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January 17, 2020

VIA E-MAIL

MaryMichelle Sosne
Actuarial Business Specialist
Oregon PERS

Re: 2018 Purchasing Power Study

Dear MaryMichelle:

As requested, we updated the annual purchasing power study for 2018 to compare how well monthly benefits paid to retirees and beneficiaries have kept up with inflation since retirement.

The Consumer Price Index for Portland (CPI-Portland) increased 4.17% in 2017. All retired Tier 1/Tier 2 members received a maximum of 2.00% annual cost-of-living adjustment (COLA) in August 2018, experiencing a decrease in purchasing power over the year.

The Supreme Court decision in *Moro v. State of Oregon* altered the COLA changes made in Senate Bills 822 and 861. After the *Moro* decision, the COLA payable depends in part on when a member's service was performed. Members who earn service on or after October 2013 will receive a COLA that reflects a blend of the benefit provided prior to October 2013 and the reduced COLA provided by Senate Bills 822 and 861.

For purposes of this study, we illustrated the purchasing power of Tier 1/Tier 2 members who earned all of their service before October 2013. Members who earned part of their service on or after October 2013 receive different cost-of-living adjustments and have different purchasing power than shown in this study.

Purchasing power in this report is defined as the cumulative post-retirement benefit increases in Tier 1/Tier 2 benefits compared to the cumulative CPI increases since the year of retirement. The chart below shows the change in purchasing power from 2017 to 2018 by year of retirement.

Year Retired	Purchasing Power	
	2017	2018
8/1/1980 – 7/1/1981 & prior	76.1%	74.5%
8/1/1981 – 7/1/1982	78.7%	77.1%
8/1/1982 – 7/1/1983	80.7%	79.0%
8/1/1983 – 7/1/1984	80.9%	79.2%
8/1/1984 – 7/1/1985	78.6%	77.0%
8/1/1985 – 7/1/1986	77.7%	76.0%
8/1/1986 – 7/1/1987	78.5%	76.9%
8/1/1987 – 7/1/1988	78.5%	76.9%
8/1/1988 – 7/1/1989	78.9%	77.3%
8/1/1989 – 7/1/1990	80.1%	78.4%
8/1/1990 – 7/1/1991	82.4%	80.7%
8/1/1991 – 7/1/1992	85.5%	83.7%
8/1/1992 – 7/1/1993	88.1%	86.2%
8/1/1993 – 7/1/1994	90.2%	88.3%
8/1/1994 – 7/1/1995	91.5%	89.6%
8/1/1995 – 7/1/1996	92.3%	90.4%
8/1/1996 – 7/1/1997	93.1%	91.2%
8/1/1997 – 7/1/1998	94.5%	92.5%
8/1/1998 – 7/1/1999	95.7%	93.7%

