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May 19, 2017

**VIA E-MAIL**

Debra Hembree  
Actuarial Services Coordinator  
Oregon PERS

**Re: 2016 Purchasing Power Study**

Dear Debra:

As requested, we updated the annual purchasing power study for 2016 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 1.23% in 2015. Tier 1/Tier 2 members who retired prior to August 2014 received a maximum of 2.00% annual cost-of-living adjustment (COLA) in August 2016, experiencing an increase in purchasing power over the year. Those who retired on or after August 2014 but before August 2015 received a maximum of 1.64% annual COLA in August 2016, also experiencing an increase in purchasing power over the year. Those who retired on or after August 2015 received a 1.23% annual COLA for service earned prior to October 2013, maintaining their purchasing power.

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 2015 to 2016 by year of retirement.

Year Retired	Purchasing Power	
	2015	2016
8/1/1980 – 7/1/1981 & prior	75.6%	76.2%
8/1/1981 – 7/1/1982	78.2%	78.8%
8/1/1982 – 7/1/1983	80.2%	80.8%
8/1/1983 – 7/1/1984	80.4%	81.0%
8/1/1984 – 7/1/1985	78.1%	78.7%
8/1/1985 – 7/1/1986	77.2%	77.8%
8/1/1986 – 7/1/1987	78.1%	78.7%
8/1/1987 – 7/1/1988	78.1%	78.7%
8/1/1988 – 7/1/1989	78.5%	79.1%
8/1/1989 – 7/1/1990	79.6%	80.2%
8/1/1990 – 7/1/1991	81.9%	82.5%
8/1/1991 – 7/1/1992	85.0%	85.6%
8/1/1992 – 7/1/1993	87.5%	88.2%
8/1/1993 – 7/1/1994	89.6%	90.3%
8/1/1994 – 7/1/1995	90.9%	91.6%
8/1/1995 – 7/1/1996	91.7%	92.4%
8/1/1996 – 7/1/1997	92.5%	93.2%
8/1/1997 – 7/1/1998	93.9%	94.6%

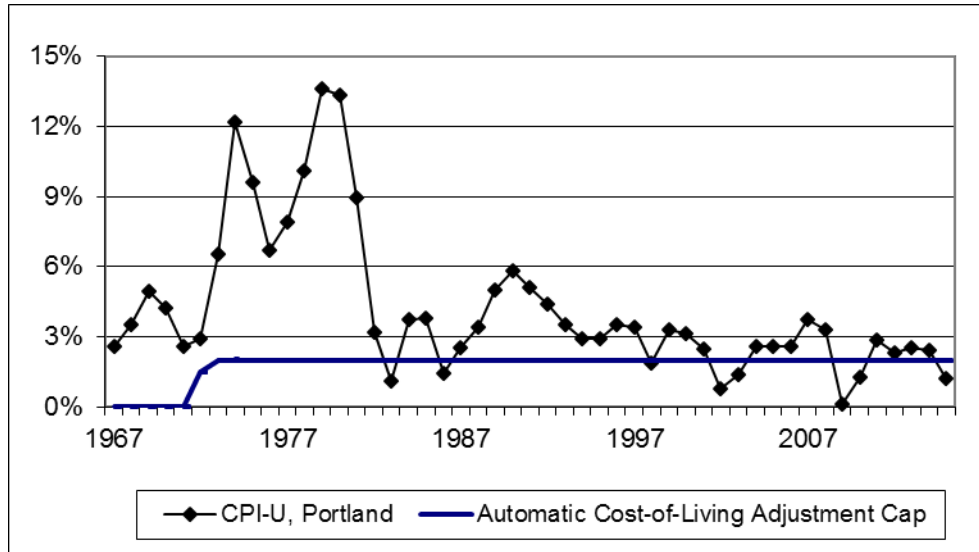
Year Retired	Purchasing Power	
	2015	2016
8/1/1998 – 7/1/1999	95.1%	95.8%
8/1/1999 – 7/1/2000	95.1%	95.8%
8/1/2000 – 7/1/2001	96.0%	96.8%
8/1/2001 – 7/1/2002	96.0%	96.8%
8/1/2002 – 7/1/2003	96.0%	96.8%
8/1/2003 – 7/1/2004	96.0%	96.8%
8/1/2004 – 7/1/2005	96.0%	96.8%
8/1/2005 – 7/1/2006	96.6%	97.3%
8/1/2006 – 7/1/2007	97.1%	97.8%
8/1/2007 – 7/1/2008	97.7%	98.4%
8/1/2008 – 7/1/2009	98.0%	98.7%
8/1/2009 – 7/1/2010	98.0%	98.7%
8/1/2010 – 7/1/2011	98.0%	98.7%
8/1/2011 – 7/1/2012	98.0%	98.7%
8/1/2012 – 7/1/2013	98.8%	99.6%
8/1/2013 – 7/1/2014	99.1%	99.9%
8/1/2014 – 7/1/2015	99.6%	100.0%
8/1/2015 – 7/1/2016	100.0%	100.0%

