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February 1, 2022

Timothy Allen
Retirement System Director and Chief Investment Officer
Tacoma Employees' Retirement System
3628 South 35th Street
Tacoma, WA 98409

Re: July 2022 Cost-of-Living Adjustments

Dear Tim:

We have calculated the COLAs to be applied to member benefits in July 2022. The COLAs are summarized as follows.

<u>Date of Retirement</u>	<u>COLA</u>	<u>Percent of Original Purchasing Power*</u>
On or before July 1, 1978	3.167%	50.0%
July 2, 1978, through July 1, 2021	2.125%	51.7% - 100.0%
After July 1, 2021	No COLA	100.0%

* Loss of purchasing power is not measured until a full year has passed since retirement.

Summary of CPI increases

The Seattle-Tacoma-Bremerton CPI-W experienced a 4.750% increase from 825.961 in 2020 to 865.195 in 2021. Therefore, all members who retired on or before July 1, 2021 are eligible for the full 2.125% COLA, based on TMC Section 1.30.665. Per Section 1.30.665A the CPI-W increase is rounded to the nearest 0.05 of one percent but not more than 2.125%. Two exhibits detailing the development of the COLA factors are enclosed with this letter.

Members with retirement dates on or before July 1, 1978 were included in the 50% restoration for 2009 and will have their benefits increased by 3.167%. Their resulting purchasing power will be 50% of their original purchasing power after the increase in July 2022.

Calculations

The calculations were performed consistently with the interpretation of TMC Section 1.30.665 used in prior years. This letter provides the COLAs and describes their calculation. The letter is sent early to give the Board time to review the COLAs. In June or July, the System will calculate the increase in each member's retirement benefit using the appropriate COLA factor based on the date of the original member's retirement. We will be available to review those calculations and to answer any questions the System may have at that time.

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The COLAs are based on the Seattle-Tacoma-Bremerton Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W), as specified in the law. This letter covers a great amount of detail. Most of this detail is a restatement of explanations provided in past years. The description provides a thorough documentation of the COLA process.

Examples

Example 1: members retired in June 2003. These members will be receiving their nineteenth COLAs. The CPI increases have been 1.42%, 1.57%, 3.02%, 3.73%, 3.79%, 4.48%, 0.44%, 0.78%, 3.17%, 2.54%, 1.22%, 1.93%, 0.91%, 2.28%, 3.32%, 3.36%, 2.14%, 1.90%, and 4.75% respectively. These members have received COLAs of 1.400% in 2004, 1.600% in 2005 and 2.125% for each year from 2006 through 2021. These members will receive a 2.125% COLA in 2022.

Total COLA and CPI increases including 2022:

$$\begin{aligned} \text{CPI increases} &= 1.0142 \times 1.0157 \times 1.0302 \times 1.0373 \times 1.0379 \times 1.0448 \times 1.0044 \times 1.0078 \\ &\quad \times 1.0317 \times 1.0254 \times 1.0122 \times 1.0193 \times 1.0091 \times 1.0228 \times 1.0332 \times 1.0336 \\ &\quad \times 1.0214 \times 1.0190 \times 1.0475 = 1.58504 \text{ (Column 5 of Exhibit 1)} \\ &= 865.195/545.850 \end{aligned}$$

$$\text{COLA increases} = 1.01400 \times 1.01600 \times 1.02125^{17} = 1.4729$$

Since the cumulative COLA increases including the 2.125% COLA in 2022 are less than the cumulative CPI increases, these members get the entire 2.125% COLA.

Example 2: members retired in June 2021. These members will be receiving their COLAs. The CPI increase was 4.75%. Since the code states the COLA is the minimum of 2.125% and the CPI rounded to the nearest 0.05%, these members will receive a 2.125% COLA.

Example 3: members retired in June 2019.

$$\text{CPI increases} = 1.0214 \times 1.0190 \times 1.0475 = 1.09028 \text{ (Column 5 of Exhibit 1)}$$

$$\begin{aligned} \text{COLA increases} &= 1.0190 \times 1.02125 = 1.04065 \text{ prior to 2022 adjustment (Column 8 of} \\ &\quad \text{Exhibit 1). Including a 2.125\% increase for 2022 would result in a total} \\ &\quad \text{of } 1.06277 = 1.04065 \times 1.02125. \end{aligned}$$

Since the cumulative COLA increases including the 2.125% COLA in 2022 (1.06277) are less than the cumulative CPI increases (1.09028), these members will receive the entire 2.125% COLA.