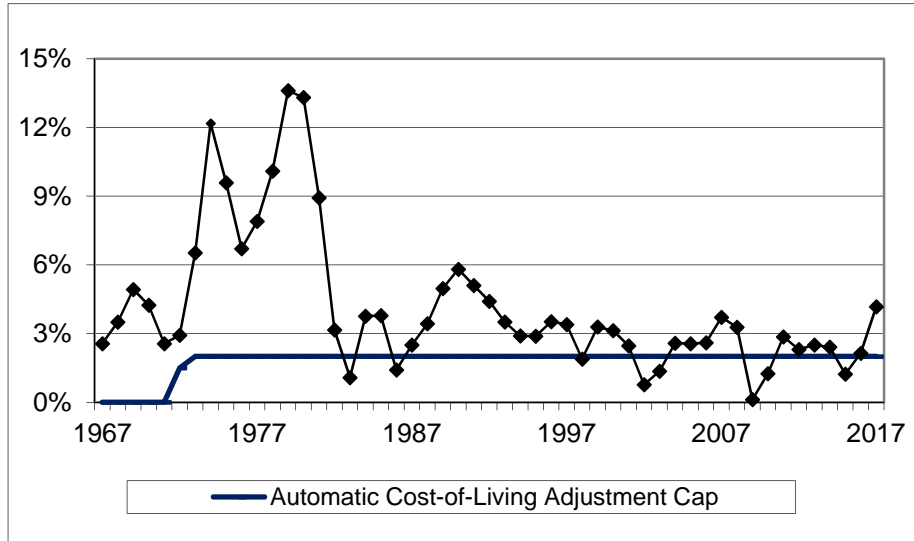
Year Retired	Purchasing Power	
	2017	2018
8/1/1999 – 7/1/2000	95.7%	93.7%
8/1/2000 – 7/1/2001	96.6%	94.6%
8/1/2001 – 7/1/2002	96.6%	94.6%
8/1/2002 – 7/1/2003	96.6%	94.6%
8/1/2003 – 7/1/2004	96.6%	94.6%
8/1/2004 – 7/1/2005	96.6%	94.6%
8/1/2005 – 7/1/2006	97.2%	95.1%
8/1/2006 – 7/1/2007	97.7%	95.7%
8/1/2007 – 7/1/2008	98.3%	96.2%
8/1/2008 – 7/1/2009	98.6%	96.6%
8/1/2009 – 7/1/2010	98.6%	96.5%
8/1/2010 – 7/1/2011	98.6%	96.5%
8/1/2011 – 7/1/2012	98.6%	96.5%
8/1/2012 – 7/1/2013	99.4%	97.3%
8/1/2013 – 7/1/2014	99.7%	97.6%
8/1/2014 – 7/1/2015	99.9%	97.8%
8/1/2015 – 7/1/2016	99.9%	97.8%
8/1/2016 – 7/1/2017	99.9%	97.8%
8/1/2017 – 7/1/2018	100%	97.9%

Inflation

In 2018 a COLA up to 2.00% was granted to retirees and beneficiaries. Prior to 2013, automatic COLAs were granted each year up to a maximum of 2.00% based on the CPI-Portland (defined by All Items, All Urban Consumers, Portland-Salem, OR-WA, Annual Average) as released by the Department of Labor. For years after 2018, we understand that COLAs will be determined based on the increase in the CPI for the West Region (CPI-West), since the CPI-Portland is no longer available.

For the COLA applicable to pre-October 2013 service, if the relevant CPI is at least 2.00% larger in one calendar year than in the prior, then retirees and beneficiaries receive a 2.00% COLA in the following year and the remaining percentage is carried forward in a “bank” to be used in future years when the relevant CPI increased by less than 2.00%. Retirees who have recently retired, and do not have a “bank” balance, receive a COLA equal to the relevant CPI amount if less than 2.00%, otherwise they receive 2.00%. With the enactment of Senate Bills 822 and 861, the COLA “bank” methodology is no longer applicable for service after October 2013, as the annual COLA level for that service is set without regard to current or historic CPI.

The graph below shows the CPI-Portland compared to the COLA cap each year.



The automatic COLA was established in 1972, and there have only been eight years (1983, 1986, 1998, 2002, 2003, 2009, 2010, and 2015) when inflation has been below the COLA cap. Consequently, retiree benefits have tended to lose their purchasing power. Attachment A shows the history of increases in CPI-Portland from 1962 through 2017.

The historical COLA amounts granted to retirees and beneficiaries are shown below:

Date	COLA	Exceptions
July 1972	1.50%	
July 1973 - July 2013	2.00% (maximum)	1.08% in July 1984 if retired on or after August 1983 1.41% in July 1987 if retired on or after August 1986 1.89% in July 1999 if retired on or after August 1998 1.24% in July 2003 if retired on or after August 2001 and prior to August 2002 0.77% in July 2003 if retired on or after August 2002 1.73% in July 2004 if retired on or after August 2000 and prior to August 2001 1.36% in July 2004 if retired on or after August 2001 1.40% in July 2010 if retired on or after August 2008 and prior to August 2009 0.12% in July 2010 if retired on or after August 2009 1.25% in July 2011 if retired on or after August 2008
July 2014 – July 2018	2.00% (maximum)	2.00% with bank applicable to service earned prior to October 2013. For service earned later, COLA is 1.25% on the first \$60,000 of annual benefits, and 0.15% on any benefits above that level. 1.64% in July 2016 for service earned prior to October 2013 if retired on or after August 2014 and prior to August 2015 1.23% in July 2016 for service earned prior to October 2013 if retired on or after August 2015

