



1301 Fifth Avenue  
Suite 3800  
Seattle, WA 98101-2605  
USA

Tel +1 206 624 7940  
Fax +1 206 623 3485

milliman.com

February 7, 2020

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

Re: July 2020 Cost-of-Living Adjustments

Dear Tim:

We have calculated the COLAs to be applied to member benefits in July 2020. 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, 2019	2.125%	50.7% - 100.0%
After July 1, 2019	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 2.14% increase from 793.554 in 2018 to 810.526 in 2019. Therefore, all members who retired on or before July 1, 2019 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 2.125%. Their resulting purchasing power will be slightly over 50% of their original purchasing power after the increase in July 2020.

### 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.

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

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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 seventeenth 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%, and 2.14% respectively. These members have received COLAs of 1.400% in 2004, 1.600% in 2005 and 2.125% for each year from 2006 through 2019. These members will receive a 2.125% COLA in 2020.

Total COLA and CPI increases including 2020:

$$\begin{aligned} \text{CPI increases} &= 1.0142 \times 1.0157 \times 1.0302 \times 1.0373 \times 1.0379 \times 1.0448 \times 1.0044 \times 1.0078 \\ &\quad \times 1.0317 \times 1.0254 \times 1.0122 \times 1.0193 \times 1.0091 \times 1.0228 \times 1.0332 \times 1.0336 \\ &\quad \times 1.0214 = 1.48489 \text{ (Column 5 of Exhibit 1)} \\ &= 810.526/545.850 \end{aligned}$$

$$\text{COLA increases} = 1.01400 \times 1.01600 \times 1.02125^{15} = 1.4123$$

Since the cumulative COLA increases including the 2.125% COLA in 2020 are less than the cumulative CPI increases, these members get the entire 2.125% COLA.

Example 2: members retired in June 2019. These members will be receiving their COLAs. The CPI increase was 2.14%. 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 2010.

$$\text{CPI increases} = 1.0078 \times 1.0317 \times 1.0254 \times 1.0122 \times 1.0193 \times 1.0091 \times 1.0228 \times 1.0332 \times 1.0336 \times 1.0214 = 1.23844 \text{ (Column 5 of Exhibit 1)}$$

$$\text{COLA increases} = 1.18244 \text{ prior to 2020 adjustment (Column 8 of Exhibit 1). Including a } 2.125\% \text{ increase for 2020 would result in a total of } 1.20757 = 1.18244 \times 1.02125.$$

Because the cumulative COLA increases including the 2.125% COLA in 2020 (1.20757) are less than the cumulative CPI increases (1.23844), 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 2019 will receive the first COLA in July of 2020, and it will be based on the increase in CPI-W from 2018 to 2019. A member retiring in August of 2019 will receive the first COLA in July of 2021, and it will be based on the increase in CPI-W from 2019 to 2020.

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 2020 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 2020 restoration COLA and maximum accumulated COLA would be based on increases in the CPI from 1979 (214.600) to 2019 (810.526). The corresponding factor is  $810.526 / 214.600 = 3.77692$ . 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 2020 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 2020 have received sixteen 1.75% COLAs (1981 – 1996), four 2.00% COLAs (1997-2000), and nineteen 2.125% COLAs (2001-2019) for a cumulative increase of  $1.0175^{16} \times 1.02^4 \times 1.02125^{19} = 2.13040$ . This number is shown in Column 8. In 2003 to 2005, in 2010 to 2011, and in 2014 to 2016, some recent retirees were not eligible for the full 2.125% COLA due to 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, 2020 COLA based on the CPI measures used to calculate the 2020 COLA. As an example, if a member retired in March of 1980, the cumulative increase in the CPI (Column 5) has been 3.77692, while the member's cumulative COLA increases (Column 8) have been 2.13040. The combined effect is that the member's benefit now provides  $2.13040 / 3.77692 = 56.406\%$  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 49.603% 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. Members retiring on or before July 1, 2019 will receive the 2.125% COLA.
9. Columns 16 and 17 show the Percent of Original Purchasing Power after the July 2020 COLA increases. All members have at least 50% of their original purchasing power. 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/nlo

Attachments

cc: Cathy Marx (w/ Attachments)  
Mark Olleman (w/ Attachments)

