Supporting Documents

PERS Shared Responsibility Framework
Office of Governor Kate Brown
April 12, 2019

Contents

PERS By The Numbers

Updated October 2018

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Executive Message

The Oregon Public Employees Retirement System (PERS) serves the people of Oregon by administering public employee benefit trusts to pay the right person, the right benefit, at the right time. The 2018 edition of *PERS by the Numbers* shares the latest facts and figures about the administration of PERS. Where possible, figures are either as of the latest actuarial valuation (December 31, 2017) or the latest fiscal year end date (June 30, 2018).

The Oregon Legislature is the "plan sponsor" for PERS, the system. The legislature determines the benefit structure for participating public employees. Those benefits have been modified over time, starting from the plan inception in 1945 with Tier One; the creation of the Tier Two program for employees starting in 1996; the Oregon Public Service Retirement Program (OPSRP) for employees that started work after August 28, 2003; and the creation of the Individual Account Program (IAP), an account-based benefit for all PERS members, starting in 2004.

The legislature also established PERS, the agency, to administer the retirement system in partnership with more than 900 public employers, including school districts, special districts, cities, counties, community colleges, universities, and state agencies. PERS is required to administer the retirement system for participating public employers, and must follow all relevant state and federal laws when determining and administering benefits.

PERS engages with over 367,000 current and former public employees or their beneficiaries, and maintains important data about their public employment service, salaries, and other information. PERS also administers a health insurance program for retirees (PERS Health Insurance Program) and a 457(b) voluntary deferred compensation program (Oregon Savings Growth Plan).

Key facts and information in *PERS by the Numbers* include:

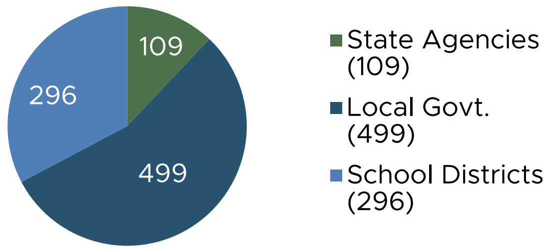
- PERS membership and demographic information, including the **number of members eligible to retire** (page 3).
- Retiree benefit information, including **monthly benefit payment amounts** (page 6).
- Updated research from PERS' annual **Tier One/Tier Two Replacement Ratio Study**, including data on average salary replacement ratios, monthly benefits, and salaries (pages 10-12).
- New information added in 2018 highlighting data about the **Individual Account Program (IAP)**, an account-based benefit for all PERS members actively employed since 2004, separate from their defined benefit pension (page 13).
- PERS' **system funded status** as of December 31, 2017 (pages 20-21).
- **System revenue** information, including member and employer contributions and investment income, as well as earnings credited to member accounts (pages 22-29).
- The **economic impact** of PERS monthly benefit payments (pages 30-32).
- A list of **PERS-participating employers** by county, according to their mailing address (pages 34-39).

All Oregonians are served in one way or another by public employees. PERS works to ensure that we pay the right benefit, to the right person, at the right time.

Kevin Olineck
PERS Director

1. System Demographics (as of June 30, 2018)

PERS-participating employers: Currently 904, including all state agencies, universities, and community colleges; all school districts; and almost all cities, counties, and other local government units. *See a full list of PERS employers in Appendix A.*



Membership by category

		State Govt.	Local Govt.	School Districts	Total
Tier One	Active	6,181	6,823	8,388	21,392
	Inactive	3,758	4,145	4,510	12,413
Tier Two	Active	9,221	11,592	14,323	35,136
	Inactive	3,539	5,486	6,236	15,261
OPSRP	Active	32,918	38,024	48,527	119,469
	Inactive	4,866	6,384	7,069	18,319
Sub-total	Active	48,320	56,439	71,238	175,997
	Inactive	12,163	16,015	17,815	45,993
Retirements*		42,847	41,184	61,832	145,863
TOTAL					**367,853**

*Retirements include beneficiaries, but not members who received total lump-sum retirement or account withdrawal payouts.

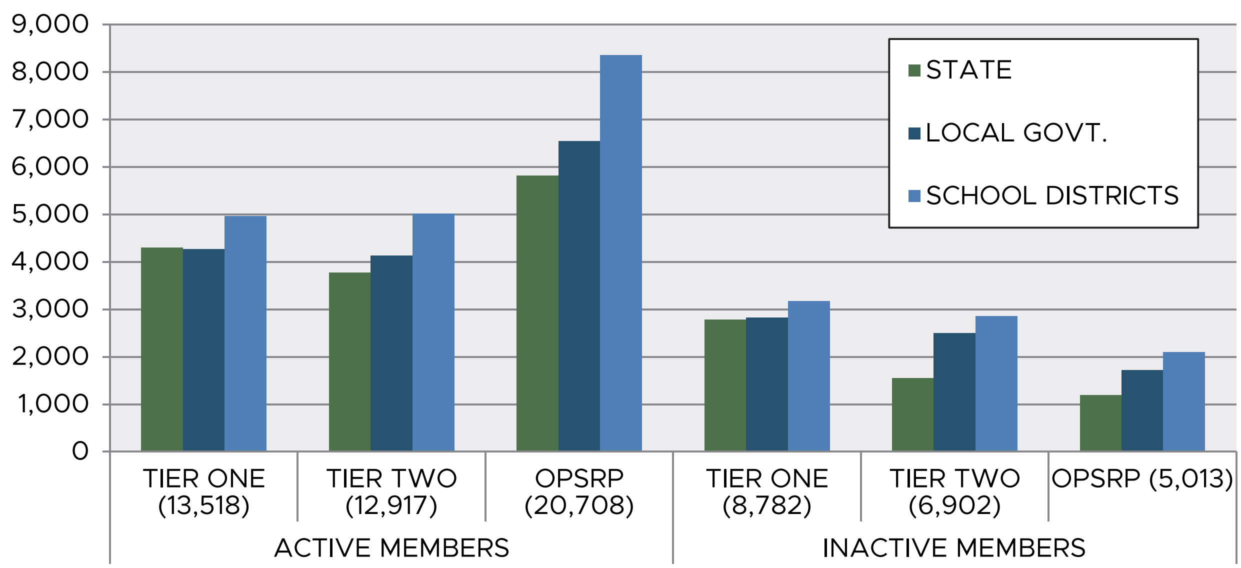
State Government: State agencies, universities, judges

Local Government: Cities, counties, special districts, community colleges

Active: Currently working for a PERS-participating employer

Inactive: Not retired; not currently working for a PERS-participating employer

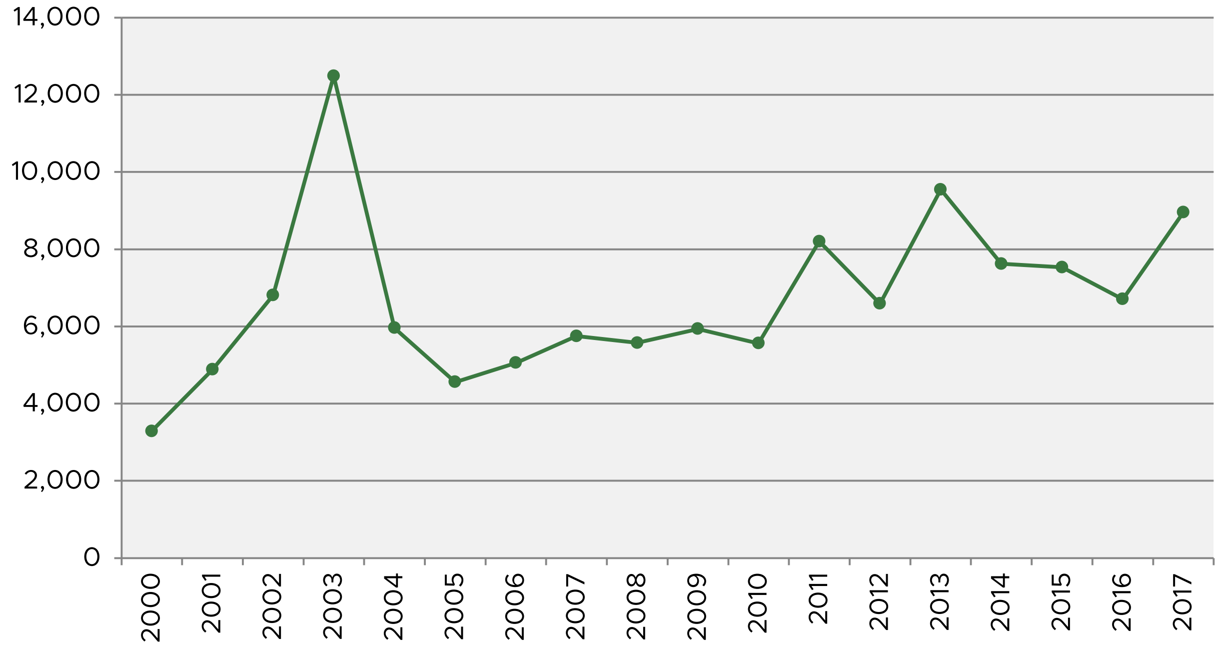
Members eligible to retire (as of June 30, 2018)



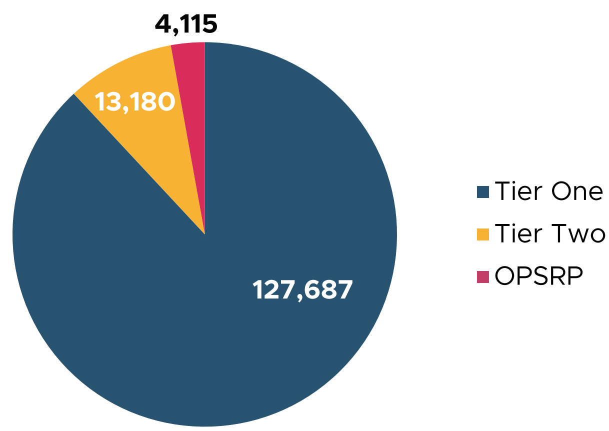
67,840 MEMBERS ELIGIBLE TO RETIRE BY AGE OR SERVICE
(30.5% of all active/inactive members)

1. System Demographics *(continued)*

Retirements by calendar year (Tier One, Tier Two, OPSRP)



Current retirees by membership group (as of December 31, 2017)



Includes retirees, beneficiaries, and alternate payees.

