopted by the ARMB, which are the June 30, 2020 valuations.

PERS

as of June 30, 2020 (\$000's)	Current			Proposed (Adopted)		
	Pension	Healthcare	Total	Pension	Healthcare	Total
1. Actuarial Accrued Liability (AAL)	15,279,525	7,036,550	22,316,075	15,521,476	6,938,951	22,460,427
2. Actuarial Value of Assets (AVA)	<u>9,713,710</u>	<u>7,989,358</u>	<u>17,703,068</u>	<u>9,713,710</u>	<u>7,989,358</u>	<u>17,703,068</u>
3. Unfunded Actuarial Accrued Liability (AAL - AVA)	5,565,815	(952,808)	4,613,007	5,807,766	(1,050,407)	4,757,359
4. Funded Ratio (AVA / AAL)	63.6%	113.5%	79.3%	62.6%	115.1%	78.8%
5. Normal Cost (Total)	137,815	84,825	222,640	145,544	77,551	223,095
6. Projected DB/DCR Payroll for Upcoming Year			2,373,078			2,377,354
7. Contribution Rate as of 6/30/20*						
7a. Normal Cost Rate (Employer)	3.09%	3.57%	6.66%	3.40%	3.26%	6.66%
7b. Unfunded Liability Amortization Rate	<u>17.45%</u>	<u>(2.66%)</u>	<u>17.45%</u>	<u>17.90%</u>	<u>(2.89%)</u>	<u>17.90%</u>
7c. Total Rate (not less than Employer Normal Cost)	20.54%	3.57%	24.11%	21.30%	3.26%	24.56%

* as a % of projected DB/DCR payroll for the upcoming year

TRS

as of June 30, 2020 (\$000's)	Current			Proposed (Adopted)		
	Pension	Healthcare	Total	Pension	Healthcare	Total
1. Actuarial Accrued Liability (AAL)	7,447,036	2,489,675	9,936,711	7,603,845	2,502,836	10,106,681
2. Actuarial Value of Assets (AVA)	<u>5,587,064</u>	<u>3,021,283</u>	<u>8,608,347</u>	<u>5,587,064</u>	<u>3,021,283</u>	<u>8,608,347</u>
3. Unfunded Actuarial Accrued Liability (AAL - AVA)	1,859,972	(531,608)	1,328,364	2,016,781	(518,447)	1,498,334
4. Funded Ratio (AVA / AAL)	75.0%	121.4%	86.6%	73.5%	120.7%	85.2%
5. Normal Cost (Total)	51,404	24,419	75,823	54,623	23,706	78,329
6. Projected DB/DCR Payroll for Upcoming Year			741,090			743,963
7. Contribution Rate as of 6/30/20*						
7a. Normal Cost Rate (Employer)	2.86%	3.30%	6.16%	3.27%	3.19%	6.46%
7b. Unfunded Liability Amortization Rate	<u>18.87%</u>	<u>(4.82%)</u>	<u>18.87%</u>	<u>19.96%</u>	<u>(4.63%)</u>	<u>19.96%</u>
7c. Total Rate (not less than Employer Normal Cost)	21.73%	3.30%	25.03%	23.23%	3.19%	26.42%

* as a % of projected DB/DCR payroll for the upcoming year

PERS DCR

as of June 30, 2020 (\$000's)	Current			Proposed (Adopted)		
	ODD	Healthcare	Total	ODD	Healthcare	Total
1. Actuarial Accrued Liability (AAL)	10,634	150,701	161,335	11,577	132,846	144,423
2. Actuarial Value of Assets (AVA)	<u>43,029</u>	<u>144,747</u>	<u>187,776</u>	<u>43,029</u>	<u>144,747</u>	<u>187,776</u>
3. Unfunded Actuarial Accrued Liability (AAL - AVA)	(32,395)	5,954	(26,441)	(31,452)	(11,901)	(43,353)
4. Funded Ratio (AVA / AAL)	404.6%	96.0%	116.4%	371.7%	109.0%	130.0%
5. Normal Cost	5,134	15,182	20,316	4,442	12,698	17,140
6. Projected DCR Payroll for Upcoming Year			1,443,017			1,444,680
7. Contribution Rate as of 6/30/20*						
7a. Normal Cost Rate	0.36%	1.05%	1.41%	0.31%	0.88%	1.19%
7b. Unfunded Liability Amortization Rate	<u>(0.17%)</u>	<u>0.05%</u>	<u>0.05%</u>	<u>(0.16%)</u>	<u>(0.03%)</u>	<u>(0.19%)</u>
7c. Total Rate (not less than Employer Normal Cost)	0.36%	1.10%	1.46%	0.31%	0.88%	1.19%