Overview of COLAs

Annual COLAs for TERS are granted in July to all members who retired on or before July 1 of the preceding year. The COLAs are based on the Seattle-Tacoma-Bellevue Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W) for the two years preceding the year in which the COLA is granted. Therefore, a member retiring in June of 2021 will receive the first COLA in July of 2022, and it will be based on the increase in CPI-W from 2020 to 2021. A member retiring in August of 2021 will receive the first COLA in July of 2023, and it will be based on the increase in CPI-W from 2021 to 2022.

The generalizations are:

- All COLAs are based on increases in the CPI for the period ending in the year preceding the COLA.
- The first COLA for members who retired on or before July 1 is based on increases in the CPI from the calendar year prior to retirement to the calendar year of retirement.
- The first COLA for members who retired after July 1 is based on increases in the CPI from the calendar year of retirement to the calendar year after retirement.

Calculation of Factors

The enclosed Exhibit 1 “Factors Applied in Calculating the 2022 COLA Increases” uses 17 columns to calculate the COLA factors. Consistent with the previous discussion, the factors will be different for members who retired in the first or second half of the calendar year. A complete description of the columns follows:

1. The first three columns show the Seattle-Tacoma-Bellevue CPI-W. The average value given in Column 3 is the beginning point for the calculation.
2. Column 4 documents the annual increase in the CPI.
3. Columns 5 and 6 document the cumulative increase in the CPI to be used in calculating the 50% restoration benefits and maximum accumulated COLA. As an example, if a member retired in March of 1980, the member’s 2022 restoration COLA and maximum accumulated COLA would be based on increases in the CPI from 1979 (214.600) to 2021 (865.195). The corresponding factor is $865.195 / 214.600 = 4.03166$. This number is shown in Column 5.
4. Column 7 documents the general TERS COLA given in each year. Some retirees have received less than this amount, as benefits are limited to 100% of original purchasing power.
5. Columns 8 and 9 document the cumulative annual COLAs granted prior to the 2022 COLA. They ignore the effect of any restorations of purchasing power. As an example, members retiring in March of 1980 received the first COLA in July of 1981, and as of June 2022 have received sixteen 1.75% COLAs (1981 – 1996), four 2.00% COLAs (1997-2000), and twenty-one 2.125% COLAs (2001-2021) for a cumulative increase of $1.0175^{16} \times 1.02^4 \times 1.02125^{21} = 2.22190$. This number is shown in Column 8. In 2003 to 2005, in 2010 to 2011, in 2014 to 2016, and in 2021, some recent retirees were not eligible for the full 2.125% COLA due to

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inflation less than 2.125%. Exhibit 2 documents how these COLAs less than 2.125% combined to provide the cumulative COLAs shown in Columns 8 and 9.

6. Columns 10 and 11 document the maximum accumulated COLA which represents the magnitude of accumulated CPI-W increases over the cumulative TERS COLA increases. The maximum accumulated COLA would restore the member to 100% of original purchasing power. Note that these are rounded to the nearest 0.05%. This is used to determine whether or not the full 2.125% increase can be granted under Section 1.30.665C.
7. Columns 12 and 13 document the percent of original purchasing power which members have before the July 1, 2022 COLA based on the CPI measures used to calculate the 2022 COLA. As an example, if a member retired in March of 1980, the cumulative increase in the CPI (Column 5) has been 4.03166, while the member's cumulative COLA increases (Column 8) have been 2.22190. The combined effect is that the member's benefit now provides $2.22190 / 4.03166 = 55.111\%$ of its original purchasing power. This number is shown in Column 12.

Prior restorations are included in these calculations. Members who were included in the prior 50% restoration are currently receiving 48.465% of their original purchasing power as seen in the bottom of Columns 12 and 13.

8. Columns 14 and 15 show the COLA factor to be applied to the portion of the current retirement benefit that is subject to escalation. Due to the CPI increasing by 4.75% this year, all members who retired on or before July 1, 2021 will receive the greater of (a) the 2.125% increase and (b) the COLA to restore them to 50% of their purchasing power.
9. Columns 16 and 17 show the Percent of Original Purchasing Power after the July 2022 COLA increases. All members have at least 50% of their original purchasing power. Members retiring on or before July 1, 1978 will have 50.000% of their original purchasing power. A restoration of purchasing power increase will be required this year. In some years, some members may be slightly above or below the 100% mark since the COLAs are rounded to the nearest 0.05%.

Caveats and Certification

Milliman's work product was prepared exclusively for the use or benefit of the Tacoma Employees' Retirement System for a specific and limited purpose. It is not for the use or benefit of any third party for any purpose. Any third party recipient of Milliman's work product who desires professional guidance should not rely upon Milliman's work product, but should engage qualified professionals for advice appropriate to its own specific needs. Any distribution of this letter must be in its entirety, unless prior written consent from Milliman is obtained.