2. System Benefits

PERS benefit component comparisons

The primary components and differences among the PERS Tier One and Tier Two programs, the Oregon Public Service Retirement Plan (OPSRP) Pension Program, and the Individual Account Program (IAP) are shown below. Tier One covers members hired before January 1, 1996; Tier Two covers members hired between January 1, 1996, and August 28, 2003; and OPSRP covers members hired after August 28, 2003. The IAP is an account-based benefit that includes all member contributions (6% of covered salary) plus annual earnings and losses, made on and after January 1, 2004.

	Tier One Pension	Tier Two Pension	OPSRP Pension	IAP
Normal retirement age	58 (or 30 yrs) P&F: age 55 or 50 w/25 yrs	60 (or 30 yrs) P&F: age 55 or 50 w/25 yrs	65 (58 w/30 yrs) P&F: age 60 or 53 w/25 yrs	Members retire from IAP when they retire from Tier One, Tier Two, or OPSRP
Early retirement	55 (50 for P&F)	55 (50 for P&F)	55, if vested (50 w/ 5 years of continuous service in a P&F position immediately preceding effective retirement date)	Members retire from IAP when they retire from Tier One, Tier Two, or OPSRP
Regular account earnings	Guaranteed assumed rate annually (currently 7.2%)	No guarantee; market returns	N/A; no member account	No guarantee; Target-Date Fund returns
Variable account earnings	Market returns on 100% global equity portfolio	Market returns on 100% global equity portfolio	N/A; no member account	N/A
Retirement calculation methods	Money Match, Full Formula, or Formula + Annuity (if eligible)	Money Match or Full Formula	Formula	Various account pay-outs or rollover
Full Formula benefit factor	1.67% general; 2.00% P&F	1.67% general; 2.00% P&F	1.50% general; 1.80% P&F	N/A
Formula + Annuity benefit factor	1.00% general; 1.35% P&F	N/A	N/A	N/A
Oregon state income tax remedy	If eligible, higher of 9.89% on service time before Oct. 1, 1991, or 4% or less based on total service time. Payable to benefit recipients who pay Oregon state income tax because they reside in Oregon.	No tax remedy provided	No tax remedy provided	No tax remedy provided
Lump-sum vacation payout				
Included in covered salary (6%)	Yes	Yes	No	Yes for Tier One and Tier Two; no for OPSRP
Included in FAS	Yes	No	No	N/A
Unused sick leave included in FAS	Yes, if employer participates in the sick leave program	Yes, if employer participates in the sick leave program	No	N/A
6% contribution included in FAS	Yes	Yes	If reported as salary	N/A
Vesting	Active member in each of 5 calendar years	Active member in each of 5 calendar years	5 calendar years w/ at least 600 hours qualifying service or normal retirement age	Immediate
COLA (after retirement)	Up to 2% annually for service on or before October 1, 2013, and a blended COLA for subsequent service			N/A; no COLA provided

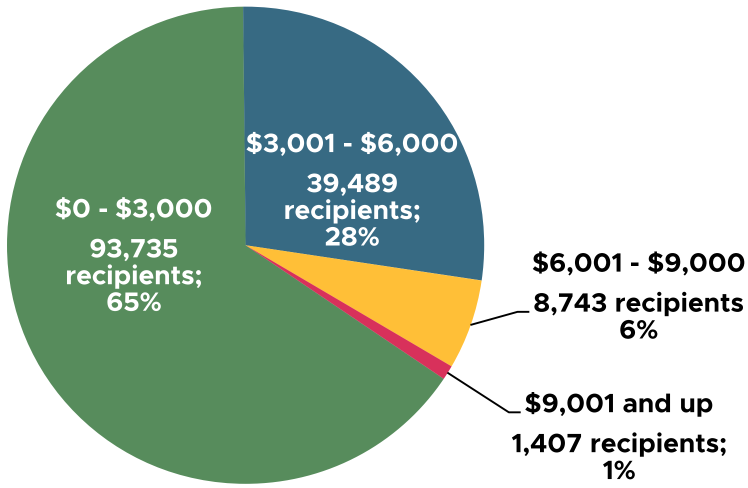
P&F = police and firefighters; FAS = final average salary; COLA = cost-of-living adjustment; N/A = not applicable

Note: PERS uses three methods to calculate Tier One retirement benefits: Full Formula, Formula + Annuity (for members who made contributions before August 21, 1981), and Money Match. PERS uses two methods to calculate Tier Two retirement benefits: Full Formula and Money Match. PERS uses the method (for which a member is eligible) that produces the highest benefit amount. OPSRP Pension Program benefits are based only on a formula method.

2. System Benefits *(continued)*

Monthly benefit payment amounts (as of January 1, 2018)

Based on 143,374 monthly benefit payments totaling $371.5 million for the month (includes alternate payees and survivors; excludes lump-sum and unit payments). Benefit payment amounts include compounded annual cost-of-living adjustments (COLAs) and other post-retirement benefit adjustments.



- Average annual benefit: $31,097
- Median annual benefit: $24,692

Monthly Benefit ($)	Number of Retirees	Percent of Benefits Paid	Monthly Benefit ($)	Number of Retirees	Percent of Benefits Paid
0 - 500	17,458	1.37%	3,001 - 3,500	9,218	8.05%
501 - 1,000	20,508	4.11%	3,501 - 4,000	7,980	8.04%
1,001 - 1,500	17,406	5.83%	4,001 - 4,500	7,086	8.09%
1,501 - 2,000	14,723	6.91%	4,501 - 5,000	6,208	7.93%
2,001 - 2,500	12,801	7.73%	5,001 - 5,500	5,110	7.21%
2,501 - 3,000	10,839	8.00%	5,501 - 6,000	3,887	6.00%
Subtotal	**93,735**		**Subtotal**	**39,489**	
% of total	**65.38%**	**33.95%**	**% of total**	**27.54%**	**45.32%**

Monthly Benefit ($)	Number of Retirees	Percent of Benefits Paid	Monthly Benefit ($)	Number of Retirees	Percent of Benefits Paid
6,001 - 6,500	2,949	4.95%	9,001 - 10,000	613	1.55%
6,501 - 7,000	2,112	3.83%	10,001 - 11,000	325	0.92%
7,001 - 7,500	1,397	2.72%	11,001 - 12,000	174	0.54%
7,501 - 8,000	1,044	2.17%	12,001 - 13,000	92	0.31%
8,001 - 8,500	723	1.60%	13,001 - 14,000	64	0.23%
8,501 - 9,000	518	1.22%	14,001 and up	139	0.69%
Subtotal	**8,743**		**Subtotal**	**1,407**	
% of total	**6.10%**	**16.49%**	**% of total**	**0.98%**	**4.24%**

2. System Benefits *(continued)*

Tier One/Tier Two members (hired before August 29, 2003)

At retirement, PERS uses three methods to calculate a Tier One monthly benefit amount and two methods to calculate a Tier Two monthly benefit amount. Members receive the highest monthly benefit that results from these calculations.