### Tacoma Employees' Retirement System Factors Applied in Calculating the 2020 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 (All Items 1967 = 100)			Annual CPI Increase	(Cumulative Increase in CPI at 2020 based on year w/ prior 6/30) CPI(2019)/CPI(T)		Tacoma COLA given on 7/1 of Year *	Cumulative Tacoma COLA @ 6/30/2020 *		Maximum Accumulated COLA **		Percent of Original Purchasing Power @ 6/30/2020 **		Total COLA Factor at 7/2019 with 50% Minimum ROPP		Percent of Original Purchasing Power @ 7/1/2020 **								
	1st Half	2nd Half	Avg		DOR	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	>=7/2	<= 7/1	>=7/2				
2020					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							
2019			810.526	2.14%	1.02139	1.00000	2.125%	1.00000	1.00000	1.0215	1.0000	97.906%	100.000%	1.02125	1.00000	99.987%	100.000%							
2018			793.554	3.36%	1.05573	1.02139	2.125%	1.02125	1.00000	1.0340	1.0215	96.734%	97.906%	1.02125	1.02125	98.790%	99.987%							
2017			767.741	3.32%	1.09081	1.05573	2.125%	1.04295	1.02125	1.0460	1.0340	95.613%	96.734%	1.02125	1.02125	97.645%	98.790%							
2016			743.051	2.28%	1.11570	1.09081	2.125%	1.06511	1.04295	1.0475	1.0460	95.466%	95.613%	1.02125	1.02125	97.494%	97.645%							
2015			726.470	0.91%	1.12582	1.11570	2.125%	1.07470	1.06511	1.0475	1.0475	95.459%	95.466%	1.02125	1.02125	97.488%	97.494%							
2014			719.942	1.93%	1.14758	1.12582	2.125%	1.09566	1.07470	1.0475	1.0475	95.475%	95.459%	1.02125	1.02125	97.504%	97.488%							
2013			706.291	1.22%	1.16157	1.14758	2.125%	1.10880	1.09566	1.0475	1.0475	95.457%	95.475%	1.02125	1.02125	97.486%	97.504%							
2012			697.784	2.54%	1.19107	1.16157	2.125%	1.13684	1.10880	1.0475	1.0475	95.448%	95.457%	1.02125	1.02125	97.476%	97.486%							
2011			680.504	3.17%	1.22883	1.19107	2.125%	1.17306	1.13684	1.0475	1.0475	95.461%	95.448%	1.02125	1.02125	97.476%	97.476%							
2010			659.589	0.78%	1.23844	1.22883	2.125%	1.18244	1.17306	1.0475	1.0475	95.478%	95.461%	1.02125	1.02125	97.507%	97.490%							
2009			654.472	0.44%	1.24389	1.23844	2.125%	1.18776	1.18244	1.0475	1.0475	95.488%	95.478%	1.02125	1.02125	97.517%	97.507%							
2008			651.608	4.48%	1.29965	1.24389	2.125%	1.24057	1.18776	1.0475	1.0475	95.454%	95.488%	1.02125	1.02125	97.483%	97.517%							
2007			623.650	3.79%	1.34885	1.29965	2.125%	1.28702	1.24057	1.0480	1.0475	95.416%	95.454%	1.02125	1.02125	97.443%	97.483%							
2006			600.900	3.73%	1.39915	1.34885	2.125%	1.31437	1.28702	1.0645	1.0480	93.941%	95.416%	1.02125	1.02125	95.937%	97.443%							
2005			579.300	3.02%	1.44145	1.39915	2.125%	1.34230	1.31437	1.0740	1.0645	93.122%	93.941%	1.02125	1.02125	95.100%	95.937%							
2004			562.300	1.57%	1.46410	1.44145	2.125%	1.36310	1.34230	1.0740	1.0740	93.102%	93.122%	1.02125	1.02125	95.080%	95.100%							
2003			553.600	1.42%	1.48489	1.46410	2.125%	1.38287	1.36310	1.0740	1.0740	93.129%	93.102%	1.02125	1.02125	95.108%	95.080%							
2002	543.2	548.5	545.850	1.80%	1.51161	1.48489	2.125%	1.40776	1.38287	1.0740	1.0740	93.130%	93.129%	1.02125	1.02125	95.109%	95.108%							