* as a % of projected DCR payroll for the upcoming year

TRS DCR

as of June 30, 2020 (\$000's)	Current			Proposed (Adopted)		
	ODD	Healthcare	Total	ODD	Healthcare	Total
1. Actuarial Accrued Liability (AAL)	223	40,634	40,857	223	38,002	38,225
2. Actuarial Value of Assets (AVA)	<u>4,933</u>	<u>49,554</u>	<u>54,487</u>	<u>4,933</u>	<u>49,554</u>	<u>54,487</u>
3. Unfunded Actuarial Accrued Liability (AAL - AVA)	(4,710)	(8,920)	(13,630)	(4,710)	(11,552)	(16,262)
4. Funded Ratio (AVA / AAL)	2,212.1%	122.0%	133.4%	2,212.1%	130.4%	142.5%
5. Normal Cost	312	3,396	3,708	295	2,882	3,177
6. Projected DCR Payroll for Upcoming Year			391,854			393,852
7. Contribution Rate as of 6/30/20*						
7a. Normal Cost Rate	0.08%	0.87%	0.95%	0.07%	0.73%	0.80%
7b. Unfunded Liability Amortization Rate	<u>(0.10%)</u>	<u>(0.14%)</u>	<u>(0.24%)</u>	<u>(0.09%)</u>	<u>(0.18%)</u>	<u>(0.27%)</u>
7c. Total Rate (not less than Employer Normal Cost)	0.08%	0.87%	0.95%	0.07%	0.73%	0.80%

* as a % of projected DCR payroll for the upcoming year

JRS

as of June 30, 2020 (\$000's)	Current			Proposed (Adopted)		
	Pension	Healthcare	Total	Pension	Healthcare	Total
1. Actuarial Accrued Liability (AAL)	211,742	16,764	228,506	198,713	16,211	214,924
2. Actuarial Value of Assets (AVA)	<u>194,788</u>	<u>34,806</u>	<u>229,594</u>	<u>194,788</u>	<u>34,806</u>	<u>229,594</u>
3. Unfunded Actuarial Accrued Liability (AAL - AVA)	16,954	(18,042)	(1,088)	3,925	(18,595)	(14,670)
4. Funded Ratio (AVA / AAL)	92.0%	207.6%	100.5%	98.0%	214.7%	106.8%
5. Normal Cost (Total)	5,934	854	6,788	5,376	819	6,195
6. Projected Payroll for Upcoming Year			13,157			13,157
7. Contribution Rate as of 6/30/20*						
7a. Normal Cost Rate (Employer)	38.85%	6.49%	45.34%	34.61%	6.22%	40.83%
7b. Unfunded Liability Amortization Rate	<u>24.74%</u>	<u>(8.24%)</u>	<u>24.74%</u>	<u>18.37%</u>	<u>(8.41%)</u>	<u>18.37%</u>
7c. Total Rate (not less than Employer Normal Cost)	63.59%	6.49%	70.08%	52.98%	6.22%	59.20%

* as a % of projected payroll for the upcoming year

NGNMRS

as of June 30, 2020 (\$000's)	Current	Proposed (Adopted)
1. Actuarial Accrued Liability (AAL)	22,417	25,842
2. Actuarial Value of Assets (AVA)	<u>43,020</u>	<u>43,020</u>
3. Unfunded Actuarial Accrued Liability (AAL - AVA)	(20,603)	(17,178)
4. Funded Ratio (AVA / AAL)	191.9%	166.5%
5. Normal Cost	503	722
6. Contribution as of 6/30/20		
6a. Normal Cost and Administrative Expenses	759	978
6b. Unfunded Liability Amortization	<u>(3,325)</u>	<u>(2,590)</u>
6c. Total (not less than zero)	0	0

Appendix: Current and Proposed (Adopted) Assumptions¹

Inflation, Investment Return, and Payroll Growth Rate

	Current		Proposed (Adopted)	
	<u>PERS/TRS/JRS</u>	<u>NGNMRS</u>	<u>PERS/TRS/JRS</u>	<u>NGNMRS</u>
Nominal Return ²	7.38%	7.00%	7.25%	5.75%
Inflation Rate	2.50%	2.50%	2.50%	2.50%
Real Rate of Return	4.88%	4.50%	4.75%	3.25%
Payroll Growth Rate	2.75%	n/a	2.75%	n/a

Salary Increase Rates – PERS/PERS DCR (Peace/Fire)

Service	Current	Proposed (Adopted)
0	7.75%	8.50%
1	7.25%	7.75%
2	6.75%	7.25%
3	6.25%	7.00%
4	5.75%	6.75%
5	5.25%	6.25%
6	4.75%	5.75%
7	4.25%	5.50%
8	3.75%	5.25%
9	3.65%	5.05%
10	3.55%	4.95%
11	3.45%	4.85%
12	3.35%	4.75%
13	3.25%	4.65%
14	3.15%	4.55%
15	3.05%	4.45%
16	2.95%	4.35%
17	2.85%	4.25%
18	2.75%	4.05%
19	2.75%	4.05%
20+	2.75%	3.85%

¹ Assumptions are not shown if the proposed (adopted) assumptions and current assumptions are the same.