Full Formula Method

For general service members:	1.67 percent × years of service credit × final average salary
For police and firefighter members:	2 percent × years of service credit × final average salary

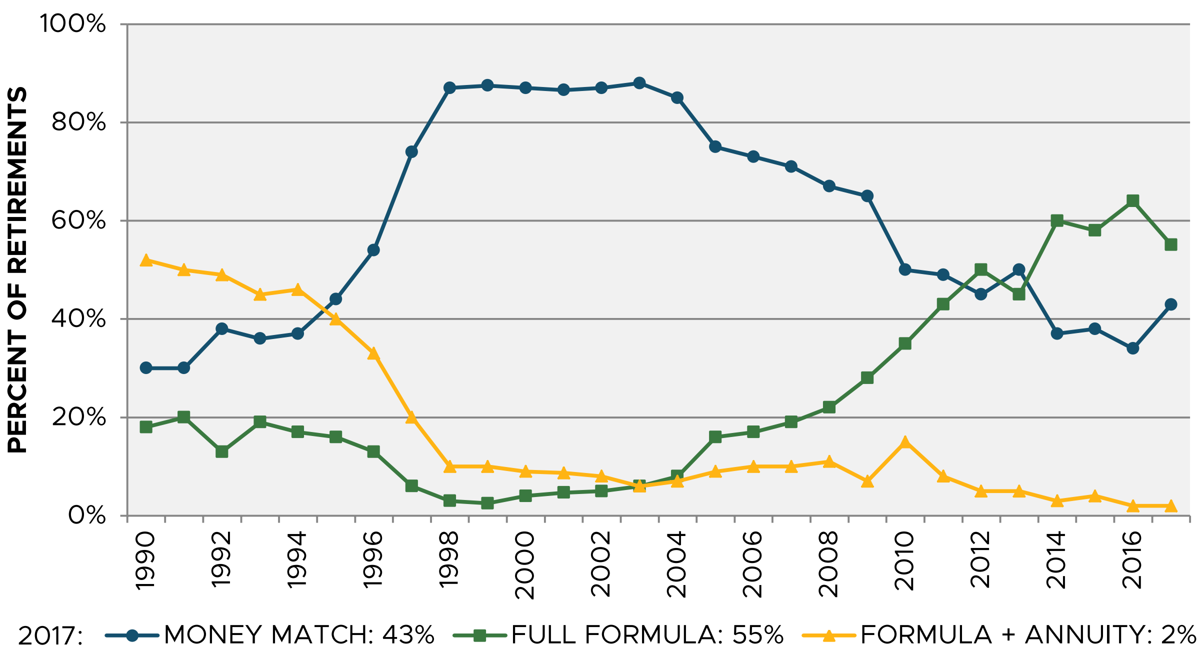
Formula Plus Annuity Method (Tier One only, available to those who made contributions before August 21, 1981.)

This benefit uses a formula similar to the Full Formula Method to compute the employer portion of the benefit. For general service members, multiply 1 percent of final average salary by years of service credit. Legislators, police, and firefighters should multiply 1.35 percent of final average salary by years of service credit. The total of the calculation will be added to an annuity payment based on member account balance and life expectancy.

Money Match

The employer matches the member account balance by an equal amount. From that total, a monthly payment amount is then calculated based on life expectancy.

Tier One/Tier Two retirement calculation method trends



2. System Benefits *(continued)*

Tier One/Tier Two pension benefit payment options selected in calendar year 2017

At retirement, Tier One and Tier Two members have **13 different options** for how to receive their pension benefit payments. All monthly retirement pension benefits are paid to the retiree for life. The option a member chooses will affect the amount of the monthly pension benefit payment. An option that includes a beneficiary payment will produce a lower monthly pension benefit payment. Benefit payments are based on an actuarial equivalent of the member's and/or the beneficiary's life expectancy.

Option (definitions below) Calendar Year 2017	Quantity	Percent
1	1,903	25.06
Refund Annuity	511	6.73
15-Year Certain	341	4.49
2	1700	22.39
2A	1669	21.98
3	230	3.03
3A	452	5.95
Lump-Sum 1	86	1.13
Lump-Sum 2	50	0.66
Lump-Sum 2A	67	0.88
Lump-Sum 3	6	0.08
Lump-Sum 3A	11	0.14
Total Lump Sum	468	6.16
AS refund	87	1.15
Total	**7,581**	**100%**

Option 1 (non-refund): This option is paid for the member's lifetime. No benefit of any kind is paid to anyone after the member dies.

Refund Annuity Option: This option is paid for the member's lifetime. When the member dies, the designated beneficiary receives a lump-sum refund of any amount remaining in the member's account, if any.

15-Year Certain Option: This option is paid for the member's lifetime. If the member dies before receiving 180 monthly payments (15 years), the beneficiary is entitled to receive the remainder of the 180 monthly payments. Once the member has received at least 180 payments, no benefit is payable to the beneficiary.

Survivorship Options (Option 2, Option 2A, Option 3, and Option 3A): Under any of the survivorship options, the member may name only one beneficiary who must be a living person. The monthly benefit payment is paid to the member until his/her death, and then paid to the beneficiary if then living (under Options 2 and 2A, at the same base amount as the member; under Option 3 and 3A, at ½ the base amount of the member).

Lump-Sum Options (Lump-Sum Option 1, Lump-Sum Option 2, Lump-Sum Option 2A, Lump-Sum Option 3, and Lump-Sum Option 3A): These options provide a lump-sum payment of the member's account balance plus a lifetime monthly pension from the employer's contributions. The lifetime monthly pension options are the same as those for the non-refund and survivorship options described above.

Total Lump Sum: The balance of the member's account and a matching amount funded by employers' contributions are paid out in total; there is no ongoing monthly benefit.

AS refund: A one-time payment based on an actuarial calculation if the Option 1 benefit is less than $200 per month.

2. System Benefits *(continued)*

Oregon Public Service Retirement Plan (OPSRP) Members (hired after August 28, 2003)

At retirement, all OPSRP members who are vested and eligible to retire can receive a monthly pension benefit for life. The pension benefit is calculated using the following formulas:

For general service members:	1.5 percent × years of total retirement credit × final average salary
For police and firefighter members:	1.8 percent × years of total retirement credit × final average salary

OPSRP pension benefit payment options selected in calendar year 2017

At retirement, OPSRP members have **five different options** for how to receive their pension benefit payments. All monthly pension retirement benefits are paid to the retiree for life. The option a member chooses will affect the amount of the monthly pension benefit payment. An option that includes a beneficiary payment will produce a lower monthly pension benefit payment. Benefit payments are based on an actuarial equivalent of the member's and/or the beneficiary's life expectancy.

Option (definitions below) Calendar Year 2017	Quantity	Percent
Single Life Option	525	38.72
Full-Survivorship Option	292	21.53
Full-Survivorship Increase Option	39	2.88
Half-Survivorship Option	149	10.99
Half-Survivorship Increase Option	28	2.06
Cash Out Lump Sum*	323	23.82
Total	**1,356**	**100%**

Single Life Option: This option is paid for the member's lifetime. No benefit of any kind is paid to anyone after the member dies.

Full-Survivorship Option: This benefit is paid monthly for the member's lifetime. After the member dies, their surviving beneficiary will receive, for life, the monthly benefit the member was receiving at the time of the member's death. Payments are actuarially reduced to provide the same monthly benefit amount to the member for life and to the member's beneficiary for his or her lifetime.

Full-Survivorship Increase Option: Same as the Full-Survivorship Option, but if the member's beneficiary dies before the member, or if the member's beneficiary is his or her spouse and they are divorced after retirement, the member will receive the higher paying Single Life Option benefit for the remainder of the member's lifetime.

Half-Survivorship Option: This benefit is paid monthly for the member's lifetime. After the member dies, their surviving beneficiary will receive, for life, one-half of the monthly benefit the member was receiving at the time of the member's death.

Half-Survivorship Increase Option: Same as the Half-Survivorship Option, but if the member's beneficiary dies before the member, or if the member's beneficiary is his or her spouse and they are divorced after retirement, the member will receive the higher paying Single Life Option benefit for the remainder of the member's lifetime.

Cash Out Lump Sum*: If an OPSRP member's monthly pension benefit is less than $200, the member will receive a one-time lump-sum payment that represents the actuarial equivalent of the present value of the pension.

Summary of findings from PERS' Tier One/Tier Two Replacement Ratio Study (RRS) for 2017

The RRS population of 94,770 retirements was drawn from 189,647 retirements from January 1990 through December 2017, and covers retired members who selected comparable monthly benefit options. The techniques used in the 2017 PERS Replacement Ratio Study are consistent with the techniques used in previous studies. The calculations do not include any federal Social Security benefits that a retiree may be eligible for based on the retiree's work history. The calculations do include the effects of the *Strunk/Eugene* benefit adjustments, which will generally impact retirements occurring in 2000-2004 and reduce the reported replacement ratios for those periods by several percentage points.

Characteristics of the Retired Members in the RRS Population[1]

Average age at retirement: 62 years old

Average years of service at retirement: 25 years of service

Average monthly retirement benefit

- For all retirees from 1990-2017, the average monthly retirement benefit at time of retirement was $2,390 per month, or about $28,686 annually
- For those retirees in the most recent year (2017), the average monthly retirement benefit was $3,036 per month, or about $36,428 annually

Average public employee salaries at retirement

- For all retirees from 1990-2017, the final average salary at retirement was $53,078 annually
- For 2017 retirees, the final average salary at retirement was $80,845 annually

Average salary replacement ratio (see chart on following page)

- For all retirees from 1990-2017, the average annual retirement benefit equaled 53% of final average salary at the time of retirement
- For 2017 retirees, the average annual retirement benefit equaled 44% of final average salary
- For all retirees from 1990-2017, there were 6.4% who received annual benefits more than 100% of final average salary. The average years of service for this group was 31 years
- For 2017 retirees, there were 1.9% who received annual benefits more than 100% of final average salary. The average years of service for this group was 35 years

For members who retire with 30 years of service (see chart on following page)

- From 1990-2017, the average retirement benefit for 30-year members equaled 78% of final average salary and the average monthly benefit was $3,713 per month
- The average replacement ratio for 30-year members peaked at 100% of final average salary in 2000 and their average monthly benefit was $4,200 per month
- For 2017 only, the average retirement benefit for 30-year members equaled 53% of final average salary and the average monthly benefit was $3,628 per month
- 10.4% of retirees from 1990-2017 had 30 years of service
- 8% of retirees in 2017 had 30 years of service

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[1]The exclusions and other factors applied to this population are explained in Appendix B on page 40. Generally, these exclusions remove about 35% of members who retire in a given year.