2001	532.8	539.6	536.200	3.54%	1.56518	1.51161	2.125%	1.45758	1.40776	1.0740	1.0740	93.126%	93.130%	1.02125	1.02125	95.105%	95.109%							
2000	512.4	523.3	517.850	3.77%	1.62414	1.56518	2.00%	1.49111	1.45758	1.0890	1.0740	91.809%	93.126%	1.02125	1.02125	93.760%	95.105%							
1999	495.3	502.8	499.050	3.10%	1.67447	1.62414	2.00%	1.52093	1.49111	1.1010	1.0890	90.831%	91.809%	1.02125	1.02125	92.761%	93.760%							
1998	480.7	487.4	484.050	2.61%	1.71813	1.67447	2.00%	1.55135	1.52093	1.1075	1.1010	90.293%	90.831%	1.02125	1.02125	92.212%	92.761%							
1997	469.1	474.4	471.750	3.10%	1.77145	1.71813	2.00%	1.58238	1.55135	1.1195	1.1075	89.327%	90.293%	1.02125	1.02125	91.225%	92.212%							
1996	452.7	462.4	457.550	3.31%	1.83004	1.77145	1.75%	1.61402	1.58238	1.1340	1.1195	88.196%	89.327%	1.02125	1.02125	90.070%	91.225%							
1995	439.8	446.0	442.900	2.90%	1.88319	1.83004	1.75%	1.64227	1.61402	1.1465	1.1340	87.207%	88.196%	1.02125	1.02125	89.060%	90.070%							
1994	426.2	434.6	430.400	3.65%	1.95190	1.88319	1.75%	1.67101	1.64227	1.1680	1.1465	85.609%	87.207%	1.02125	1.02125	87.429%	89.060%							
1993	411.9	418.6	415.250	2.99%	2.01023	1.95190	1.75%	1.70025	1.67101	1.1825	1.1680	84.580%	85.609%	1.02125	1.02125	86.377%	87.429%							
1992	399.6	406.8	403.200	3.53%	2.08121	2.01023	1.75%	1.73001	1.70025	1.2030	1.1825	83.125%	84.580%	1.02125	1.02125	84.892%	86.377%							
1991	386.1	392.8	389.450	5.54%	2.19655	2.08121	1.75%	1.76028	1.73001	1.2480	1.2030	80.139%	83.125%	1.02125	1.02125	81.842%	84.892%							
1990	361.8	376.2	369.000	7.13%	2.35310	2.19655	1.75%	1.79109	1.76028	1.3140	1.2480	76.116%	80.139%	1.02125	1.02125	77.733%	81.842%							
1989	340.3	348.6	344.450	4.66%	2.46286	2.35310	1.75%	1.82243	1.79109	1.3515	1.3140	73.997%	76.116%	1.02125	1.02125	75.569%	77.733%							
1988	326.1	332.1	329.100	3.30%	2.54402	2.46286	1.75%	1.85432	1.82243	1.3720	1.3515	72.889%	73.997%	1.02125	1.02125	74.438%	75.569%							
1987	315.6	321.6	318.600	2.35%	2.60368	2.54402	1.75%	1.88677	1.85432	1.3800	1.3720	72.466%	72.889%	1.02125	1.02125	74.006%	74.438%							
1986			311.300	0.71%	2.62221	2.60368	1.75%	1.91979	1.88677	1.3660	1.3800	73.213%	72.466%	1.02125	1.02125	74.066%	74.006%							
1985			309.100	2.08%	2.67677	2.62221	1.75%	1.95339	1.91979	1.3705	1.3660	72.976%	73.213%	1.02125	1.02125	74.526%	74.066%							
1984			302.800	3.27%	2.76441	2.67677	1.75%	1.98757	1.95339	1.3910	1.3705	71.899%	72.976%	1.02125	1.02125	73.426%	74.526%							
1983			293.200	-0.27%	2.75689	2.76441	1.75%	2.02236	1.98757	1.3630	1.3910	73.356%	71.899%	1.02125	1.02125	74.915%	73.426%							
1982			294.000	6.48%	2.93562	2.75689	1.75%	2.05775	2.02236	1.4265	1.3630	70.096%	73.356%	1.02125	1.02125	71.585%	74.915%							
1981			276.100	10.84%	3.25382	2.93562	1.75%	2.09376	2.05775	1.5540	1.4265	64.348%	70.096%	1.02125	1.02125	65.715%	71.585%							
1980			249.100	16.08%	3.77692	3.25382	1.75%	2.13040	2.09376	1.7730	1.5540	56.406%	64.348%	1.02125	1.02125	57.604%	65.715%							