The consultants who worked on this assignment are retirement actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuary is independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, I hereby certify that, to the best of my knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. I am a member of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

If you have any questions, feel free to contact me.

Sincerely,



Daniel R. Wade, FSA, EA, MAAA
Consulting Actuary

DRW/va

Attachments

cc: Cathy Marx (w/ Attachments)
Julie Smith (w/ Attachments)

Tacoma Employees' Retirement System Factors Applied in Calculating the 2022 COLA Increases

Ret Year	(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
	AVERAGE CPI-W		URBAN WAGE, CLERICAL SEATTLE		Annual CPI Increase	(Cumulative Increase in CPI at 2022 based on year w/ prior 6/30 CPI(2021)/CPI(T))		Tacoma COLA given on 7/1 of Year *	Cumulative Tacoma COLA @ 6/30/2022 *		Maximum Accumulated COLA **		Percent of Original Purchasing Power @ 6/30/2022 **		Total COLA Factor at 7/2021 with 50% Minimum ROPP		Percent of Original Purchasing Power @ 7/1/2022 **	
	1st Half	2nd Half	Avg	DOR		DOR	DOR		DOR	DOR	DOR	DOR	DOR	DOR	DOR	DOR	DOR	DOR
				<= 7/1	>=7/2	<= 7/1	>=7/2	<= 7/1	>=7/2	<= 7/1	>=7/2	<= 7/1	>=7/2	<= 7/1	>=7/2	<= 7/1	>=7/2	<= 7/1
2022					1.00000	N/A	2.125%	1.00000	N/A	1.0000	N/A	100.000%	N/A	1.00000	N/A	100.000%	N/A	
2021			865.195	4.75%	1.04750	1.00000	2.125%	1.00000	1.00000	1.0475	1.0000	95.465%	100.000%	1.02125	1.00000	97.494%	100.000%	
2020			825.961	1.90%	1.06745	1.04750	2.125%	1.01900	1.00000	1.0475	1.0475	95.461%	95.465%	1.02125	1.02125	97.490%	97.494%	
2019			810.526	2.14%	1.09028	1.06745	2.125%	1.04065	1.01900	1.0475	1.0475	95.448%	95.461%	1.02125	1.02125	97.477%	97.490%	
2018			793.554	3.36%	1.12694	1.09028	2.125%	1.06511	1.04065	1.0580	1.0475	94.514%	95.448%	1.02125	1.02125	96.523%	97.477%	
2017			767.741	3.32%	1.16438	1.12694	2.125%	1.08775	1.06511	1.0705	1.0580	93.419%	94.514%	1.02125	1.02125	95.404%	96.523%	
2016			743.051	2.28%	1.19096	1.16438	2.125%	1.11086	1.08775	1.0720	1.0705	93.275%	93.419%	1.02125	1.02125	95.257%	95.404%	
2015			726.470	0.91%	1.20176	1.19096	2.125%	1.12086	1.11086	1.0720	1.0720	93.269%	93.275%	1.02125	1.02125	95.250%	95.257%	
2014			719.942	1.93%	1.22498	1.20176	2.125%	1.14272	1.12086	1.0720	1.0720	93.284%	93.269%	1.02125	1.02125	95.267%	95.250%	
2013			706.291	1.22%	1.23992	1.22498	2.125%	1.15643	1.14272	1.0720	1.0720	93.267%	93.284%	1.02125	1.02125	95.249%	95.267%	
2012			697.784	2.54%	1.27140	1.23992	2.125%	1.18567	1.15643	1.0725	1.0720	93.257%	93.267%	1.02125	1.02125	95.239%	95.249%	
2011			680.504	3.17%	1.31172	1.27140	2.125%	1.22344	1.18567	1.0720	1.0725	93.270%	93.257%	1.02125	1.02125	95.252%	95.239%	
2010			659.589	0.78%	1.32197	1.31172	2.125%	1.23323	1.22344	1.0720	1.0720	93.287%	93.270%	1.02125	1.02125	95.269%	95.252%	
2009			654.472	0.44%	1.32778	1.32197	2.125%	1.23878	1.23323	1.0720	1.0720	93.297%	93.287%	1.02125	1.02125	95.279%	95.269%	
2008			651.608	4.48%	1.38731	1.32778	2.125%	1.29386	1.23878	1.0720	1.0720	93.264%	93.297%	1.02125	1.02125	95.246%	95.279%	
2007			623.650	3.79%	1.43983	1.38731	2.125%	1.34230	1.29386	1.0725	1.0720	93.226%	93.264%	1.02125	1.02125	95.207%	95.246%	
2006			600.900	3.73%	1.49352	1.43983	2.125%	1.37082	1.34230	1.0895	1.0725	91.785%	93.226%	1.02125	1.02125	93.735%	95.207%	