2. System Benefits *(continued)*

Summary of findings from PERS' Tier One/Tier Two RRS for 2017 *(continued)*

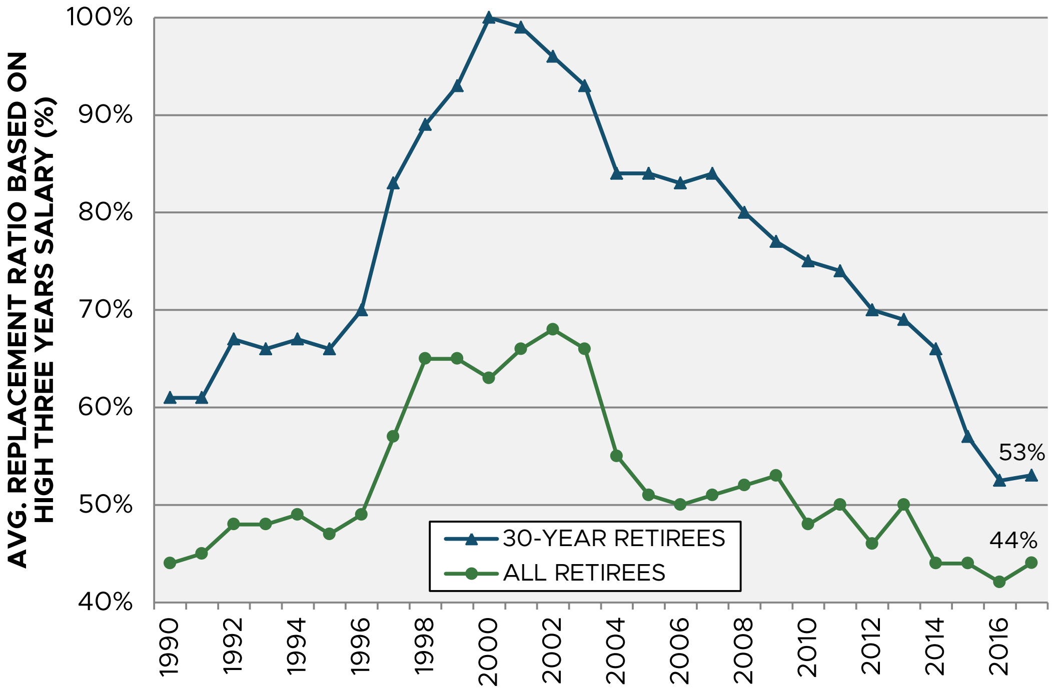
Average salary replacement ratio based on final average salary (FAS)

	Retirees with 30 Years of Service (does not include those w/ more than 30 years)		All Retirees in Study			# of Retirees w/ 31 or More Years of Service
Calendar Year	**# of Retirees in Study***	**Average Replacement Ratio Based on FAS**	**# of Retirees in Study***	**Average Replacement Ratio Based on FAS**	**% of Retirees Receiving >100% of FAS**	**# of Retirees in Study***
1990	146	61%	1,866	44%	0.0%	236
1991	217	61%	2,377	45%	0.1%	261
1992	205	67%	2,432	48%	0.5%	289
1993	289	66%	2,744	48%	0.5%	319
1994	302	67%	3,298	49%	0.3%	452
1995	304	66%	2,827	47%	1.0%	307
1996	281	70%	2,477	49%	1.4%	223
1997	295	83%	3,107	57%	7.5%	284
1998	465	89%	4,567	65%	12.0%	472
1999	548	93%	4,644	65%	14.0%	452
2000	273	100%	2,112	63%	15.8%	148
2001	391	99%	3,146	66%	16.5%	304
2002	670	96%	4,605	68%	17.4%	583
2003	942	93%	7,631	66%	14.4%	937
2004	471	84%	3,259	55%	5.5%	155
2005	393	84%	2,548	51%	4.4%	155
2006	347	83%	2,952	50%	4.3%	254
2007	372	84%	3,226	51%	4.9%	337
2008	417	80%	3,480	52%	5.0%	445
2009	432	77%	3,881	53%	6.2%	586
2010	414	75%	3,516	48%	4.3%	440
2011	464	74%	4,484	50%	5.3%	937
2012	272	70%	4,098	46%	4.3%	585
2013	389	69%	5,800	50%	5.6%	1,108
2014	262	66%	4,000	44%	2.8%	441
2015	430	57%	4,830	44%	2.6%	772
2016	324	52%	3,955	42%	2.0%	606
2017	423	53%	5,319	44%	1.5%	1,089
Total/Avg	**10,738**	**78%**	**103,181**	**53%**	**6.4%**	**13,177**

*Includes monthly benefit payments for members retiring from active service within the preceding 12 months. Benefits related to inactive, lump sum, judge and legislator retirements are excluded.

2. System Benefits *(continued)*

Tier One/Tier Two replacement ratio trends (data from PERS' Replacement Ratio Study)



Individual Account Program (IAP)

All PERS members actively employed since 2004 have an Individual Account Program (IAP) account-based benefit. Six percent of members' salary, whether paid by the member or their employer, is placed into the IAP. At retirement, the payment members receive from the IAP is based on their account balance—contributions plus investment earnings or losses over time. The IAP has no guaranteed investment return.

Average IAP account balances and distributions to retired members, withdrawals, and deceased members

Year (as of 12/31)	Total IAP Account Balance After Earnings Crediting ($M)	# of Accounts	Average IAP Account Balance ($)	# of Payees
2004	423.4	162,119	2,611	2
2005	928.9	181,055	5,130	4,131
2006	1,396.8	197,491	7,072	6,557
2007	2,120.5	210,133	10,091	6,705
2008	1,851.2	218,192	8,484	8,624
2009	2,742.8	231,256	11,847	7,727
2010	3,536.9	236,265	14,970	8,695
2011	3,939.7	238,062	16,549	11,479
2012	4,855.1	240,637	20,176	14,728
2013	5,127.3	242,516	21,142	14,994
2014	6,001.1	245,768	24,821	15,118
2015	6,906.1	255,896	26,988	15,644
2016	7.634.7	262,096	29,129	16,213
2017	8,960.4	269,812	33,210	16,866

IAP Target-Date Fund values (as of June 30, 2018)

Starting January 1, 2018, all PERS members became invested in age-based Target-Date Funds, an effort by the Oregon Investment Council to reduce investment risk and volatility as members age. All members receiving installment payments after retirement are invested in the Retirement Allocation Fund.

Target-Date Fund	Number of Accounts	Total Account Balance ($)
Retirement Allocation Fund Born in 1952 or before	22,501	$709,331,542
2020 Born between 1953 and 1957	23,063	$994,406,907
2025 Born between 1958 and 1962	31,611	$1,466,500,408
2030 Born between 1963 and 1967	32,751	$1,536,066,906
2035 Born between 1968 and 1972	36,278	$1,561,255,880
2040 Born between 1973 and 1977	35,758	$1,260,511,246
2045 Born between 1978 and 1982	36,073	$875,911,688
2050 Born between 1983 and 1987	30,156	$408,972,830
2055 Born between 1988 and 1992	19,769	$116,567,257
2060 Born in 1993 or after	6,855	$14,010,344

2. System Benefits *(continued)*

Retired Tier One, Tier Two, and OPSRP members with hours reported working in a PERS-covered position in 2017 by employer group

After a Tier One or Tier Two member begins receiving a PERS retirement benefit, they may choose to return to work for a public employer. Generally, Tier One and Tier Two members may work less than 1,040 compensated hours (work, vacation, sick leave) in a calendar year without stopping their pension benefit payment. OPSRP members who choose to work after retirement for a public employer may work less than 600 compensated hours in a year before their benefit payment is stopped.

In all cases, PERS members are responsible for tracking the number of compensated hours they work for a public employer and not exceeding their limit. If a member exceeds their hour limit, their retirement benefit will stop, and they may be required to repay benefits they received while re-employed.

There are some exceptions to the Tier One and Tier Two hour limitation depending on the type of employer, geographic location, population of the employer's city or county, type of position, and other factors. More information can be found on the PERS website (Tier One/Tier Two, OPSRP).