² Net of investment expenses of 12 basis points.

Salary Increase Rates – PERS/PERS DCR (Others)

Service	Current	Proposed (Adopted)
0	6.75%	6.75%
1	6.25%	6.00%
2	5.75%	5.50%
3	5.25%	5.00%
4	4.75%	4.75%
5	4.25%	4.25%
6	3.75%	4.05%
7	3.65%	3.95%
8	3.55%	3.75%
9	3.45%	3.55%
10	3.35%	3.45%
11	3.25%	3.25%
12	3.15%	3.10%
13	3.05%	3.05%
14	2.95%	3.00%
15	2.85%	2.95%
16	2.75%	2.90%
17+	2.75%	2.85%

Salary Increase Rates – TRS

Service	Current	Proposed (Adopted)
0	6.75%	7.00%
1	6.25%	6.50%
2	5.75%	6.00%
3	5.25%	5.75%
4	4.75%	5.50%
5	4.25%	5.25%
6	3.75%	5.00%
7	3.65%	4.75%
8	3.55%	4.50%
9	3.45%	4.25%
10	3.35%	4.00%
11	3.25%	3.75%
12	3.15%	3.50%
13	3.05%	3.45%
14	2.95%	3.35%
15	2.85%	3.25%
16	2.75%	3.15%
17	2.75%	3.05%
18	2.75%	3.00%
19	2.75%	2.95%
20+	2.75%	2.85%

Salary Increase Rates – TRS DCR

Service	Current	Proposed (Adopted)
0	6.75%	7.25%
1	6.25%	6.75%
2	5.75%	6.25%
3	5.25%	5.75%
4	4.75%	5.25%
5	4.25%	5.00%
6	3.75%	4.75%
7	3.65%	4.50%
8	3.55%	4.25%
9	3.45%	4.00%
10	3.35%	3.75%
11	3.25%	3.50%
12	3.15%	3.25%
13	3.05%	3.05%
14	2.95%	3.00%
15	2.85%	2.95%
16	2.75%	2.90%
17+	2.75%	2.85%

Salary Increase Rates – JRS

Current: 0% per year through FY24, 3.62% per year thereafter

Proposed (Adopted): 0% per year through FY24, 3.00% per year thereafter

Healthcare Trend Rates

Fiscal Year	Current			Proposed (Adopted)		
	Medical Pre-65	Medical Post-65	Rx/EGWP	Medical Pre-65	Medical Post-65	Rx/EGWP
2023	6.10%	5.40%	6.80%	7.00%	5.50%	7.50%
2024	5.90%	5.40%	6.40%	6.70%	5.50%	7.20%
2025	5.80%	5.40%	6.10%	6.40%	5.40%	6.90%
2026	5.60%	5.40%	5.70%	6.20%	5.40%	6.65%
2027	5.40%	5.40%	5.40%	6.05%	5.35%	6.35%
2028	5.40%	5.40%	5.40%	5.85%	5.35%	6.10%
2029	5.40%	5.40%	5.40%	5.65%	5.30%	5.80%
2030	5.40%	5.40%	5.40%	5.45%	5.30%	5.55%
2031-2038	5.40%	5.40%	5.40%	5.30%	5.30%	5.30%
2039	5.40%	5.40%	5.40%	5.25%	5.25%	5.25%
2040	5.40%	5.40%	5.40%	5.20%	5.20%	5.20%
2041	5.30%	5.30%	5.30%	5.10%	5.10%	5.10%
2042	5.20%	5.20%	5.20%	5.05%	5.05%	5.05%
2043	5.10%	5.10%	5.10%	4.95%	4.95%	4.95%
2044	5.10%	5.10%	5.10%	4.90%	4.90%	4.90%
2045	5.00%	5.00%	5.00%	4.80%	4.80%	4.80%
2046	4.90%	4.90%	4.90%	4.75%	4.75%	4.75%
2047	4.80%	4.80%	4.80%	4.70%	4.70%	4.70%
2048	4.70%	4.70%	4.70%	4.60%	4.60%	4.60%
2049	4.60%	4.60%	4.60%	4.55%	4.55%	4.55%
2050+	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%

Termination: Ultimate Rates – PERS (Peace/Fire)