2005			579.300	3.02%	1.53867	1.49352	2.125%	1.39995	1.37082	1.0990	1.0895	90.984%	91.785%	1.02125	1.02125	92.918%	93.735%	
2004			562.300	1.57%	1.56285	1.53867	2.125%	1.42165	1.39995	1.0995	1.0990	90.965%	90.984%	1.02125	1.02125	92.898%	92.918%	
2003			553.600	1.42%	1.58504	1.56285	2.125%	1.44226	1.42165	1.0990	1.0995	90.992%	90.965%	1.02125	1.02125	92.926%	92.898%	
2002	543.2	548.5	545.850	1.80%	1.61357	1.58504	2.125%	1.46822	1.44226	1.0990	1.0990	90.992%	90.992%	1.02125	1.02125	92.926%	92.926%	
2001	532.8	539.6	536.200	3.54%	1.67074	1.61357	2.125%	1.52019	1.46822	1.0990	1.0990	90.989%	90.992%	1.02125	1.02125	92.922%	92.926%	
2000	512.4	523.3	517.850	3.77%	1.73368	1.67074	2.00%	1.55515	1.52019	1.1150	1.0990	89.702%	90.989%	1.02125	1.02125	91.608%	92.922%	
1999	495.3	502.8	499.050	3.10%	1.78741	1.73368	2.00%	1.58626	1.55515	1.1270	1.1150	88.746%	89.702%	1.02125	1.02125	90.632%	91.608%	
1998	480.7	487.4	484.050	2.61%	1.83401	1.78741	2.00%	1.61798	1.58626	1.1335	1.1270	88.221%	88.746%	1.02125	1.02125	90.096%	90.632%	
1997	469.1	474.4	471.750	3.10%	1.89093	1.83401	2.00%	1.65034	1.61798	1.1460	1.1335	87.277%	88.221%	1.02125	1.02125	89.131%	90.096%	
1996	452.7	462.4	457.550	3.31%	1.95348	1.89093	1.75%	1.68335	1.65034	1.1605	1.1460	86.172%	87.277%	1.02125	1.02125	88.003%	89.131%	
1995	439.8	446.0	442.900	2.90%	2.01021	1.95348	1.75%	1.71281	1.68335	1.1735	1.1605	85.205%	86.172%	1.02125	1.02125	87.016%	88.003%	
1994	426.2	434.6	430.400	3.65%	2.08355	2.01021	1.75%	1.74278	1.71281	1.1955	1.1735	83.645%	85.205%	1.02125	1.02125	85.422%	87.016%	
1993	411.9	418.6	415.250	2.99%	2.14582	2.08355	1.75%	1.77328	1.74278	1.2100	1.1955	82.639%	83.645%	1.02125	1.02125	84.395%	85.422%	
1992	399.6	406.8	403.200	3.53%	2.22158	2.14582	1.75%	1.80431	1.77328	1.2315	1.2100	81.217%	82.639%	1.02125	1.02125	82.943%	84.395%	
1991	386.1	392.8	389.450	5.54%	2.34470	2.22158	1.75%	1.83589	1.80431	1.2770	1.2315	78.299%	81.217%	1.02125	1.02125	79.963%	82.943%	
1990	361.8	376.2	369.000	7.13%	2.51182	2.34470	1.75%	1.86802	1.83589	1.3445	1.2770	74.369%	78.299%	1.02125	1.02125	75.949%	79.963%	
1989	340.3	348.6	344.450	4.66%	2.62897	2.51182	1.75%	1.90071	1.86802	1.3830	1.3445	72.298%	74.369%	1.02125	1.02125	73.835%	75.949%	
1988	326.1	332.1	329.100	3.30%	2.71562	2.62897	1.75%	1.93397	1.90071	1.4040	1.3830	71.217%	72.298%	1.02125	1.02125	72.730%	73.835%	
1987	315.6	321.6	318.600	2.35%	2.77930	2.71562	1.75%	1.96781	1.93397	1.4125	1.4040	70.803%	71.217%	1.02125	1.02125	72.307%	72.730%	
1986			311.300	0.71%	2.79908	2.77930	1.75%	2.00225	1.96781	1.3980	1.4125	71.532%	70.803%	1.02125	1.02125	73.053%	72.307%	
1985			309.100	2.08%	2.85732	2.79908	1.75%	2.03729	2.00225	1.4025	1.3980	71.301%	71.532%	1.02125	1.02125	72.816%	73.053%	
1984			302.800	3.27%	2.95087	2.85732	1.75%	2.07294	2.03729	1.4235	1.4025	70.249%	71.301%	1.02125	1.02125	71.741%	72.816%	
1983			293.200	-0.27%	2.94284	2.95087	1.75%	2.10922	2.07294	1.3950	1.4235	71.673%	70.249%	1.02125	1.02125	73.196%	71.741%	
1982			294.000	6.48%	3.13363	2.94284	1.75%	2.14613	2.10922	1.4600	1.3950	68.487%	71.673%	1.02125	1.02125	69.942%	73.196%	

* See Exhibit 2 for detail. Amount shown is the maximum for the year, ignoring restoration of purchasing power COLAs, which are not included. Some retirees received less based on 100% of purchasing power maximum.