Hours	State	Local Govt.	K-12	Total
< 200	553	1,333	2,892	**4,778**
200 - 400	389	639	1,335	**2,363**
401 - 600	311	469	904	**1,684**
601 - 800	239	294	618	**1,151**
801 - 1039	319	411	700	**1,430**
> 1039	168	286	241	**695**
Total	**1,979**	**3,432**	**6,690**	**12,101**

Other PERS Programs

Oregon Savings Growth Plan (OSGP) 457(b) deferred compensation

The Oregon Savings Growth Plan (OSGP) is a 457(b) deferred compensation plan that provides public employees a convenient way to save for retirement. Enrollment is available to all state of Oregon employees upon hire, as well as local government and school district employees whose employers have adopted the plan.

OSGP lets participants save for retirement on a pre-tax or after-tax basis through payroll deductions. Participants can save as little as $25 a month, up to $18,500 in calendar year 2018 ($24,500 if age 50 or older).

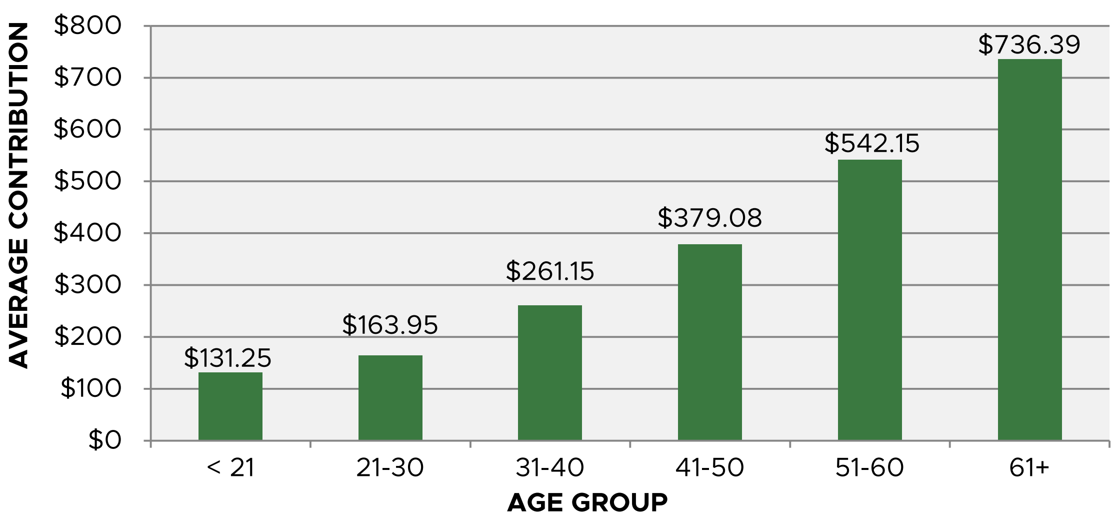
Oregon Revised Statutes 243.474 authorizes the state to offer its deferred compensation program to all Oregon public employers, including special districts, local governments, and school districts. As of June 30, 2018, 288 local governments offer OSGP. Some local government and school district employers cannot offer OSGP because they have other 457 or 403(b) plans.

Participation (as of June 30, 2018)

30,135 total participants

- 17,950 participants are actively contributing to OSGP
- 18,268 participants are state agency employees (includes universities, higher education, and miscellaneous state agencies)

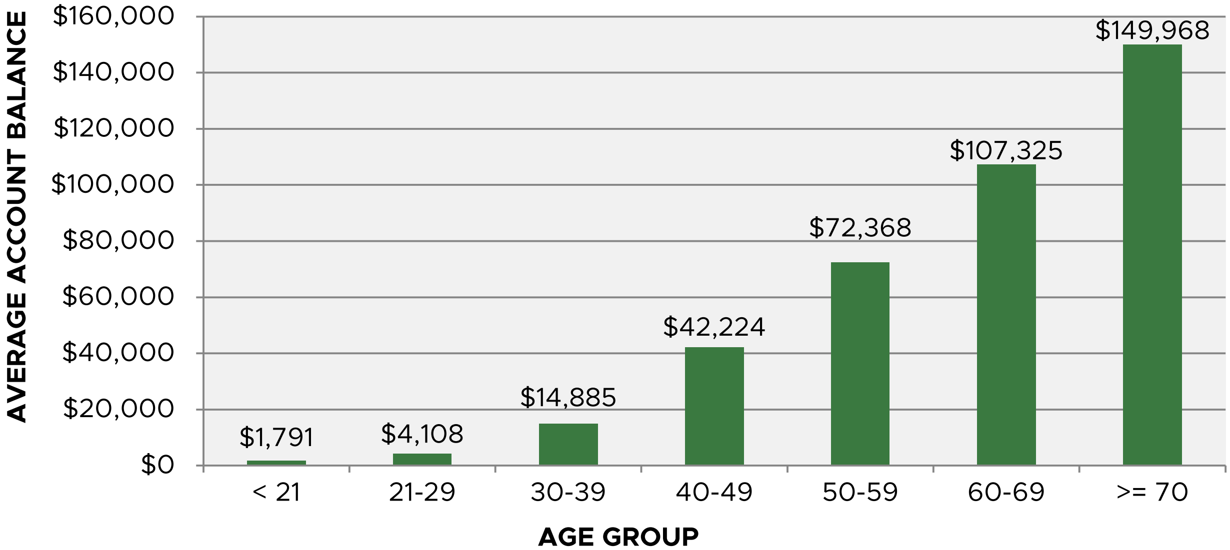
Average monthly contribution to OSGP by age



Average contribution amount: $445.93/month

2. System Benefits *(continued)*

Average value of OSGP accounts by age



Total Plan Assets: $2.19 billion

2. System Benefits *(continued)*

PERS Retiree Health Insurance Program information

The Oregon PERS Health Insurance Program offers optional medical, dental, and long-term care insurance plans to eligible Tier One/Tier Two and OPSRP retirees, their spouses, and dependents. Upon retirement, these insurance options become a choice available to all PERS retirees. While primarily serving our Medicare-eligible (age 65 and over) population, the PERS Health Insurance Program also offers insurance coverage options for those not yet Medicare eligible.

There are two statutory trust funds administered by PERS as part of the Health Insurance Program that provide premium subsidies for eligible Tier One and Tier Two retirees or surviving spouses. These trusts are known as the Retirement Health Insurance Account (RHIA), serving all qualifying PERS Medicare-eligible retirees, and the Retiree Health Insurance Premium Account (RHIPA), serving qualifying state government non-Medicare retirees. Both trusts are funded from employer contributions on an actuarial basis.

Program Enrollment (as of June 30, 2018)

Medical Plans (four plans offered)	Totals	Medicare	Non-Medicare
Covered lives	59,190	57,160	2,030
Retirees (or surviving spouses)	48,261	49,962	1,299
Spouses/dependents	10,929	10,198	731
Average age of enrolled retirees	75.4	76.1	57.5
Dental Plans (two plans offered)	38,045		
Long-Term Care Plan	1,992		

Statutory Health Insurance Premium Subsidies

Retirees receiving RHIA (trust fund held by PERS*)	44,890
Retirees receiving RHIPA (trust fund held by PERS**)	1,066
RHIA monthly payment total	$2,693,400
RHIPA monthly payment total	$380,111

*The RHIA subsidy is $60 per month for Medicare-eligible retirees.

**The RHIPA subsidy is for state government non-Medicare retirees only and varies depending on the employee's years of state service, from $192.68 (8 years) to $385.35 (30+ years) per month for Plan Year 2018.

Employer rates (effective July 1, 2019): RHIA: 0.0%; RHIPA (state government only): 0.39%

Actuarial surplus or liability (as of December 31, 2017): -$116 million (RHIA); $40 million (RHIPA)