## Inflation

In 2016 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 the COLA applicable to pre-October 2013 service, if the CPI-Portland 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 CPI-Portland increased by less than 2.00%. Retirees who had recently retired, and did not have a “bank” balance, receive a COLA equal to the CPI-Portland amount if less than 2.00%, otherwise they received 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 2015.

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 2016	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:

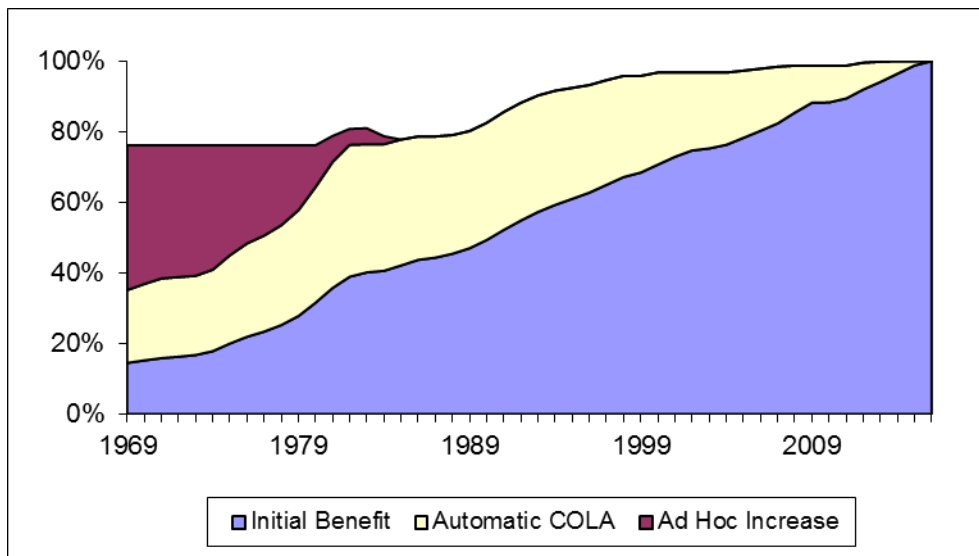
Effective Date	One Time Payment Amount
April 1964	Monthly Benefit
April 1965	1.5 × Monthly Benefit
April 1966, April 1967	2 × Monthly Benefit
April 1968, April 1969, April 1970, April 1971	3 × Monthly Benefit
December 1971	3.5 × Monthly Benefit