** All members retiring on or before July 1, 1978 have had their benefits increased to at least 50% of original purchasing power. These increases are included.



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**Tacoma Employees' Retirement System
Factors Applied in Calculating the 2022 COLA Increases**

Ret Year	(1)		(2)	(3)	(4)	(5)		(6)	(7)	(8)		(9)	(10)		(11)	(12)		(13)	(14)		(15)	(16)	(17)
	AVERAGE CPI-W		Annual CPI Increase	URBAN WAGE, CLERICAL SEATTLE (All Items 1967 = 100) Avg	Annual CPI Increase	(Cumulative Increase in CPI at 2022 based on year w/ prior 6/30) CPI(2021)/CPI(T)		Tacoma COLA given on 7/1 of Year *	Cumulative Tacoma COLA @ 6/30/2022 *		Maximum Accumulated COLA **		Percent of Original Purchasing Power @ 6/30/2022 **		Total COLA Factor at 7/2021 with 50% Minimum ROPP		Percent of Original Purchasing Power @ 7/1/2022 **		DOR	DOR	DOR	DOR	
	1st Half	2nd Half				DOR	DOR		DOR	DOR	DOR	DOR	DOR	DOR	DOR	DOR							
						<= 7/1	>=7/2		<= 7/1	>=7/2	<= 7/1	>=7/2	<= 7/1	>=7/2	<= 7/1	>=7/2	<= 7/1	>=7/2					<= 7/1
1981		276.100	10.84%	3.47328	3.13363	1.75%	2.18369	2.14613	1.5905	1.4600	62.871%	68.487%	1.02125	1.02125	64.207%	69.942%							
1980		249.100	16.08%	4.03166	3.47328	1.75%	2.22190	2.18369	1.8145	1.5905	55.111%	62.871%	1.02125	1.02125	56.282%	64.207%							
1979		214.600	10.73%	4.46437	4.03166	1.75%	2.26078	2.22190	1.9745	1.8145	50.641%	55.111%	1.02125	1.02125	51.717%	56.282%							
1978		193.800	9.12%	4.87159	4.46437	1.75%	2.30035	2.26078	2.0633	1.9745	48.465%	50.641%	1.03167	1.02125	50.000%	51.717%							
1977		177.600	7.96%	5.25954	4.87159	1.75%	2.34060	2.30035	2.0633	2.0633	48.465%	48.465%	1.03167	1.03167	50.000%	50.000%							
1976		164.500	5.58%	5.55324	5.25954	1.75%	2.38157	2.34060	2.0633	2.0633	48.465%	48.465%	1.03167	1.03167	50.000%	50.000%							
1975		155.800	10.11%	6.11445	5.55324	1.75%	2.42324	2.38157	2.0633	2.0633	48.465%	48.465%	1.03167	1.03167	50.000%	50.000%							
1974		141.500	10.98%	6.78584	6.11445	1.75%	2.46565	2.42324	2.0633	2.0633	48.465%	48.465%	1.03167	1.03167	50.000%	50.000%							
1973		127.500	6.52%	7.22803	6.78584	6.00%	2.50880	2.46565	2.0633	2.0633	48.465%	48.465%	1.03167	1.03167	50.000%	50.000%							
1972		119.700	2.84%	7.43295	7.22803	1.50%	2.65933	2.50880	2.0633	2.0633	48.465%	48.465%	1.03167	1.03167	50.000%	50.000%							
1971		116.400	2.11%	7.58943	7.43295	7.50%	2.69922	2.65933	2.0633	2.0633	48.465%	48.465%	1.03167	1.03167	50.000%	50.000%							
1970		114.000	4.40%	7.92303	7.58943	1.50%	2.90166	2.69922	2.0633	2.0633	48.465%	48.465%	1.03167	1.03167	50.000%	50.000%							
1969		109.200	4.90%	8.31119	7.92303	9.50%	2.94518	2.90166	2.0633	2.0633	48.465%	48.465%	1.03167	1.03167	50.000%	50.000%							
1968		104.100	4.10%	8.65195	8.31119	1.00%	3.22497	2.94518	2.0633	2.0633	48.465%	48.465%	1.03167	1.03167	50.000%	50.000%							

* See Exhibit 2 for detail. Amount shown is the maximum for the year, ignoring restoration of purchasing power COLAs, which are not included. Some retirees received less based on 100% of purchasing power maximum.