Age	Current		Proposed (Adopted)	
	Male	Female	Male	Female
<23	4.70%	6.80%	2.40%	5.80%
23	4.46%	6.80%	2.40%	5.80%
24	4.22%	6.80%	2.40%	5.80%
25	3.98%	6.80%	2.40%	5.80%
26	3.74%	6.80%	2.40%	5.80%
27	3.50%	6.80%	2.40%	5.80%
28	3.32%	6.63%	2.40%	5.80%
29	3.14%	6.46%	2.40%	5.80%
30	2.96%	6.29%	2.00%	5.10%
31	2.79%	6.12%	2.00%	5.10%
32	2.61%	5.95%	2.00%	5.10%
33	2.50%	5.36%	2.00%	5.10%
34	2.39%	4.77%	2.00%	5.10%
35	2.28%	4.18%	1.60%	3.00%
36	2.17%	3.60%	1.60%	3.00%
37	2.06%	3.01%	1.60%	3.00%
38	2.05%	2.99%	1.60%	3.00%
39	2.04%	2.98%	1.60%	3.00%
40	1.68%	3.39%	1.30%	3.00%
41	1.67%	3.37%	1.30%	3.00%
42	1.67%	3.36%	1.30%	3.00%
43	1.71%	3.33%	1.30%	3.00%
44	1.76%	3.31%	1.30%	3.00%
45	1.81%	3.28%	1.50%	2.90%
46	1.85%	3.25%	1.50%	2.90%
47	1.90%	3.23%	1.50%	2.90%
48	2.22%	3.19%	1.50%	2.90%
49	2.53%	3.15%	1.50%	2.90%
50	3.18%	6.42%	3.00%	5.00%
51	4.24%	6.32%	3.00%	5.00%
52	4.24%	6.19%	3.00%	5.00%
53	4.24%	6.04%	3.00%	5.00%
54	4.24%	3.00%	3.00%	5.00%
55+	3.00%	2.00%	2.25%	1.80%

Termination: Ultimate Rates – PERS (Others)

Age	Current		Proposed (Adopted)	
	Male	Female	Male	Female
<23	11.40%	12.99%	7.80%	8.20%
23	10.83%	12.21%	7.80%	8.20%
24	10.26%	11.43%	7.80%	8.20%
25	9.69%	10.65%	7.80%	8.20%
26	9.12%	9.87%	7.80%	8.20%
27	8.55%	9.09%	7.80%	8.20%
28	8.30%	8.72%	7.80%	8.20%
29	8.05%	8.34%	7.80%	8.20%
30	7.80%	7.97%	7.00%	7.10%
31	7.54%	7.60%	7.00%	7.10%
32	7.29%	7.23%	7.00%	7.10%
33	6.99%	6.88%	7.00%	7.10%
34	6.69%	6.53%	7.00%	7.10%
35	6.39%	6.17%	5.70%	5.50%
36	6.10%	5.82%	5.70%	5.50%
37	5.80%	5.47%	5.70%	5.50%
38	5.63%	5.35%	5.70%	5.50%
39	5.47%	5.23%	5.70%	5.50%
40	4.86%	5.65%	4.50%	5.20%
41	4.71%	5.51%	4.50%	5.20%
42	4.56%	5.38%	4.50%	5.20%
43	4.50%	5.19%	4.50%	5.20%
44	4.44%	4.99%	4.50%	5.20%
45	4.39%	4.80%	4.20%	4.40%
46	4.33%	4.60%	4.20%	4.40%
47	4.27%	4.41%	4.20%	4.40%
48	4.26%	4.40%	4.20%	4.40%
49	4.24%	4.39%	4.20%	4.40%
50	3.63%	4.45%	3.60%	4.70%
51	3.60%	4.43%	3.60%	4.70%
52	3.56%	4.40%	3.60%	4.70%
53	3.52%	4.37%	3.60%	4.70%
54	4.17%	6.20%	3.60%	4.70%
55+	3.00%	5.00%	2.90%	4.90%