Benefit Increases

From April 1964 through December 1971 there were some one-time additional payments granted to retirees. These payments are not included in this analysis as they did not affect the ongoing benefit paid to the retiree. A summary of the one-time payments follows:

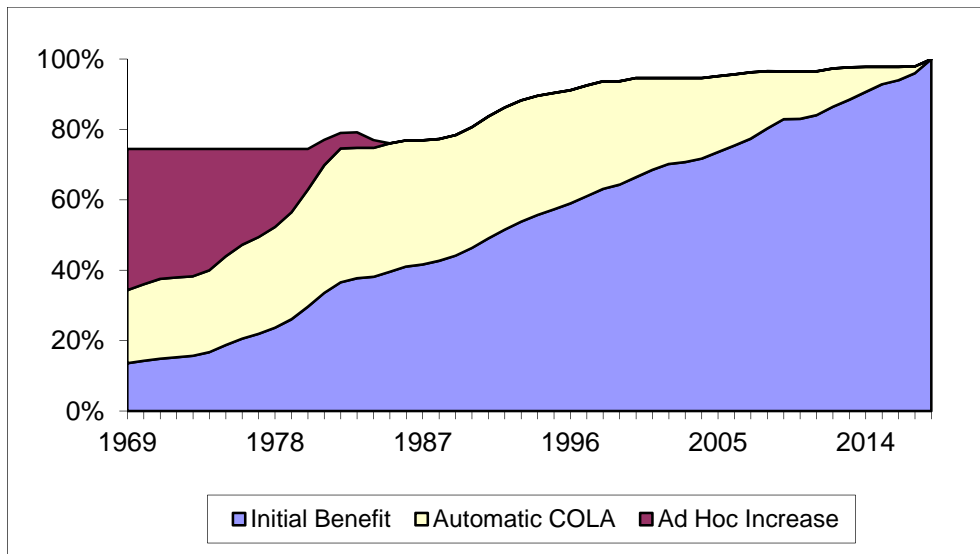
Effective Date	One Time Payment Amount
April 1964	Monthly Benefit
April 1965	1.5 x Monthly Benefit
April 1966, April 1967	2 x Monthly Benefit
April 1968, April 1969, April 1970, April 1971	3 x Monthly Benefit
December 1971	3.5 x Monthly Benefit

In addition, retirees and beneficiaries have been granted ad hoc benefit increases that resulted in increased monthly benefits going forward. A summary of the ad hoc increases granted by legislation is shown below, with the graded increases shown on Attachment B.

Effective Date	Ad Hoc Increase Granted by Legislation
January 1972	25% if retired prior to January 1968 12% if retired after December 1967 and prior to January 1972
January 1974	25% if retired prior to January 1968 20% if retired after December 1967 and prior to January 1972 12% if retired after December 1971 and prior to January 1974
October 1977	25% on first \$50 of monthly benefit 15% on next \$100 10% on next \$100 5% on next \$100 and 1% on monthly benefit over \$350
July 1979	2% for all retirees
July 1980	2% for all retirees
August 1981	Graded table by year of retirement to 11.40%
July 1982	Graded table by year of retirement to 11.40%
July 1985	Graded table by year of retirement to 7.28%
July 1986	Graded table by year of retirement to 7.28%
July 1989	Graded table by year of retirement to produce a 95% replacement of original purchasing power