** All members retiring on or before July 1, 1978 have had their benefits increased to at least 50% of original purchasing power. These increases are included.



This work product was prepared solely for Tacoma Employees' Retirement System for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

Documentation of Cumulative COLAs for Retirement Dates on or before 7/1 of Given Year

Ret Year	Tacoma COLA given on 7/1 of Year*	Cumulative COLA at 7/2012	7/2013 COLA	Cumulative COLA at 7/2013	7/2014 COLA	Cumulative COLA at 7/2014	7/2015 COLA	Cumulative COLA at 7/2015	7/2016 COLA	Cumulative COLA at 7/2016	7/2017 COLA	Cumulative COLA at 7/2017	7/2018 COLA	Cumulative COLA at 7/2018	7/2019 COLA	Cumulative COLA at 7/2019	7/2020 COLA	Cumulative COLA at 7/2020	7/2021 COLA	Cumulative COLA at 7/2021
2022	2.1250%																			
2021	2.1250%																			
2020	2.1250%																			
2019	2.1250%																		1.9000%	1.01900
2018	2.1250%														2.1250%	1.02125	2.1250%	1.04295	1.9000%	1.04065
2017	2.1250%														2.1250%	1.04295	2.1250%	1.06511	2.1250%	1.06511
2016	2.1250%														2.1250%	1.04295	2.1250%	1.06511	2.1250%	1.08775
2015	2.1250%														2.1250%	1.04295	2.1250%	1.06511	2.1250%	1.11086
2014	2.1250%														2.1250%	1.04295	2.1250%	1.06511	2.1250%	1.12086
2013	2.1250%														2.1250%	1.04295	2.1250%	1.06511	2.1250%	1.14272
2012	2.1250%														2.1250%	1.04295	2.1250%	1.06511	2.1250%	1.15643
2011	2.1250%	1.02125	2.1250%	1.02125	1.6500%	1.03810	1.9000%	1.05782	0.9000%	1.06734	2.1250%	1.09003	2.1250%	1.11319	2.1250%	1.13684	2.1250%	1.16100	2.1250%	1.18567
2010	2.1250%	1.02942	2.1250%	1.05130	2.1250%	1.07364	2.1250%	1.09645	1.2500%	1.11016	2.1250%	1.13375	2.1250%	1.15784	2.1250%	1.18244	2.1250%	1.20757	2.1250%	1.23323
2009	2.1250%	1.03354	2.1250%	1.05550	2.1250%	1.07793	2.1250%	1.10084	1.3000%	1.11515	2.1250%	1.13885	2.1250%	1.16305	2.1250%	1.18776	2.1250%	1.21300	2.1250%	1.23878
2008	2.1250%	1.08003	2.1250%	1.10298	2.1250%	1.12641	2.1250%	1.15035	1.2500%	1.16473	2.1250%	1.18948	2.1250%	1.21476	2.1250%	1.24057	2.1250%	1.26693	2.1250%	1.29386
2007	2.1250%	1.11086	2.1250%	1.13447	2.1250%	1.15858	2.1250%	1.18320	2.1250%	1.20834	2.1250%	1.23402	2.1250%	1.26024	2.1250%	1.28702	2.1250%	1.31437	2.1250%	1.34230
2006	2.1250%	1.13447	2.1250%	1.15858	2.1250%	1.18320	2.1250%	1.20834	2.1250%	1.23402	2.1250%	1.26024	2.1250%	1.28702	2.1250%	1.31437	2.1250%	1.34230	2.1250%	1.37082
2005	2.1250%	1.15858	2.1250%	1.18320	2.1250%	1.20834	2.1250%	1.23402	2.1250%	1.26024	2.1250%	1.28702	2.1250%	1.31437	2.1250%	1.34230	2.1250%	1.37082	2.1250%	1.39955
2004	2.1250%	1.17653	2.1250%	1.20154	2.1250%	1.22707	2.1250%	1.25314	2.1250%	1.27977	2.1250%	1.30697	2.1250%	1.33474	2.1250%	1.36310	2.1250%	1.39207	2.1250%	1.42165