Termination: Ultimate Rates – TRS

Age	Current		Proposed (Adopted)	
	Male	Female	Male	Female
<23	2.62%	3.79%	3.60%	4.60%
23	2.62%	3.79%	3.60%	4.60%
24	2.61%	3.79%	3.60%	4.60%
25	2.61%	3.79%	3.60%	4.60%
26	2.61%	3.79%	3.60%	4.60%
27	2.60%	3.79%	3.60%	4.60%
28	2.60%	4.27%	3.60%	4.60%
29	2.60%	4.76%	3.60%	4.60%
30	2.60%	5.24%	3.60%	5.40%
31	2.60%	5.73%	3.60%	5.40%
32	2.59%	6.22%	3.60%	5.40%
33	2.59%	5.72%	3.60%	5.40%
34	2.59%	5.23%	3.60%	5.40%
35	2.59%	4.74%	3.60%	3.90%
36	2.58%	4.25%	3.60%	3.90%
37	2.58%	3.75%	3.60%	3.90%
38	2.58%	3.75%	3.60%	3.90%
39	2.57%	3.74%	3.60%	3.90%
40	2.26%	2.75%	3.10%	2.60%
41	2.26%	2.75%	3.10%	2.60%
42	2.25%	2.74%	3.10%	2.60%
43	2.24%	2.73%	3.10%	2.60%
44	2.23%	2.73%	3.10%	2.60%
45	2.22%	2.72%	3.10%	2.60%
46	2.21%	2.71%	3.10%	2.60%
47	2.20%	2.70%	3.10%	2.60%
48	2.18%	2.69%	3.10%	2.60%
49	2.16%	2.68%	3.10%	2.60%
50	3.43%	4.42%	4.60%	4.80%
51	3.39%	4.39%	4.60%	4.80%
52	3.35%	4.36%	4.60%	4.80%
53	3.30%	4.32%	4.60%	4.80%
54	3.00%	7.56%	4.60%	4.80%
55+	2.00%	5.00%	2.80%	4.80%

Termination: Select Rates – PERS DCR (Peace/Fire)

Years of Service	Current		Proposed (Adopted)	
	Male	Female	Male	Female
<1	18.90%	20.63%	17.00%	27.00%
1	14.18%	16.50%	12.00%	21.00%
2	10.50%	13.75%	11.00%	15.00%
3	9.45%	12.38%	11.00%	13.00%
4	8.40%	11.00%	10.00%	9.00%

Termination: Select Rates – PERS DCR (Others)

Years of Service	Current		Proposed (Adopted)	
	Male	Female	Male	Female
<1	24.36%	27.98%	28.00%	29.00%
1	21.00%	22.31%	20.00%	24.00%
2	16.80%	17.85%	16.00%	19.00%
3	13.44%	14.28%	14.00%	16.00%
4	9.45%	12.34%	12.00%	14.00%

Termination: Select Rates – TRS DCR

Years of Service	Current		Proposed (Adopted)	
	Male	Female	Male	Female
<1	20.70%	21.80%	28.00%	31.00%
1	19.55%	18.70%	28.00%	21.00%
2	16.10%	15.40%	19.00%	18.00%
3	13.80%	13.20%	17.00%	13.00%
4	11.50%	11.00%	13.00%	13.00%
5	7.32%	8.05%	13.00%	10.00%

Termination: Ultimate Rates – PERS DCR (Peace/Fire)

Age	Current		Proposed (Adopted)	
	Male	Female	Male	Female
<23	5.52%	11.97%	6.60%	10.20%
23	5.65%	11.97%	6.60%	10.20%
24	5.78%	11.97%	6.60%	10.20%
25	5.91%	11.97%	6.60%	10.20%
26	6.04%	11.97%	6.60%	10.20%
27	6.16%	11.97%	6.60%	10.20%
28	6.16%	11.94%	6.60%	10.20%
29	6.15%	11.91%	6.60%	10.20%
30	6.14%	11.88%	6.80%	10.00%
31	6.14%	11.84%	6.80%	10.00%
32	6.12%	11.81%	6.80%	10.00%
33	6.11%	11.79%	6.80%	10.00%
34	6.09%	11.77%	6.80%	10.00%
35	6.08%	11.75%	6.70%	9.90%
36	6.07%	11.72%	6.70%	9.90%
37	6.05%	11.70%	6.70%	9.90%
38	6.03%	11.60%	6.70%	9.90%
39	6.00%	11.50%	6.70%	9.90%
40	5.98%	11.40%	6.50%	9.50%
41	5.95%	11.30%	6.50%	9.50%
42	5.93%	11.20%	6.50%	9.50%
43	5.85%	11.14%	6.50%	9.50%
44	5.78%	11.09%	6.50%	9.50%
45	5.71%	11.03%	6.50%	9.30%
46	5.64%	10.98%	6.50%	9.30%
47	5.57%	10.92%	6.50%	9.30%
48	6.01%	10.84%	6.50%	9.30%
49	6.45%	10.75%	6.50%	9.30%
50	6.89%	10.67%	8.50%	9.10%
51	7.32%	10.58%	8.50%	9.10%
52	7.76%	10.50%	8.50%	9.10%
53	7.97%	10.66%	8.50%	9.10%
54	8.18%	10.82%	8.50%	9.10%
55	8.38%	10.98%	9.80%	9.60%
56	8.59%	11.15%	9.80%	9.60%
57	8.80%	11.31%	9.80%	9.60%
58	9.03%	11.47%	9.80%	9.60%
59	9.25%	11.63%	9.80%	9.60%
60	9.48%	11.79%	12.50%	10.30%
61	9.71%	11.95%	12.50%	10.30%
62	9.94%	12.12%	12.50%	10.30%
63	12.37%	12.28%	12.50%	10.30%
64	14.81%	12.44%	12.50%	10.30%
65+	17.25%	12.60%	19.20%	10.70%