2. System Benefits *(continued)*

History of Key PERS Benefit Enhancements, Caps, and Reductions by Year

Year	Category	Action	Affected Members
1945	Administrative	The Public Employees Retirement System is signed into law and begins business July 1, 1946, as a money match retirement plan	All
1947	Retirement Age/Vesting	Requirement for employees to serve a six-month waiting period before becoming PERS members begins	All
1953	Administrative	By law, the PERS plan is terminated and immediately reopened the next day, allowing public employers to provide Social Security coverage	All
1967	Investment Risk Allocation	Legislature passes a bill that allows PERS to invest up to 10% of the retirement fund in common stock, creates the Oregon Investment Council, and establishes a defined benefit formula for employer-funded retirement benefits (formula plus annuity)	All
1969	Investment Risk Allocation	Participation in variable account program begins	All
1972	Cost-of-Living Adjustment	Implemented ad hoc COLA increase (12% to 25% benefit increase)	Existing retirees
1972	Cost-of-Living Adjustment	Initiated an annual COLA with a 1.5% cap	All retirees
1973	Benefit Calculation/Formula	Increased Formula Plus Annuity pension factors (General Service: .67 to 1.00; Police & Fire: 0.92 to 1.35)	Tier One
1973	Cost-of-Living Adjustment	Annual COLA cap raised from 1.5% to 2%	All retirees
1973	Cost-of-Living Adjustment	Capped COLA at actual inflation rate or 2%, whichever is less	All retirees
1973	Final Average Salary	Added accrued sick leave to retirement benefit calculation for participating employers	Tier One/Two
1974	Cost of Living Adjustment	Implemented ad hoc increase (0% to 25% benefit increase)	Existing retirees
1975	Investment Risk Allocation	Initiated member account assumed rate guarantee	Tier One
1975	Investment Risk Allocation	Increased assumed earnings rate from 5.5% to 7%	Tier One
1975	Investment Risk Allocation	Credited member regular accounts with more than the assumed earnings rate*	Tier One
1976	Investment Risk Allocation	Gain Loss Reserve established to "self-fund" assumed earnings rate crediting	Tier One
1979	Administrative	Employers allowed to “pick up” member 6% contribution	All
1979	Investment Risk Allocation	Increased assumed earnings rate from 7% to 7.5%	Tier One
1981	Benefit Calculation/Formula	Added Full Formula benefit calculation method	All
1981	Benefit Calculation/Formula	Consolidated member contributions from 1% to 7% salary based sliding scale to universal 6%	All
1981	Benefit Calculation/Formula	Eliminated Formula Plus Annuity benefit calculation method	Tier One
1981	Cost-of-Living Adjustment	Implemented ad hoc COLA increase (4% to 11.4% benefit increase)	Existing retirees
1985	Cost-of-Living Adjustment	Implemented ad hoc COLA increase (3% to 7.28% benefit increase)	Existing retirees
1985	Benefit Calculation/Formula	Added benefit option to allow lump-sum payment of member account	All
1987	Benefit Calculation/Formula	Members allowed to purchase six-month waiting period	All
1987	Benefit Calculation/Formula	New retirement benefit payout options added	All
1989	Cost-of-Living Adjustment	Implemented ad hoc COLA increase (0% to 25% benefit increase)	Existing retirees
1989	Investment Risk Allocation	Increased assumed earnings rate from 7.5% to 8%	Tier One
1989	Retiree Health Benefits	Established Medicare and state employee pre-Medicare insurance premium subsidies	Tier One/Two
1989	Retiree Health Benefits	Capped Medicare premium subsidy at $60 per month	Tier One/Two
1989	Retirement Age/Vesting	Added “30 years of service” retirement regardless of age	Tier One/Two

CONTINUED ON FOLLOWING PAGE

*Tier One regular accounts were credited with earnings in excess of the assumed rate in the following years: 1975, 1976, 1979, 1980, 1982, 1983, 1985, 1986, 1988, 1989, 1991, 1993, 1995, 1996, 1997, 1998, and 1999. In all other years subsequent to 1975, these accounts were credited at the effective assumed rate.

Key: Benefit enhancement | Benefit cap or reduction

2. System Benefits *(continued)*

History of Key PERS Benefit Enhancements, Caps, and Reductions by Year (continued)

Year	Category	Action	Affected
1991	Benefit Calculation/Formula	Imposed state income tax on PERS benefits	All
1991	Benefit Calculation/Formula	Established service time based state income tax offset benefit of between 1% to 4% (SB 656)	Tier One
1993	Administrative	Divorced spouses entitled to separate account from member's	All
1995	Benefit Calculation/Formula	Established state income tax offset benefit for pre-1991 service time (HB 3349)	Tier One
1995	Benefit Calculation/Formula	Eliminated tax remedy for anyone hired after July 14, 1995	All new hires
1996	Final Average Salary	Excluded lump-sum vacation payouts from final average salary	Tier Two
1996	Investment Risk Allocation	Eliminated guaranteed return on regular accounts for new members	Tier Two
1996	Retirement Age/Vesting	Increased normal retirement age for new members from 58 to 60 (General Service)	Tier Two
1997	Administrative	Married members must provide proof of spousal consent for retirement option choice	All
1997	Administrative	Reemployed retirees can work up to 1,040 hours for a PERS-covered employer without loss of benefits (up from 600 hours)	All
1997	Benefit Calculation/Formula	Out-of-state teaching service and some military purchases allowed	All
1999	Benefit Calculation/Formula	Locked in existing actuarial equivalency factor tables	Tier One
2000	Investment Risk Allocation	Eliminated 'Last Known Rate' member account crediting guarantee	Tier One
2003	Benefit Calculation/Formula	Decreased Full Formula benefit pension factor (General Service: 1.67 to 1.50; Police & Fire 2.00 to 1.80)	OPSRP
2003	Benefit Calculation/Formula	Eliminated Money Match benefit calculation method	OPSRP
2003	Benefit Calculation/Formula	Redirected member contributions to freeze Money Match benefit levels	Prospective MM retirees
2003	Benefit Calculation/Formula	Required regularly updated mortality assumptions and actuarial factors	All
2003	Cost-of-Living Adjustment	Pro-rated first year COLA	OPSRP
2003	Cost-of-Living Adjustment	Eliminated COLA 'bank' carryover	OPSRP
2003	Final Average Salary	Eliminated lump-sum vacation payouts from subject salary	OPSRP
2003	Final Average Salary	Eliminated accumulated sick leave from final average salary	OPSRP
2003	Investment Risk Allocation	Required members to self-fund guaranteed return on member accounts	Tier One
2003	Investment Risk Allocation	Creates IAP to include all member contributions made on or after January 1, 2004, which receives actual returns with no guarantee	All
2003	Retiree Health Benefits	Eliminated post-retirement health insurance premium subsidies	OPSRP
2003	Retirement Age/Vesting	Increased normal retirement age from 60 to 65 (General Service) 55 to 60 (Police & Fire)	OPSRP
2003	Retirement Age/Vesting	Increased vesting from 5 years or age 50 to 5 years or age 65 (General Service) or age 60 (Police & Fire)	OPSRP
2005	Benefit Calculation/Formula	Adjusted member accounts and benefit payments to recapture 1999 earnings overcrediting	Tier One
2009	Retiree Health Benefits	Allowed OPSRP members to participate in PERS retiree health insurance pools without premium subsidy	OPSRP
2011	Benefit Calculation/Formula	Eliminated HB 3349 tax remedy for prospective retirees who move out of state on or after January 1, 2012	Tier One
2013	Cost-of-Living Adjustment	1.5% in 2013; COLA in 2014 and beyond is 1.25% on the first $60,000 of an annual benefit; 0.15% on amounts above $60,000	All
2013	Supplementary Payments	Annual supplementary payments of 0.25% to all benefit recipients (up to $150) through 2019. Second annual supplementary payment of 0.25% through 2019 if benefit is $20,000 or less annually	Retirees
2013	Benefit Calculation/Formula	Eliminated any tax remedy for retirees who do not pay income taxes in Oregon because they are not residents of Oregon	Tier One
2014	Investment Risk Allocation	Decreased assumed earnings rate from 8.0% to 7.75%	Tier One
2015	Supplementary Payments	Supplementary Payments invalidated by Oregon Supreme Court	Retirees
2015	Cost-of-Living Adjustment	Annual COLA of up to 2% restored for service time accrued before October 1, 2013. COLA for service time after that date uses a lower rate. Service time accrued in both periods is "blended."	All
2016	Investment Risk Allocation	Decreased assumed earnings rate from 7.75% to 7.50%	Tier One
2017	Investment Risk Allocation	Decreased assumed earnings rate from 7.50% to 7.20%	Tier One
2017	Investment Risk Allocation	Oregon Investment Council changes IAP investment strategy to Target-Date Funds, intended to reduce investment risk and volatility as members age	All

Key:	Benefit enhancement	Benefit cap or reduction

3. System Funding Level and Status

The PERS Funding Equation

At the end of each calendar year, the PERS actuaries calculate the system's funded status using the following basic equation:

B	=	C	+	E
BENEFITS		CONTRIBUTIONS		EARNINGS
Present value of earned benefits		*Employer funds to pay for pension benefits*		*Future returns on investment funds*
Set by: Oregon Legislature		Set by: PERS Board		Managed by: Oregon Investment Council

Every two years, the PERS Board adjusts contribution rates so that, over time, contributions will be sufficient to fund the benefits earned, if earnings follow assumptions.