\* 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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**Exhibit 1  
(continued)**

**Tacoma Employees' Retirement System  
Factors Applied in Calculating the 2020 COLA Increases**

Ret Year	(1) AVERAGE CPI-W URBAN WAGE, CLERICAL SEATTLE (All Items 1967 = 100)		(2)	(3)	(4) Annual CPI Increase		(5) Cumulative Increase in CPI at 2020 based on year w/ prior 6/30 CPI(2019)/CPI(T)	(6)	(7) Tacoma COLA given on 7/1 of Year *	(8) Cumulative Tacoma COLA @ 6/30/2020 *		(9)	(10) Maximum Accumulated COLA **		(11)	(12) Percent of Original Purchasing Power @ 6/30/2020 **		(13)	(14) Total COLA Factor at 7/2019 with 50% Minimum ROPP		(15)	(16) Percent of Original Purchasing Power @ 7/1/2020 **		(17)			
	1st Half	2nd Half	Avg		DOR	DOR	<= 7/1	>=7/2		DOR	DOR		DOR	DOR		DOR	DOR		DOR	DOR		DOR	DOR		DOR	DOR	
1979			214.600	10.73%	4.18228	3.77692	1.75%	2.16768	2.13040	1.9295	1.7730	51.830%	56.406%	1.02125	1.02125	52.931%	57.604%										
1978			193.800	9.12%	4.56377	4.18228	1.75%	2.20561	2.16768	2.0160	1.9295	49.603%	51.830%	1.02125	1.02125	50.657%	52.931%										
1977			177.600	7.96%	4.92721	4.56377	1.75%	2.24421	2.20561	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%										
1976			164.500	5.58%	5.20235	4.92721	1.75%	2.28349	2.24421	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%										
1975			155.800	10.11%	5.72810	5.20235	1.75%	2.32345	2.28349	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%										
1974			141.500	10.98%	6.35707	5.72810	1.75%	2.36411	2.32345	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%										
1973			127.500	6.52%	6.77131	6.35707	6.00%	2.40548	2.36411	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%										
1972			119.700	2.84%	6.96328	6.77131	1.50%	2.54981	2.40548	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%										
1971			116.400	2.11%	7.10988	6.96328	7.50%	2.58806	2.54981	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%										
1970			114.000	4.40%	7.42240	7.10988	1.50%	2.78216	2.58806	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%										
1969			109.200	4.90%	7.78603	7.42240	9.50%	2.82389	2.78216	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%										
1968			104.100	4.10%	8.10526	7.78603	1.00%	3.09216	2.82389	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%										
1967			100.000	2.99%	8.34733	8.10526	0.00%	3.12308	3.09216	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%										
1966			97.100	2.75%	8.57699	8.34733	0.00%	3.12308	3.12308	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%										