Termination: Ultimate Rates – PERS DCR (Others)

Age	Current		Proposed (Adopted)	
	Male	Female	Male	Female
<23	13.71%	16.50%	13.70%	15.80%
23	13.71%	16.51%	13.70%	15.80%
24	13.71%	16.51%	13.70%	15.80%
25	13.71%	16.52%	13.70%	15.80%
26	13.71%	16.53%	13.70%	15.80%
27	13.71%	16.54%	13.70%	15.80%
28	13.41%	15.94%	13.70%	15.80%
29	13.21%	15.34%	13.70%	15.80%
30	12.82%	17.75%	12.20%	11.20%
31	12.52%	14.15%	12.20%	11.20%
32	12.22%	13.55%	12.20%	11.20%
33	11.65%	12.90%	12.20%	11.20%
34	11.09%	12.24%	12.20%	11.20%
35	10.52%	11.58%	9.70%	10.20%
36	9.95%	10.92%	9.70%	10.20%
37	9.39%	10.26%	9.70%	10.20%
38	9.12%	9.98%	9.70%	10.20%
39	8.86%	9.70%	9.70%	10.20%
40	8.60%	9.42%	8.50%	10.60%
41	8.32%	9.14%	8.50%	10.60%
42	8.07%	8.86%	8.50%	10.60%
43	7.95%	8.54%	8.50%	10.60%
44	7.83%	8.22%	8.50%	10.60%
45	7.72%	7.90%	8.90%	8.90%
46	7.60%	7.58%	8.90%	8.90%
47	7.48%	7.26%	8.90%	8.90%
48	7.68%	7.23%	8.90%	8.90%
49	7.87%	7.20%	8.90%	8.90%
50	8.07%	7.17%	8.40%	8.70%
51	8.26%	7.14%	8.40%	8.70%
52	8.46%	7.11%	8.40%	8.70%
53	8.46%	7.26%	8.40%	8.70%
54	8.47%	7.42%	8.40%	8.70%
55	8.48%	7.57%	8.70%	9.50%
56	8.48%	7.72%	8.70%	9.50%
57	8.49%	7.88%	8.70%	9.50%
58	8.77%	8.15%	8.70%	9.50%
59	9.08%	8.42%	8.70%	9.50%
60	9.32%	8.69%	10.10%	11.80%
61	9.60%	8.96%	10.10%	11.80%
62	9.88%	9.24%	10.10%	11.80%
63	10.28%	10.51%	10.10%	11.80%
64	10.68%	11.78%	10.10%	11.80%
65+	11.08%	13.05%	11.20%	15.70%

Termination: Ultimate Rates – TRS DCR

Age	Current		Proposed (Adopted)	
	Male	Female	Male	Female
<26	9.41%	8.31%	10.50%	8.70%
26	9.41%	8.32%	10.50%	8.70%
27	9.40%	8.33%	10.50%	8.70%
28	9.39%	8.32%	10.50%	8.70%
29	9.39%	8.32%	10.50%	8.70%
30	9.38%	8.31%	10.50%	8.70%
31	9.37%	8.31%	10.50%	8.70%
32	9.36%	8.30%	10.50%	8.70%
33	9.35%	8.29%	10.50%	8.70%
34	9.35%	8.28%	10.50%	8.70%
35	9.34%	8.27%	10.40%	8.60%
36	9.34%	8.26%	10.40%	8.60%
37	9.33%	8.25%	10.40%	8.60%
38	9.31%	8.24%	10.40%	8.60%
39	9.29%	8.22%	10.40%	8.60%
40	9.26%	8.21%	10.30%	8.60%
41	9.24%	8.19%	10.30%	8.60%
42	9.22%	8.17%	10.30%	8.60%
43	9.16%	8.15%	10.30%	8.60%
44	9.11%	8.12%	10.30%	8.60%
45	9.05%	8.09%	10.00%	8.40%
46	8.99%	8.07%	10.00%	8.40%
47	8.94%	8.04%	10.00%	8.40%
48	8.86%	8.00%	10.00%	8.40%
49	8.78%	7.95%	10.00%	8.40%
50	8.70%	7.91%	9.50%	8.10%
51	8.62%	7.86%	9.50%	8.10%
52	8.54%	7.82%	9.50%	8.10%
53	8.37%	7.73%	9.50%	8.10%
54	8.20%	7.64%	9.50%	8.10%
55	8.03%	7.55%	8.80%	7.90%
56	7.86%	7.46%	8.80%	7.90%
57	7.69%	7.36%	8.80%	7.90%
58	7.76%	7.50%	8.80%	7.90%
59	7.82%	7.64%	8.80%	7.90%
60	7.89%	7.78%	9.30%	8.70%
61	7.95%	7.92%	9.30%	8.70%
62	8.02%	8.05%	9.30%	8.70%
63	8.59%	8.29%	9.30%	8.70%
64	9.17%	8.52%	9.30%	8.70%
65+	9.75%	8.75%	10.90%	7.40%