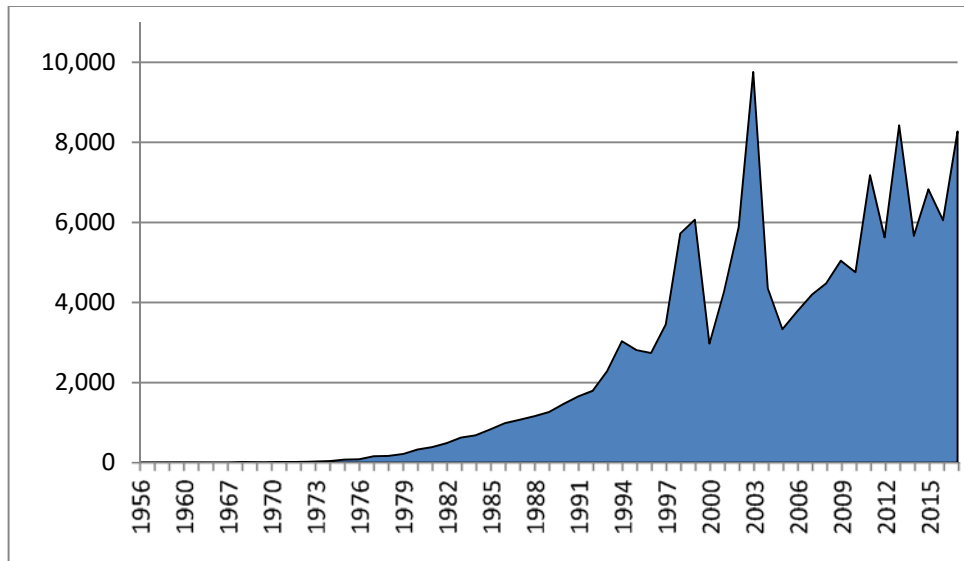
Current Purchasing Power

The current purchasing power of retirees depends on both the automatic COLA increases and the ad hoc increases granted, compared to the growth in the CPI over the same time period. The graph below shows the cumulative effects of increases granted as a percentage of a benefit adjusted by CPI by year of retirement.



As shown in the graph above, for long-time retired members, the majority of the increases in their benefits since retirement have come from ad hoc increases. Retirees who retired within the past 33 years have not received any ad hoc increases. However, inflation has been significantly lower than in the late 1970's, and the automatic COLA increases have tracked changes in CPI more closely. Purchasing power for retirees since 1996 has remained within 90 percent of original purchasing power.

The following graph shows the distribution of retirees and beneficiaries, from the December 31, 2017 actuarial valuation, by year of retirement. As shown in the graph below, a vast majority of retirees and beneficiaries have retired within the last 33 years and have not received any ad hoc increases. However, as their COLAs have tracked more closely with CPI, their purchasing power has remained higher than long-time retired members who have received ad hoc increases. For retirees/beneficiaries retired in the last 33 years, when considering benefits earned prior to October 2013, the average purchasing power is 94.1% compared to the average purchasing power of 76.7% for those retired more than 33 years ago.



Attachment C compares the cumulative post-retirement benefit increases in Tier 1/Tier 2 benefits to the cumulative CPI increases for the last 49 years. The middle columns show the level to which an initial benefit of \$100 per month would have risen, based on CPI increases and increases granted through PERS. The columns on the right show the original \$100 benefit and the PERS-adjusted benefit as a percentage of the CPI-adjusted benefit.

For example, a 1969 retiree with an original benefit of \$100 per month would need to be receiving \$735.04 per month now to have kept pace with inflation. Benefit increases granted through PERS would have increased the \$100 per month benefit to \$547.40 per month. The original benefit of \$100 per month is 13.6% of the CPI-adjusted benefit and the PERS-adjusted benefit of \$547.40 is 74.5% of the CPI-adjusted benefit.

Our analysis and conclusions are based on the data, methods and assumptions described above. Differences in the methods and assumptions may produce different results.

Calculations presented in this letter are for purposes of illustrating how well benefits paid to PERS retirees and beneficiaries have kept up with inflation since retirement. As such, they cannot be relied upon for other purposes, and calculations for purposes other than this use may be significantly different from the results contained in this letter. Accordingly, additional determinations may be needed for other purposes.

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Ms. MaryMichelle Sosne
January 17, 2020
Page 8

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

If you have any questions about the purchasing power report or need any additional information, please let us know

Sincerely,



Scott D. Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

encl.