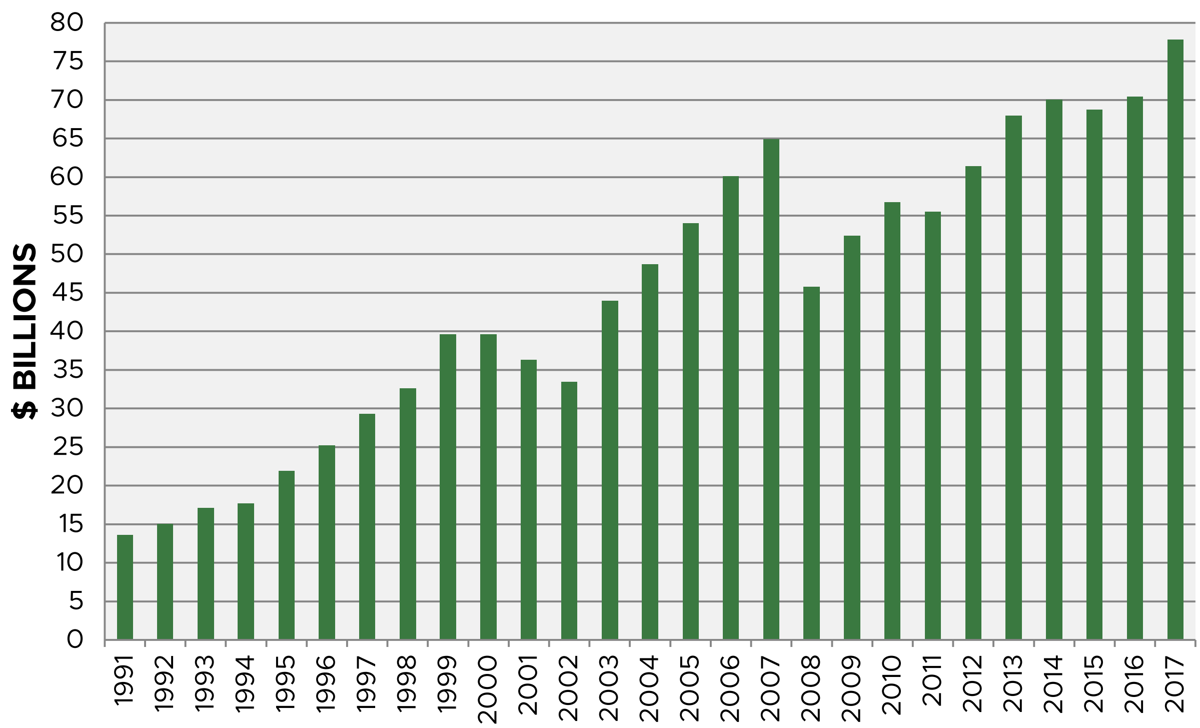
Funded status (as of December 31, 2017)

The Oregon Public Employees Retirement Fund (OPERF) is invested under the oversight and direction of the Oregon Investment Council with staff support from the Investment Division of Oregon State Treasury.

As of December 31, 2017, PERS was 73 percent funded (80 percent including employer side accounts). Side accounts hold deposits from PERS employers of pension obligation bond proceeds and other advance lump-sum payments that are amortized to offset that employer's contribution.

As of December 31, 2017, the unfunded actuarial liability (UAL) was $22.3 billion ($16.7 billion including side accounts). The UAL fluctuates based on various factors including investment returns, Board reserving policies, statutory plan design changes, and litigation outcomes.

PERS fund value (calendar years ending December 31)



3. System Funding Level and Status *(continued)*

Unfunded actuarial liability history and funded ratio[1]

Valuation[2] Date	Without Side Accounts		With Side Accounts[3] (starting in 2002)	
	UAL ($M)	Funded Ratio (%)	UAL ($M)	Funded Ratio (%)
2000	1,545	96.4	1,545	96.4
2001	-2,031	105.4	-2,031	105.4
2002	3,983	89.9	3,204	92.0
2003	6,227	86.0	1,751	96.1
2004	7,678	84.0	2,122	95.6
2005	4,919	91.0	-1,751	104.0
2006	2,229	95.7	-5,019	109.7
2007	1,538	97.1	-6,120	111.5
2008	16,133	70.4	10,998	80.0
2009	13,598	76.0	8,108	86.0
2010[4]	13,300	78.0	7,700	87.0
2011	16,255	73.0	11,030	82.0
2012[5]	11,100	82.0	5,600	91.0
2013	8,500	86.0	2,600	96.0
2014[6]	18,000	76.0	12,100	84.0
2015	21,800	71.0	16,200	79.0
2016	25,300	69.0	19,900	75.0
2017[7]	22,300	73.0	16,700	80.0

1 Includes RHIA/RHIPA.

2 2000-2003 UALs were calculated using actuarial value of assets (AVA) based on year-to-year changes in asset values smoothed over four-year periods. All other UALs since 1997 were calculated using an AVA based on fair market value.

3 The official PERS valuation UAL and funded ratio are based on accepted actuarial standards and methodologies. These methodologies are subject to review and revision every two years. A negative UAL amount represents a surplus.

4 2010 and after includes the OPSRP Pension Program, 2000-2009 reflects only Tier One/Tier Two.

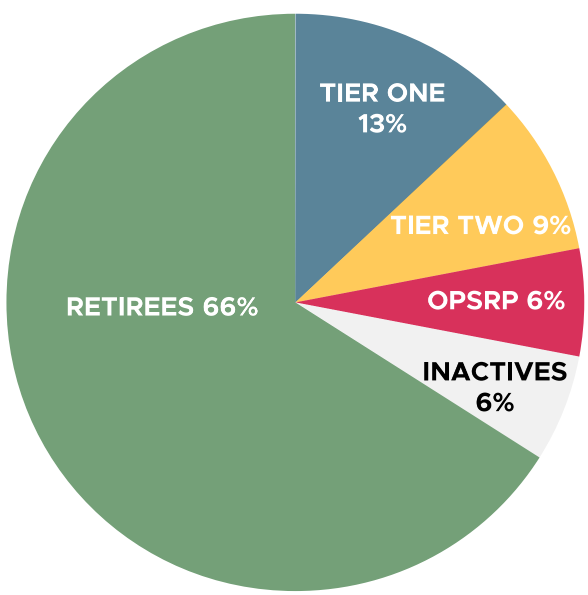
5 Includes liability reductions from Senate Bills 822 and 861 and Board-adopted actuarial assumptions/methods from the 2012 Experience Study.

6 Includes the *Moro* decision and Board-adopted actuarial assumptions/methods from the 2014 Experience Study.

7 Includes Board-adopted actuarial assumptions/methods from the 2017 Experience Study.

Actuarial accrued liabilities (as of December 31, 2017)

Approximately 72 percent of PERS' total accrued liability is for members who are no longer working in PERS-covered employment (retired and inactive members).



4. System Revenue

Member and employer contributions and investment income for calendar years

Year	Member Contributions ($M)	Employer Contributions ($M)	Amortization of Employer Side Accounts ($M)*	Total Employer ($M)	Net Investment & Other Income ($M)
1995	287	427	N/A	427	4,110
1996	296	463	N/A	463	4,358
1997	291	473	N/A	473	4,582
1998	318	488	N/A	488	3,978
1999	347	577	N/A	577	7,463
2000	359	654	N/A	654	143
2001	385	689	N/A	689	-2,708
2002	398	725	8	733	-3,460
2003	405	582	97	679	8,866
2004	371**	408	278	686	5,933
2005	434	504	357	861	6,179
2006	456	637	474	1,111	8,163
2007	468	633	466	1,099	5,808
2008	484	669	541	1,210	-17,235
2009	515	561	540	1,101	8,053
2010	502	435	558	993	6,444
2011	510	627	509	1,136	1,935
2012	513	915	443	1,358	7,859
2013	561	942	448	1,390	9,458
2014	524	994	472	1,466	4,819
2015	611	1,185	542	1,727	1,380
2016	610	1,036	628	1,644	4,840
2017	628	1,241	653	1,894	10,633

*PERS' methodology to track amortization of side accounts began in 2002. Side accounts hold deposits by employers of pension obligation bond proceeds and other lump-sum payments that are amortized to offset that employer's PERS contributions.

**Since January 1, 2004, member contributions have been placed in the Individual Account Program (IAP), instead of the legacy Tier One/Tier Two member accounts.

4. System Revenue *(continued)*

2017 Earnings Crediting ($ millions)

Reserve/Account	Balance Before 2017 Crediting	Final 2017 Crediting	Final Ending Reserve Balance	Crediting Rates
Contingency Reserve	$50.0	-	$50.0	N/A
Tier One Member Regular Accounts	3,907.5	293.0	4,200.5	7.50%
Tier One Rate Guarantee Reserve	180.8	329.7	510.5	N/A
Benefits-In-Force (BIF) Reserve	21,298.1	3,244.4	24,542.5	15.23%
Tier Two Member Regular Accounts	833.5	127.0	960.5	15.23%
Employer Reserves	24,202.3	3,686.6	27,888.9	15.23%
OPSRP Pension	3,562.5	548.6	4,111.1	15.37%
UAL Lump-Sum Payment Side Accounts*	4,765.1	792.5	5,557.6	Various
IAP Accounts**	7,794.8	1,117.8	8,912.6	14.72%
Total	**$66,594.6**	**$10,139.6**	**$76,734.2**	

*Side account earnings rates for lump sums on deposit vary depending on when the deposit was made within the calendar year and are not affected by Board reserving or crediting decisions.

**Informational only; not affected by Board reserving or crediting decisions.

Contingency Reserve: This reserve can be used for any purpose the Board determines is appropriate so long as the use of the funds furthers the trust's purpose. It is funded in years that investment income exceeds the assumed rate (currently 7.2 percent). The reserve is capped at $50 million.

Tier One Rate Guarantee Reserve: This reserve is used to credit the assumed rate on Tier One member regular accounts in years when the fund earns below the assumed rate, and to hold excess earnings from the years when the fund earns more than the assumed rate (currently 7.2 percent).