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

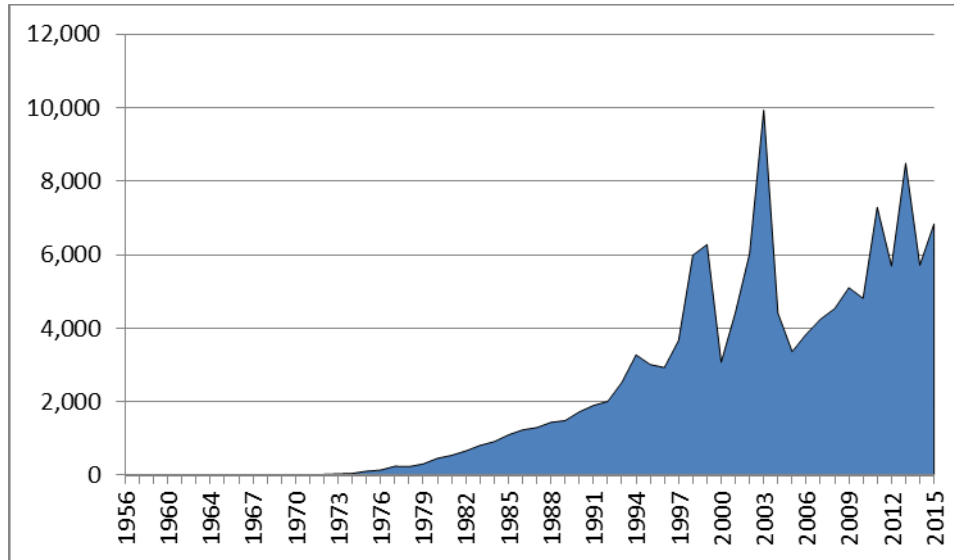
## Current Purchasing Power

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 31 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 1994 has remained within 90 percent of original purchasing power.

The following graph shows the distribution of retirees and beneficiaries, from the December 31, 2015 actuarial valuation, by year of retirement. As shown in the graph below, a vast majority of retirees and beneficiaries have retired within the last 31 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 31 years, when considering benefits earned prior to October 2013, the average purchasing power is 95.6% compared to the average purchasing power of 78.4% for those retired more than 31 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 47 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 \$690.84 per month now to have kept pace with inflation. Benefit increases granted through PERS would have increased the \$100 per month benefit to \$526.18 per month. The original benefit of \$100 per month is 14.5% of the CPI-adjusted benefit and the PERS-adjusted benefit of \$526.18 is 76.2% 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. Debra Hembree  
May 19, 2017  
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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: Steve Rodeman  
Matt Larrabee



# ATTACHMENT A

## History of Consumer Price Index — Portland

Year	CPI 1967 Basis	CPI 1982-84 Basis	Annual Percentage Increase	Year	CPI 1982-84 Basis	Annual Percentage Increase
1962	88.5			1989	120.4	4.97%
1963	90.2		1.92%	1990	127.4	5.81%
1964	92.2		2.22%	1991	133.9	5.10%
1965	94.6		2.60%	1992	139.8	4.41%
1966	97.5		3.07%	1993	144.7	3.51%
1967	100.0		2.56%	1994	148.9	2.90%
1968	103.5		3.50%	1995	153.2	2.89%
1969	108.6		4.93%	1996	158.6	3.52%
1970	113.2		4.24%	1997	164.0	3.40%
1971	116.1		2.56%	1998	167.1	1.89%
1972	119.5		2.93%	1999	172.6	3.29%
1973	127.3		6.53%	2000	178.0	3.13%
1974	142.8		12.18%	2001	182.4	2.47%
1975	156.5		9.59%	2002	183.8	0.77%
1976	167.0		6.71%	2003	186.3	1.36%
1977	180.2		7.90%	2004	191.1	2.58%
1978	198.4		10.10%	2005	196.0	2.56%
1979	225.4		13.61%	2006	201.1	2.60%
1980	255.4		13.31%	2007	208.6	3.71%
1981	278.2		8.93%	2008	215.4	3.28%
1982	287.0		3.16%	2009	215.6	0.12%
1983	290.1		1.08%	2010	218.3	1.25%
1984	301.0		3.76%	2011	224.6	2.86%
1985	312.4	106.7	3.79%	2012	229.8	2.31%
1986	316.8	108.2	1.41%	2013	235.5	2.50%
1987	324.7	110.9	2.50%	2014	241.2	2.41%
1988	335.8	114.7	3.43%	2015	244.2	1.23%

Source: U.S. Department of Labor, Bureau of Labor Statistics  
Consumer Price Index, All Items, All Urban Consumers, Portland-Salem, OR-WA, Annual Average

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# ATTACHMENT B

Year	Ad Hoc Adjustments by Effective Year					
	Retired	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, 2016