cc: Matt Larrabee

ATTACHMENT A

History of Consumer Price Index —

Year	Portland CPI 1967 Basis ¹	Portland CPI 1982- 84 Basis ²	Annual Percentage Increase	Year	Portland CPI 1982- 84 Basis ²	West CPI 1982- 84 Basis ³	Annual Percentage Increase
1962	88.5			1990	127.4		5.81%
1963	90.2		1.92%	1991	133.9		5.10%
1964	92.2		2.22%	1992	139.8		4.41%
1965	94.6		2.60%	1993	144.7		3.51%
1966	97.5		3.07%	1994	148.9		2.90%
1967	100.0		2.56%	1995	153.2		2.89%
1968	103.5		3.50%	1996	158.6		3.52%
1969	108.6		4.93%	1997	164.0		3.40%
1970	113.2		4.24%	1998	167.1		1.89%
1971	116.1		2.56%	1999	172.6		3.29%
1972	119.5		2.93%	2000	178.0		3.13%
1973	127.3		6.53%	2001	182.4		2.47%
1974	142.8		12.18%	2002	183.8		0.77%
1975	156.5		9.59%	2003	186.3		1.36%
1976	167.0		6.71%	2004	191.1		2.58%
1977	180.2		7.90%	2005	196.0		2.56%
1978	198.4		10.10%	2006	201.1		2.60%
1979	225.4		13.61%	2007	208.6		3.71%
1980	255.4		13.31%	2008	215.4		3.28%
1981	278.2		8.93%	2009	215.6		0.12%
1982	287.0		3.16%	2010	218.3		1.25%
1983	290.1		1.08%	2011	224.6		2.86%
1984	301.0		3.76%	2012	229.8		2.31%
1985	312.4		3.79%	2013	235.5		2.50%
1986	316.8	108.2	1.41%	2014	241.2		2.41%
1987		110.9	2.50%	2015	244.2		1.23%
1988		114.7	3.43%	2016	249.4		2.14%
1989		120.4	4.97%	2017	259.8	254.7	4.17%

Sources: U.S. Department of Labor, Bureau of Labor Statistics

¹Consumer Price Index, All Items – Old Base, All Urban Consumers, Portland-Salem, OR-WA, Annual Average

²Consumer Price Index, All Items, All Urban Consumers, Portland-Salem, OR-WA, Annual Average

³Consumer Price Index, All Items in West Urban, All Urban Consumers, Annual Average

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ATTACHMENT B

Year Retired	Ad Hoc Adjustments by Effective Year				
	1981	1982	1985	1986	1989
1950	11.40	11.40	7.28	7.28	18.00
1951	10.64	10.64	7.28	7.28	19.00
1952	10.56	10.56	7.28	7.28	10.00
1953	10.16	10.16	7.28	7.28	8.00
1954	10.04	10.04	7.28	7.28	8.00
1955	10.00	10.00	7.25	7.25	7.00
1956	9.68	9.68	7.06	7.06	9.00
1957	9.28	9.28	6.82	6.82	9.00
1958	9.08	9.08	6.70	6.70	5.00
1959	8.96	8.96	6.62	6.62	3.00
1960	8.76	8.76	6.50	6.50	3.00
1961	8.64	8.64	6.42	6.42	2.00
1962	8.56	8.56	6.37	6.37	1.00
1963	8.32	8.32	6.22	6.22	1.00
1964	8.12	8.12	6.09	6.09	—
1965	7.88	7.88	5.94	5.94	—
1966	7.56	7.56	5.73	5.73	—
1967	7.36	7.36	5.60	5.60	—
1968	7.20	7.20	5.49	5.49	7.00
1969	6.88	6.88	5.28	5.28	4.00
1970	6.60	6.60	5.09	5.09	—
1971	6.36	6.36	4.93	4.93	—
1972	6.20	6.20	4.82	4.82	15.00
1973	5.92	5.92	4.63	4.63	14.00
1974	5.28	5.28	4.17	4.17	25.00
1975	4.92	4.92	3.92	3.92	15.00
1976	4.72	4.72	3.77	3.77	7.00
1977	4.44	4.44	3.57	3.57	3.00
1978	4.76	4.76	3.80	3.80	16.00
1979	4.32	4.32	3.48	3.48	11.00
1980	4.00	4.00	3.24	3.24	3.00
1981	—	4.00	3.09	3.09	—
1982		—	3.01	3.01	—
1983			3.00	3.00	—
1984			—	3.00	—
1985			—	—	—
1986				—	—
1987					—
1988					—
1989					—