2003	2.1250%	1.19359	2.1250%	1.21896	2.1250%	1.24486	2.1250%	1.27131	2.1250%	1.29833	2.1250%	1.32592	2.1250%	1.35409	2.1250%	1.38287	2.1250%	1.41225	2.1250%	1.44226
2002	2.1250%	1.21508	2.1250%	1.24090	2.1250%	1.26727	2.1250%	1.29420	2.1250%	1.32170	2.1250%	1.34978	2.1250%	1.37847	2.1250%	1.40776	2.1250%	1.43767	2.1250%	1.46822
2001	2.1250%	1.25808	2.1250%	1.28481	2.1250%	1.31212	2.1250%	1.34000	2.1250%	1.36847	2.1250%	1.39755	2.1250%	1.42725	2.1250%	1.45758	2.1250%	1.48855	2.1250%	1.52019
2000	2.0000%	1.28702	2.1250%	1.31437	2.1250%	1.34230	2.1250%	1.37082	2.1250%	1.39995	2.1250%	1.42970	2.1250%	1.46008	2.1250%	1.49111	2.1250%	1.52279	2.1250%	1.55515
1999	2.0000%	1.31276	2.1250%	1.34066	2.1250%	1.36914	2.1250%	1.39824	2.1250%	1.42795	2.1250%	1.45829	2.1250%	1.48928	2.1250%	1.52093	2.1250%	1.55325	2.1250%	1.58626
1998	2.0000%	1.33901	2.1250%	1.36747	2.1250%	1.39653	2.1250%	1.42620	2.1250%	1.45651	2.1250%	1.48746	2.1250%	1.51907	2.1250%	1.55135	2.1250%	1.58432	2.1250%	1.61798
1997	2.0000%	1.36579	2.1250%	1.39482	2.1250%	1.42446	2.1250%	1.45473	2.1250%	1.48564	2.1250%	1.51721	2.1250%	1.54945	2.1250%	1.58238	2.1250%	1.61600	2.1250%	1.65034
1996	1.7500%	1.39311	2.1250%	1.42271	2.1250%	1.45295	2.1250%	1.48382	2.1250%	1.51535	2.1250%	1.54755	2.1250%	1.58044	2.1250%	1.61402	2.1250%	1.64832	2.1250%	1.68335
1995	1.7500%	1.41749	2.1250%	1.44761	2.1250%	1.47837	2.1250%	1.50979	2.1250%	1.54187	2.1250%	1.57464	2.1250%	1.60810	2.1250%	1.64227	2.1250%	1.67717	2.1250%	1.71281
1994	1.7500%	1.44230	2.1250%	1.47294	2.1250%	1.50424	2.1250%	1.53621	2.1250%	1.56885	2.1250%	1.60219	2.1250%	1.63624	2.1250%	1.67101	2.1250%	1.70652	2.1250%	1.74278
1993	1.7500%	1.46754	2.1250%	1.49872	2.1250%	1.53057	2.1250%	1.56309	2.1250%	1.59631	2.1250%	1.63023	2.1250%	1.66487	2.1250%	1.70025	2.1250%	1.73638	2.1250%	1.77328
1992	1.7500%	1.49322	2.1250%	1.52495	2.1250%	1.55735	2.1250%	1.59045	2.1250%	1.62424	2.1250%	1.65876	2.1250%	1.69401	2.1250%	1.73001	2.1250%	1.76677	2.1250%	1.80431
1991	1.7500%	1.51935	2.1250%	1.55164	2.1250%	1.58461	2.1250%	1.61828	2.1250%	1.65267	2.1250%	1.68779	2.1250%	1.72365	2.1250%	1.76028	2.1250%	1.79769	2.1250%	1.83589
1990	1.7500%	1.54594	2.1250%	1.57879	2.1250%	1.61234	2.1250%	1.64660	2.1250%	1.68159	2.1250%	1.71732	2.1250%	1.75382	2.1250%	1.79109	2.1250%	1.82915	2.1250%	1.86802
1989	1.7500%	1.57299	2.1250%	1.60642	2.1250%	1.64055	2.1250%	1.67542	2.1250%	1.71102	2.1250%	1.74738	2.1250%	1.78451	2.1250%	1.82243	2.1250%	1.86116	2.1250%	1.90071
1988	1.7500%	1.60052	2.1250%	1.63453	2.1250%	1.66926	2.1250%	1.70474	2.1250%	1.74096	2.1250%	1.77796	2.1250%	1.81574	2.1250%	1.85432	2.1250%	1.89373	2.1250%	1.93397
1987	1.7500%	1.62853	2.1250%	1.66313	2.1250%	1.69848	2.1250%	1.73457	2.1250%	1.77143	2.1250%	1.80907	2.1250%	1.84751	2.1250%	1.88677	2.1250%	1.92687	2.1250%	1.96781
1986	1.7500%	1.65703	2.1250%	1.69224	2.1250%	1.72820	2.1250%	1.76492	2.1250%	1.80243	2.1250%	1.84073	2.1250%	1.87985	2.1250%	1.91979	2.1250%	1.96059	2.1250%	2.00225