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

Ret Year	AVERAGE CPI-W URBAN WAGE, CLERICAL SEATTLE (All Items 1967 = 100)			(Cumulative Increase in CPI at 2020 based on year w/ prior 6/30) CPI(2019)/CPI(T)				Tacoma COLA given on 7/1 of Year *	Cumulative Tacoma COLA @ 6/30/2020 *		Maximum Accumulated COLA **		Percent of Original Purchasing Power @ 6/30/2020 **		Total COLA Factor at 7/2019 with 50% Minimum ROPP		Percent of Original Purchasing Power @ 7/1/2020 **		
	1st Half	2nd Half	Avg	Annual CPI Increase	DOR <= 7/1	DOR >=7/2	DOR <= 7/1		DOR >=7/2	DOR <= 7/1	DOR >=7/2	DOR <= 7/1	DOR >=7/2	DOR <= 7/1	DOR >=7/2	DOR <= 7/1	DOR >=7/2	DOR <= 7/1	DOR >=7/2
	2020					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
	2019			810.526	2.14%	1.02139	1.00000		2.125%	1.00000	1.00000	1.0215	1.0000	97.906%	100.000%	1.02125	1.00000	99.987%	100.000%
2018			793.554	3.36%	1.05573	1.02139	2.125%	1.02125	1.00000	1.0340	1.0215	96.734%	97.906%	1.02125	1.02125	98.790%	99.987%		
2017			767.741	3.32%	1.09081	1.05573	2.125%	1.04295	1.02125	1.0460	1.0340	95.613%	96.734%	1.02125	1.02125	97.645%	98.790%		
2016			743.051	2.28%	1.11570	1.09081	2.125%	1.06511	1.04295	1.0475	1.0460	95.466%	95.613%	1.02125	1.02125	97.494%	97.645%		
2015			726.470	0.91%	1.12582	1.11570	2.125%	1.07470	1.06511	1.0475	1.0475	95.459%	95.466%	1.02125	1.02125	97.488%	97.494%		
2014			719.942	1.93%	1.14758	1.12582	2.125%	1.09566	1.07470	1.0475	1.0475	95.475%	95.459%	1.02125	1.02125	97.504%	97.488%		
2013			706.291	1.22%	1.16157	1.14758	2.125%	1.10880	1.09566	1.0475	1.0475	95.457%	95.475%	1.02125	1.02125	97.486%	97.504%		
2012			697.784	2.54%	1.19107	1.16157	2.125%	1.13684	1.10880	1.0475	1.0475	95.448%	95.457%	1.02125	1.02125	97.476%	97.486%		
2011			680.504	3.17%	1.22883	1.19107	2.125%	1.17306	1.13684	1.0475	1.0475	95.461%	95.448%	1.02125	1.02125	97.490%	97.476%		
2010			659.589	0.78%	1.23844	1.22883	2.125%	1.18244	1.17306	1.0475	1.0475	95.478%	95.461%	1.02125	1.02125	97.507%	97.490%		
2009			654.472	0.44%	1.24389	1.23844	2.125%	1.17305	1.18244	1.0605	1.0475	94.305%	95.478%	1.02125	1.02125	96.309%	97.507%		
2008			651.608	4.48%	1.29965	1.24389	2.125%	1.24057	1.17305	1.0475	1.0605	95.454%	94.305%	1.02125	1.02125	97.483%	96.309%		
2007			623.650	3.79%	1.34885	1.29965	2.125%	1.28702	1.24057	1.0480	1.0475	95.416%	95.454%	1.02125	1.02125	97.443%	97.483%		
2006			600.900	3.73%	1.39915	1.34885	2.125%	1.31437	1.28702	1.0645	1.0480	93.941%	95.416%	1.02125	1.02125	95.937%	97.443%		
2005			579.300	3.02%	1.44145	1.39915	2.125%	1.34230	1.31437	1.0740	1.0645	93.122%	93.941%	1.02125	1.02125	95.100%	95.937%		
2004			562.300	1.57%	1.46410	1.44145	2.125%	1.36310	1.34230	1.0740	1.0740	93.102%	93.122%	1.02125	1.02125	95.080%	95.100%		
2003			553.600	1.42%	1.48489	1.46410	2.125%	1.38287	1.36310	1.0740	1.0740	93.129%	93.102%	1.02125	1.02125	95.108%	95.080%		
2002	543.2	548.5	545.850	1.80%	1.51161	1.48489	2.125%	1.40776	1.38287	1.0740	1.0740	93.130%	93.129%	1.02125	1.02125	95.109%	95.108%		
2001	532.8	539.6	536.200	3.54%	1.56518	1.51161	2.125%	1.45758	1.40776	1.0740	1.0740	93.126%	93.130%	1.02125	1.02125	95.105%	95.109%		
2000	512.4	523.3	517.850	3.77%	1.62414	1.56518	2.00%	1.49111	1.45758	1.0890	1.0740	91.809%	93.126%	1.02125	1.02125	93.760%	95.105%		
1999	495.3	502.8	499.050	3.10%	1.67447	1.62414	2.00%	1.52093	1.49111	1.1010	1.0890	90.831%	91.809%	1.02125	1.02125	92.761%	93.760%		
1998	480.7	487.4	484.050	2.61%	1.71813	1.67447	2.00%	1.55135	1.52093	1.1075	1.1010	90.293%	90.831%	1.02125	1.02125	92.212%	92.761%		
1997	469.1	474.4	471.750	3.10%	1.77145	1.71813	2.00%	1.58238	1.55135	1.1195	1.1075	89.327%	90.293%	1.02125	1.02125	91.225%	92.212%		
1996	452.7	462.4	457.550	3.31%	1.83004	1.77145	1.75%	1.61402	1.58238	1.1340	1.1195	88.196%	89.327%	1.02125	1.02125	90.070%	91.225%		