Retirement Rates (Reduced) – PERS (Peace/Fire)

Age	Current		Proposed (Adopted)	
	Male	Female	Male	Female
50	5.00%	5.00%	5.00%	5.00%
51	5.00%	7.00%	5.00%	5.00%
52	7.00%	7.00%	7.00%	7.00%
53	7.00%	7.00%	7.00%	7.00%
54	7.00%	35.00%	7.00%	7.00%
55	7.00%	8.00%	7.50%	7.50%
56	7.00%	8.00%	7.50%	7.50%
57	7.00%	8.00%	7.50%	7.50%
58	7.00%	8.00%	7.50%	7.50%
59	20.00%	20.00%	20.00%	20.00%

Retirement Rates (Unreduced) – PERS (Peace/Fire)

Age	Current		Proposed (Adopted)	
	Male	Female	Male	Female
<47	8.80%	6.00%	9.00%	7.50%
47	8.80%	15.00%	13.00%	18.50%
48	14.30%	15.00%	13.00%	18.50%
49	14.30%	15.00%	13.00%	18.50%
50	16.50%	15.00%	20.00%	21.00%
51	16.50%	15.00%	20.00%	21.00%
52	20.35%	15.00%	20.00%	21.00%
53	20.35%	15.00%	20.00%	21.00%
54	20.35%	25.00%	20.00%	21.00%
55	27.50%	20.00%	29.00%	20.00%
56	27.50%	15.00%	29.00%	20.00%
57	27.50%	15.00%	29.00%	20.00%
58	27.50%	15.00%	29.00%	20.00%
59	27.50%	15.00%	29.00%	20.00%
60	33.00%	25.00%	29.00%	31.50%
61	27.50%	20.00%	29.00%	31.50%
62	27.50%	30.00%	29.00%	31.50%
63	27.50%	50.00%	29.00%	31.50%
64	22.00%	50.00%	29.00%	31.50%
65	22.00%	50.00%	45.00%	45.00%
66	27.50%	50.00%	45.00%	45.00%
67	55.00%	50.00%	45.00%	45.00%
68	55.00%	50.00%	45.00%	45.00%
69	55.00%	50.00%	45.00%	45.00%
70+	100.00%	100.00%	100.00%	100.00%

Retirement Rates (Reduced) – PERS (Others)

Age	Current		Proposed (Adopted)	
	Male	Female	Male	Female
50	6.00%	8.00%	7.00%	8.50%
51	6.00%	8.00%	7.00%	8.50%
52	9.00%	8.00%	11.00%	8.50%
53	6.00%	8.00%	11.00%	8.50%
54	20.00%	15.00%	24.00%	16.50%
55	6.00%	6.00%	7.00%	6.50%
56	6.00%	6.00%	7.00%	6.50%
57	6.00%	6.00%	7.00%	6.50%
58	6.00%	6.00%	7.00%	6.50%
59	15.00%	20.00%	18.00%	22.00%

Retirement Rates (Unreduced) – PERS (Others)

Age	Current		Proposed (Adopted)	
	Male	Female	Male	Female
<50	11.00%	11.00%	11.50%	11.50%
50	33.00%	38.50%	37.50%	40.50%
51	35.75%	38.50%	37.50%	40.50%
52	35.75%	38.50%	37.50%	40.50%
53	35.75%	38.50%	37.50%	40.50%
54	38.50%	38.50%	37.50%	40.50%
55	33.00%	33.00%	25.50%	24.00%
56	22.00%	22.00%	25.50%	24.00%
57	22.00%	19.80%	25.50%	24.00%
58	22.00%	19.80%	25.50%	24.00%
59	22.00%	19.80%	25.50%	24.00%
60	22.00%	23.10%	26.50%	24.50%
61	22.00%	22.00%	26.50%	24.50%
62	22.00%	22.00%	26.50%	24.50%
63	22.00%	22.00%	26.50%	24.50%
64	22.00%	22.00%	26.50%	24.50%
65	24.75%	28.60%	30.50%	28.50%
66	27.50%	28.60%	30.50%	28.50%
67	22.00%	24.20%	30.50%	28.50%
68	24.75%	24.20%	30.50%	28.50%
69	27.50%	24.20%	30.50%	28.50%
70	27.50%	24.20%	27.50%	27.50%
71	27.50%	24.20%	27.50%	27.50%
72	27.50%	27.50%	27.50%	27.50%
73	27.50%	27.50%	27.50%	27.50%
74	27.50%	38.50%	27.50%	27.50%
75	55.00%	55.00%	50.00%	50.00%
76	55.00%	55.00%	50.00%	50.00%
77	55.00%	55.00%	50.00%	50.00%
78	55.00%	55.00%	50.00%	50.00%
79	55.00%	55.00%	50.00%	50.00%
80+	100.00%	100.00%	100.00%	100.00%