1985	1.7500%	1.68603	2.1250%	1.72185	2.1250%	1.75844	2.1250%	1.79581	2.1250%	1.83397	2.1250%	1.87294	2.1250%	1.91274	2.1250%	1.95339	2.1250%	1.99490	2.1250%	2.03729
1984	1.7500%	1.71553	2.1250%	1.75199	2.1250%	1.78922	2.1250%	1.82724	2.1250%	1.86607	2.1250%	1.90572	2.1250%	1.94622	2.1250%	1.98757	2.1250%	2.02981	2.1250%	2.07294
1983	1.7500%	1.74555	2.1250%	1.78265	2.1250%	1.82053	2.1250%	1.85921	2.1250%	1.89872	2.1250%	1.93907	2.1250%	1.98027	2.1250%	2.02236	2.1250%	2.06533	2.1250%	2.10922
1982	1.7500%	1.77610	2.1250%	1.81384	2.1250%	1.85239	2.1250%	1.89175	2.1250%	1.93195	2.1250%	1.97300	2.1250%	2.01493	2.1250%	2.05775	2.1250%	2.10147	2.1250%	2.14613
1981	1.7500%	1.80718	2.1250%	1.84558	2.1250%	1.88480	2.1250%	1.92485	2.1250%	1.96576	2.1250%	2.00753	2.1250%	2.05019	2.1250%	2.09376	2.1250%	2.13825	2.1250%	2.18369
1980	1.7500%	1.83881	2.1250%	1.87788	2.1250%	1.91779	2.1250%	1.95854	2.1250%	2.00016	2.1250%	2.04266	2.1250%	2.08607	2.1250%	2.13040	2.1250%	2.17567	2.1250%	2.22190
1979	1.7500%	1.87099	2.1250%	1.91074	2.1250%	1.95135	2.1250%	1.99281	2.1250%	2.03516	2.1250%	2.07841	2.1250%	2.12257	2.1250%	2.16768	2.1250%	2.21374	2.1250%	2.26078
1978	1.7500%	1.90373	2.1250%	1.94418	2.1250%	1.98550	2.1250%	2.02769	2.1250%	2.07078	2.1250%	2.11478	2.1250%	2.15972	2.1250%	2.20561	2.1250%	2.25248	2.1250%	2.30035
1977	1.7500%	1.93704	2.1250%	1.97821	2.1250%	2.02024	2.1250%	2.06317	2.1250%	2.10702	2.1250%	2.15179	2.1250%	2.19752	2.1250%	2.24421	2.1250%	2.29190	2.1250%	2.34060
1976	1.7500%	1.97094	2.1250%	2.01282	2.1250%	2.05560	2.1250%	2.09928	2.1250%	2.14389	2.1250%	2.18945	2.1250%	2.23597	2.1250%	2.28349	2.1250%	2.33201	2.1250%	2.38157
1975	1.7500%	2.00543	2.1250%	2.04805	2.1250%	2.09157	2.1250%	2.13602	2.1250%	2.18141	2.1250%	2.22776	2.1250%	2.27510	2.1250%	2.32345	2.1250%	2.37282	2.1250%	2.42324
1974	1.7500%	2.04053	2.1250%	2.08389	2.1250%	2.12817	2.1250%	2.17340	2.1250%	2.21958	2.1250%	2.26675	2.1250%	2.31492	2.1250%	2.36411	2.1250%	2.41434	2.1250%	2.46565
1973	6.0000%	2.07624	2.1250%	2.12036	2.1250%	2.16542	2.1250%	2.21143	2.1250%	2.25842	2.1250%	2.30642	2.1250%	2.35543	2.1250%	2.40548	2.1250%	2.45660	2.1250%	2.50880
1972	1.5000%	2.20081	2.1250%	2.24758	2.1250%	2.29534	2.1250%	2.34412	2.1250%	2.39393	2.1250%	2.44480	2.1250%	2.49675	2.1250%	2.54981	2.1250%	2.60399	2.1250%	2.65933
1971	7.5000%	2.23382	2.1250%	2.28129	2.1250%	2.32977	2.1250%	2.37928	2.1250%	2.42984	2.1250%	2.48147	2.1250%	2.53420	2.1250%	2.58806	2.1250%	2.64305	2.1250%	2.69922
1970	1.5000%	2.40136	2.1250%	2.45239	2.1250%	2.50450	2.1250%	2.55772	2.1250%	2.61208	2.1250%	2.66758	2.1250%	2.72427	2.1250%	2.78216	2.1250%	2.84128	2.1250%	2.90166
1969	9.5000%	2.43738	2.1250%	2.48918	2.1250%	2.54207	2.1250%	2.59609	2.1250%	2.65126	2.1250%	2.70760	2.1250%	2.76513	2.1250%	2.82389	2.125			