1995	439.8	446.0	442.900	2.90%	1.88319	1.83004	1.75%	1.64227	1.61402	1.1465	1.1340	87.207%	88.196%	1.02125	1.02125	89.060%	90.070%		
1994	426.2	434.6	430.400	3.65%	1.95190	1.88319	1.75%	1.67101	1.64227	1.1680	1.1465	85.609%	87.207%	1.02125	1.02125	87.429%	89.060%		
1993	411.9	418.6	415.250	2.99%	2.01023	1.95190	1.75%	1.70025	1.67101	1.1825	1.1680	84.580%	85.609%	1.02125	1.02125	86.377%	87.429%		
1992	399.6	406.8	403.200	3.53%	2.08121	2.01023	1.75%	1.73001	1.70025	1.2030	1.1825	83.125%	84.580%	1.02125	1.02125	84.892%	86.377%		
1991	386.1	392.8	389.450	5.54%	2.19655	2.08121	1.75%	1.76028	1.73001	1.2480	1.2030	80.139%	83.125%	1.02125	1.02125	81.842%	84.892%		
1990	361.8	376.2	369.000	7.13%	2.35310	2.19655	1.75%	1.79109	1.76028	1.3140	1.2480	76.116%	80.139%	1.02125	1.02125	77.733%	81.842%		
1989	340.3	348.6	344.450	4.66%	2.46286	2.35310	1.75%	1.82243	1.79109	1.3515	1.3140	73.997%	76.116%	1.02125	1.02125	75.569%	77.733%		
1988	326.1	332.1	329.100	3.30%	2.54402	2.46286	1.75%	1.85432	1.82243	1.3720	1.3515	72.889%	73.997%	1.02125	1.02125	74.438%	75.569%		
1987	315.6	321.6	318.600	2.35%	2.60368	2.54402	1.75%	1.88677	1.85432	1.3800	1.3720	72.466%	72.889%	1.02125	1.02125	74.006%	74.438%		
1986			311.300	0.71%	2.62221	2.60368	1.75%	1.91979	1.88677	1.3660	1.3800	73.213%	72.466%	1.02125	1.02125	74.768%	74.006%		
1985			309.100	2.08%	2.67677	2.62221	1.75%	1.95339	1.91979	1.3705	1.3660	72.976%	73.213%	1.02125	1.02125	74.526%	74.768%		
1984			302.800	3.27%	2.76441	2.67677	1.75%	1.98757	1.95339	1.3910	1.3705	71.899%	72.976%	1.02125	1.02125	73.426%	74.526%		
1983			293.200	-0.27%	2.75689	2.76441	1.75%	2.02236	1.98757	1.3630	1.3910	73.356%	71.899%	1.02125	1.02125	74.915%	73.426%		
1982			294.000	6.48%	2.93562	2.75689	1.75%	2.05775	2.02236	1.4265	1.3630	70.096%	73.356%	1.02125	1.02125	71.585%	74.915%		
1981			276.100	10.84%	3.25382	2.93562	1.75%	2.09376	2.05775	1.5540	1.4265	64.348%	70.096%	1.02125	1.02125	65.715%	71.585%		
1980			249.100	16.08%	3.77692	3.25382	1.75%	2.13040	2.09376	1.7730	1.5540	56.406%	64.348%	1.02125	1.02125	57.604%	65.715%		
1979			214.600	10.73%	4.18228	3.77692	1.75%	2.16768	2.13040	1.9295	1.7730	51.830%	56.406%	1.02125	1.02125	52.931%	57.604%		
1978			193.800	9.12%	4.56377	4.18228	1.75%	2.20561	2.16768	2.0160	1.9295	49.603%	51.830%	1.02125	1.02125	50.657%	52.931%		
1977			177.600	7.96%	4.92721	4.56377	1.75%	2.24421	2.20561	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%		
1976			164.500	5.58%	5.20235	4.92721	1.75%	2.28349	2.24421	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%		
1975			155.800	10.11%	5.72810	5.20235	1.75%	2.32345	2.28349	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%		
1974			141.500	10.98%	6.35707	5.72810	1.75%	2.36411	2.32345	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%		
1973			127.500	6.52%	6.77131	6.35707	6.00%	2.40548	2.36411	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%		
1972			119.700	2.84%	6.96328	6.77131	1.50%	2.54981	2.40548	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%		
1971			116.400	2.11%	7.10988	6.96328	7.50%	2.58806	2.54981	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%		
1970			114.000	4.40%	7.42240	7.10988	1.50%	2.78216	2.58806	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%		
1969			109.200	4.90%	7.78603	7.42240	9.50%	2.82389	2.78216	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%		
1968			104.100	4.10%	8.10526	7.78603	1.00%	3.09216	2.82389	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%		
1967			100.000	2.99%	8.34733	8.10526	0.00%	3.12308	3.09216	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%		
1966			97.100	2.75%	8.57699	8.34733	0.00%	3.12308	3.12308	2.0160	2.0160	49.603%	49.603%	1.02125	1.02125	50.657%	50.657%		

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