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ATTACHMENT C

Comparison of Tier 1/Tier 2 Benefits to CPI at August, 2018

Year Retired	Count of Years	Cumulative Increase		Purchasing Power	
		CPI	Tier 1/Tier 2 Benefit	Initial Benefit	Current Benefit
8/1/1969-7/1/1970	49	735.04	547.40	13.6%	74.5%
8/1/1970-7/1/1971	48	700.51	521.68	14.3%	74.5%
8/1/1971-7/1/1972	47	672.01	500.46	14.9%	74.5%
8/1/1972-7/1/1973	46	655.24	487.97	15.3%	74.5%
8/1/1973-7/1/1974	45	636.59	474.08	15.7%	74.5%
8/1/1974-7/1/1975	44	597.57	445.02	16.7%	74.5%
8/1/1975-7/1/1976	43	532.69	396.70	18.8%	74.5%
8/1/1976-7/1/1977	42	486.07	361.98	20.6%	74.5%
8/1/1977-7/1/1978	41	455.51	339.22	22.0%	74.5%
8/1/1978-7/1/1979	40	422.16	314.39	23.7%	74.5%
8/1/1979-7/1/1980	39	383.43	285.55	26.1%	74.5%
8/1/1980-7/1/1981	38	337.50	251.34	29.6%	74.5%
8/1/1981-7/1/1982	37	297.85	229.52	33.6%	77.1%
8/1/1982-7/1/1983	36	273.44	216.06	36.6%	79.0%
8/1/1983-7/1/1984	35	265.06	209.86	37.7%	79.2%
8/1/1984-7/1/1985	34	262.23	201.86	38.1%	77.0%
8/1/1985-7/1/1986	33	252.72	192.17	39.6%	76.0%
8/1/1986-7/1/1987	32	243.50	187.25	41.1%	76.9%
8/1/1987-7/1/1988	31	240.11	184.65	41.6%	76.9%
8/1/1988-7/1/1989	30	234.25	181.06	42.7%	77.3%
8/1/1989-7/1/1990	29	226.49	177.54	44.2%	78.4%
8/1/1990-7/1/1991	28	215.76	174.06	46.3%	80.7%
8/1/1991-7/1/1992	27	203.92	170.66	49.0%	83.7%
8/1/1992-7/1/1993	26	194.02	167.31	51.5%	86.2%
8/1/1993-7/1/1994	25	185.83	164.03	53.8%	88.3%
8/1/1994-7/1/1995	24	179.52	160.80	55.7%	89.6%
8/1/1995-7/1/1996	23	174.46	157.65	57.3%	90.4%
8/1/1996-7/1/1997	22	169.56	154.56	59.0%	91.2%
8/1/1997-7/1/1998	21	163.80	151.54	61.1%	92.5%
8/1/1998-7/1/1999	20	158.41	148.41	63.1%	93.7%
8/1/1999-7/1/2000	19	155.47	145.66	64.3%	93.7%
8/1/2000-7/1/2001	18	150.52	142.43	66.4%	94.6%
8/1/2001-7/1/2002	17	145.95	138.09	68.5%	94.6%
8/1/2002-7/1/2003	16	142.44	134.75	70.2%	94.6%
8/1/2003-7/1/2004	15	141.35	133.72	70.7%	94.6%
8/1/2004-7/1/2005	14	139.45	131.93	71.7%	94.6%
8/1/2005-7/1/2006	13	135.94	129.34	73.6%	95.1%
8/1/2006-7/1/2007	12	132.55	126.80	75.4%	95.7%
8/1/2007-7/1/2008	11	129.19	124.32	77.4%	96.2%
8/1/2008-7/1/2009	10	124.57	120.27	80.3%	96.6%
8/1/2009-7/1/2010	9	120.61	116.42	82.9%	96.5%
8/1/2010-7/1/2011	8	120.47	116.28	83.0%	96.5%
8/1/2011-7/1/2012	7	118.98	114.85	84.0%	96.5%
8/1/2012-7/1/2013	6	115.67	112.60	86.5%	97.3%
8/1/2013-7/1/2014	5	113.06	110.39	88.4%	97.6%
8/1/2014-7/1/2015	4	110.30	107.84	90.7%	97.8%
8/1/2015-7/1/2016	3	107.71	105.31	92.8%	97.8%
8/1/2016-7/1/2017	2	106.40	104.03	94.0%	97.8%
8/1/2016-7/1/2017	1	104.17	102.00	96.0%	97.9%
8/1/2017-7/1/2018	0	100.00	100.00	100.0%	100.0%

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