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	47	690.84	526.18	14.5%	76.2%
8/1/1970-7/1/1971	46	658.38	501.46	15.2%	76.2%
8/1/1971-7/1/1972	45	631.60	481.07	15.8%	76.2%
8/1/1972-7/1/1973	44	615.83	469.06	16.2%	76.2%
8/1/1973-7/1/1974	43	598.30	455.71	16.7%	76.2%
8/1/1974-7/1/1975	42	561.63	427.77	17.8%	76.2%
8/1/1975-7/1/1976	41	500.65	381.33	20.0%	76.2%
8/1/1976-7/1/1977	40	456.84	347.96	21.9%	76.2%
8/1/1977-7/1/1978	39	428.11	326.08	23.4%	76.2%
8/1/1978-7/1/1979	38	396.77	302.20	25.2%	76.2%
8/1/1979-7/1/1980	37	360.37	274.48	27.7%	76.2%
8/1/1980-7/1/1981	36	317.20	241.60	31.5%	76.2%
8/1/1981-7/1/1982	35	279.94	220.63	35.7%	78.8%
8/1/1982-7/1/1983	34	256.99	207.69	38.9%	80.8%
8/1/1983-7/1/1984	33	249.12	201.73	40.1%	81.0%
8/1/1984-7/1/1985	32	246.46	194.04	40.6%	78.7%
8/1/1985-7/1/1986	31	237.53	184.72	42.1%	77.8%
8/1/1986-7/1/1987	30	228.85	180.00	43.7%	78.7%
8/1/1987-7/1/1988	29	225.67	177.49	44.3%	78.7%
8/1/1988-7/1/1989	28	220.17	174.05	45.4%	79.1%
8/1/1989-7/1/1990	27	212.86	170.66	47.0%	80.2%
8/1/1990-7/1/1991	26	202.79	167.32	49.3%	82.5%
8/1/1991-7/1/1992	25	191.65	164.04	52.2%	85.6%
8/1/1992-7/1/1993	24	182.35	160.83	54.8%	88.2%
8/1/1993-7/1/1994	23	174.65	157.67	57.3%	90.3%
8/1/1994-7/1/1995	22	168.73	154.57	59.3%	91.6%
8/1/1995-7/1/1996	21	163.97	151.54	61.0%	92.4%
8/1/1996-7/1/1997	20	159.37	148.57	62.7%	93.2%
8/1/1997-7/1/1998	19	153.95	145.66	65.0%	94.6%
8/1/1998-7/1/1999	18	148.88	142.66	67.2%	95.8%
8/1/1999-7/1/2000	17	146.12	140.01	68.4%	95.8%
8/1/2000-7/1/2001	16	141.47	136.91	70.7%	96.8%
8/1/2001-7/1/2002	15	137.18	132.74	72.9%	96.8%
8/1/2002-7/1/2003	14	133.87	129.53	74.7%	96.8%
8/1/2003-7/1/2004	13	132.85	128.54	75.3%	96.8%
8/1/2004-7/1/2005	12	131.06	126.81	76.3%	96.8%
8/1/2005-7/1/2006	11	127.77	124.32	78.3%	97.3%
8/1/2006-7/1/2007	10	124.58	121.89	80.3%	97.8%
8/1/2007-7/1/2008	9	121.42	119.50	82.4%	98.4%
8/1/2008-7/1/2009	8	117.08	115.61	85.4%	98.7%
8/1/2009-7/1/2010	7	113.36	111.91	88.2%	98.7%
8/1/2010-7/1/2011	6	113.22	111.78	88.3%	98.7%
8/1/2011-7/1/2012	5	111.83	110.40	89.4%	98.7%
8/1/2012-7/1/2013	4	108.72	108.23	92.0%	99.6%
8/1/2013-7/1/2014	3	106.26	106.11	94.1%	99.9%
8/1/2014-7/1/2015	2	103.67	103.67	96.5%	100.0%
8/1/2015-7/1/2016	1	101.23	101.23	98.8%	100.0%
8/1/2016-7/1/2017	0	100.00	100.00	100.0%	100.0%

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