Retirement Rates (Reduced) – TRS

Age	Current		Proposed (Adopted)	
	Male	Female	Male	Female
50	10.00%	10.00%	5.00%	5.00%
51	10.00%	10.00%	5.00%	5.00%
52	10.00%	10.00%	5.00%	10.00%
53	10.00%	12.00%	5.00%	5.00%
54	10.00%	12.00%	10.00%	5.00%
55	15.00%	8.00%	14.50%	11.00%
56	10.00%	8.00%	9.50%	11.00%
57	10.00%	8.00%	9.50%	11.00%
58	10.00%	8.00%	9.50%	11.00%
59	10.00%	8.00%	9.50%	11.00%

Retirement Rates (Unreduced) – TRS

Age	Current		Proposed (Adopted)	
	Male	Female	Male	Female
<45	3.00%	3.00%	3.00%	3.00%
45	5.00%	5.00%	5.50%	7.00%
46	5.00%	8.00%	5.50%	7.00%
47	5.00%	8.00%	5.50%	7.00%
48	5.00%	8.00%	5.50%	7.00%
49	5.00%	8.00%	5.50%	7.00%
50	5.00%	14.00%	12.50%	13.00%
51	8.00%	13.00%	12.50%	13.00%
52	15.00%	13.00%	12.50%	13.00%
53	15.00%	14.00%	12.50%	13.00%
54	15.00%	15.00%	12.50%	13.00%
55	20.00%	17.00%	20.00%	17.50%
56	17.00%	17.00%	20.00%	17.50%
57	15.00%	17.00%	20.00%	17.50%
58	20.00%	17.00%	20.00%	17.50%
59	20.00%	23.00%	20.00%	17.50%
60	25.00%	23.00%	19.50%	23.50%
61	18.00%	23.00%	19.50%	23.50%
62	18.00%	21.00%	19.50%	23.50%
63	18.00%	21.00%	19.50%	23.50%
64	18.00%	26.00%	19.50%	23.50%
65	30.00%	21.00%	28.00%	23.50%
66	25.00%	21.00%	28.00%	23.50%
67	25.00%	21.00%	28.00%	23.50%
68	25.00%	26.00%	28.00%	23.50%
69	35.00%	26.00%	28.00%	23.50%
70	30.00%	26.00%	30.00%	36.00%
71	30.00%	37.00%	30.00%	36.00%
72	30.00%	37.00%	30.00%	36.00%
73	30.00%	37.00%	30.00%	36.00%
74	30.00%	37.00%	30.00%	36.00%
75	50.00%	50.00%	50.00%	50.00%
76	50.00%	50.00%	50.00%	50.00%
77	50.00%	50.00%	50.00%	50.00%
78	50.00%	50.00%	50.00%	50.00%
79	50.00%	50.00%	50.00%	50.00%
80+	100.00%	100.00%	100.00%	100.00%

Retirement Rates – NGNMRS

Age	Current		Proposed (Adopted)	
	Male	Female	Male	Female
<51	13.00%	13.00%	15.34%	18.20%
51	13.00%	13.00%	15.34%	18.20%
52	13.00%	13.00%	15.34%	18.20%
53	15.00%	15.00%	17.70%	21.00%
54	20.00%	20.00%	23.60%	28.00%
55	25.00%	25.00%	18.50%	16.25%
56	35.00%	35.00%	25.90%	22.75%
57	40.00%	40.00%	29.60%	26.00%
58	45.00%	45.00%	33.30%	29.25%
59	50.00%	50.00%	37.00%	32.50%
60	55.00%	55.00%	40.70%	35.75%
61	60.00%	60.00%	44.40%	35.75%
62	60.00%	60.00%	44.40%	35.75%
63	60.00%	60.00%	44.40%	35.75%
64	60.00%	60.00%	44.40%	35.75%
65+	100.00%	100.00%	100.00%	100.00%