Benefits-In-Force Reserve: This reserve is used to pay retired members' benefits and annuities. It is funded by earnings and fund transfers from member accounts and employer reserves associated with retirements processed during a calendar year.

Employer Reserves: Funds from these reserves are moved to the Benefits-In-Force Reserve when a benefit is due to a member.

System-wide average employer contribution rates excluding retiree health insurance (RHIA/RHIPA)

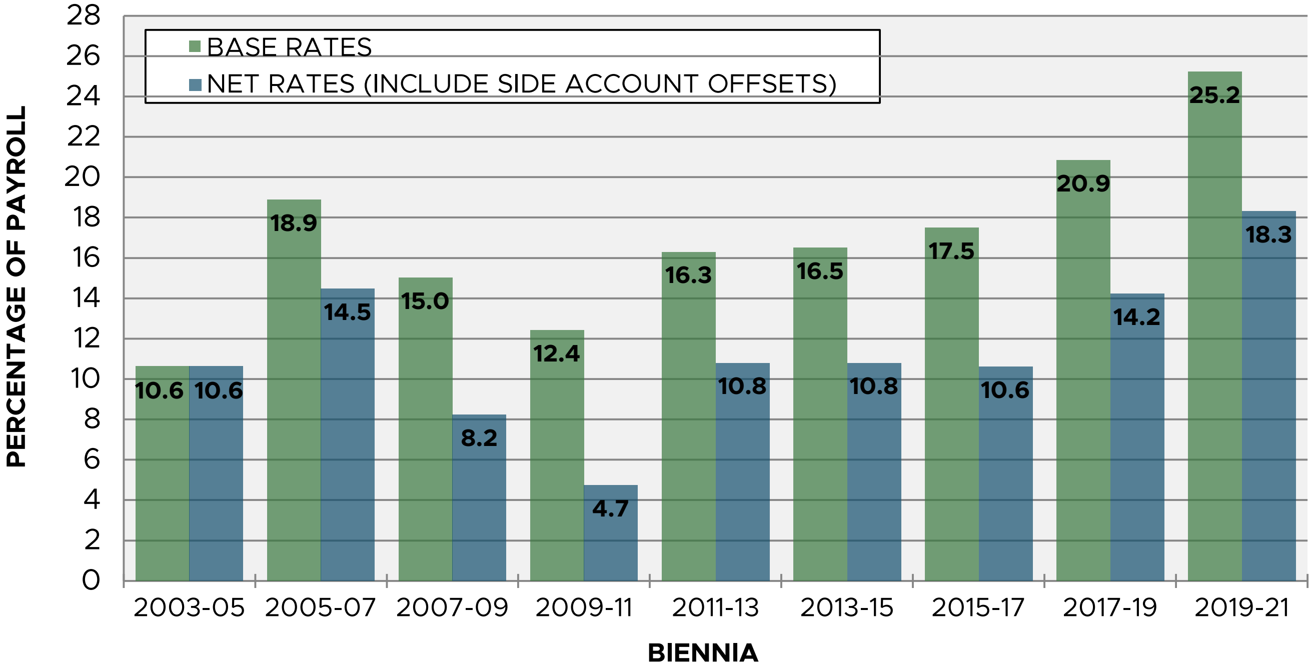
Valuation Year	Rate Effective Dates	Average Rate w/ Side Accounts (%)	Average Rate w/o Side Accounts (%)	Annualized Salary ($M)
1975	Various	11.21	11.21	1,014.5
1977	Various	11.87	11.87	1,226.8
1979	Various	10.97	10.97	1,488.0
1982	Various	10.13	10.13	2,062.1
1985	Various	10.87	10.87	2,428.3
1987	Various	11.30	11.30	2,764.7
1989	Various	9.74	9.74	3,199.4
1991	Various	9.19	9.19	3,887.5
1993	Various	9.15	9.15	4,466.8
1995	Various	9.42	9.42	4,848.1
1997	Various	11.40	11.40	5,161.6
1999	7/1/01 – 6/30/03	10.74	10.74	5,676.6
2001	7/1/03 – 6/30/05	10.64	10.64	6,256.5
2003*	7/1/05 – 6/30/07	14.47*	18.89*	6,248.5
2005**	7/1/07 – 6/30/09	8.22	15.01	6,792.0
2007	7/1/09 – 6/30/11	4.73	12.42	7,721.8
2009	7/1/11 – 6/30/13	10.8	16.3	8,512.0
2011***	7/1/13 – 6/30/15	10.8	16.5	8,600.0
2013	7/1/15 – 6/30/17	10.6	17.5	8,699.0
2015	7/1/17 – 6/30/19	14.23	20.85	10,100.0
2017	7/1/19 – 6/30/21	18.32	25.23	10,825.0

*December 31, 2003 rates were phased-in. Actual rate paid averaged 10.58% with employer side accounts and 15.10% without employer side accounts.

**Includes weighted average rate for Tier One/Tier Two and OPSRP beginning in 2005.

***Includes liability reduction and rate deferral from Senate Bill 822 (2013).

System-wide average employer contribution rates as a percent of covered salary (net rates include side account offsets)



- Excludes 6% member contributions and pension obligation bond debt service payments.
- Includes Tier One, Tier Two, and OPSRP.
- 2005-07 rates (from December 31, 2003 valuation) were phased-in. Actual rate paid averaged 10.58% with employer side accounts and 15.10% without employer side accounts.
- 2017-19 rates reflect, among other things, the *Moro* decision, assumed rate decrease from 7.75% to 7.5%, and all other assumption changes and actuarial experience.
- 2019-21 rates reflect investment returns for 2016 and 2017, assumed rate decrease from 7.5% to 7.2%, updated mortality assumptions, expected increase in UAL in 2016 and 2017, and all other assumption changes and actuarial experience.
- Does not include RHIA/RHIPA (health insurance).

2019-21 employer contribution rate increase projections (2017 Valuation Data)

($ millions)	Projected 2017-19 Payroll*	(A) Projected 2017-19 Contribution	Projected 2019-21 Payroll*	(B) Projected 2019-21 Contribution**	(B) - (A) Projected Contribution Increase
State Agencies	$5,920	$820	$6,350	$1,125	$305
School Districts	$6,630	$925	$7,100	$1,300	$375
All Others	$7,650	$1,130	$8,200	$1,540	$410
Total	**$20,200**	**$2,875**	**$21,650**	**$3,965**	**$1,090**

*Assumes payroll growth at 3.5% annually based on 12/31/2017 active member census, reflecting proportional payroll composition (Tier One/Tier Two vs. OPSRP) as of 12/31/2017.

**Collared net rates are used to project 2019-21 employer contributions.

4. System Revenue *(continued)*

Employer side accounts

When an employer makes a lump-sum payment to prepay part or all of its unfunded actuarial liability (UAL), the money is placed in a special account called a "side account." This account is attributed solely to the employer making the payment and is held separate from other employer reserves.

Most employers with side accounts issued pension obligation bonds (POBs) and provided the bond proceeds to PERS as a UAL lump-sum deposit to fund their side account. A few employers funded their side accounts with lump-sum payments from other sources, such as savings from internal operations. PERS does not track individual employer costs associated with POBs.

Administrative costs for side accounts are limited by statute. PERS assesses $1,500 per side account in the first year and $500 annually thereafter, regardless of the size of the side account.

As of December 31, 2017, 145 employers have side accounts. Of these, 38 employers have multiple side accounts: one city, two special districts, two community colleges, and 33 school districts.

Employer Type	# w/ Side Accounts
Independent Locals (not a member of a pool)	6
State Agencies (all, including universities)	1
Pooled Counties	9
Pooled Cities	9
Pooled Special Districts	8
Community Colleges	17
School Districts	95

As of December 31, 2017, side account assets totaled $5.56 billion.

Side Accounts by Employer Type (as of December 31, 2017)	
Employer Type	**Balance (Millions)**
Independent	$85.3
State Agencies	$1,832.0
Pooled Counties	$89.0
Pooled Cities	$48.7
Pooled Special Districts	$93.9
Community Colleges	$402.7
School Districts	$3,009.7

Side accounts are generally amortized over the same time period as the employer's associated UAL, providing the employer with an offset of its employer rate. The goal is for the side account to provide rate relief to the employer until the associated UAL is paid off. However, with the adoption of SB 1566 by the 2017 Legislative Assembly, employers that meet certain criteria now have the option of selecting a shorter amortization schedule for new side accounts. Using this option does not affect the amortization period of the employer's UAL.

Side account rate offsets are recalculated every two years, taking into consideration how much of the side account has been used, what earnings have been credited, and changes to the individual employer's payroll.

Employer side accounts (continued)

Average Side Account Rate Offset 2005 -2019	
Rate Period	**Average Rate Offset (% of Payroll)**
2005 - 2007	-4.54%
2007 - 2009	-6.71%
2009 - 2011	-7.20%
2011 - 2013	-5.11%
2013 - 2015	-5.26%
2015 - 2017	-6.38%
2017 - 2019	-6.14%

Side account earnings

Side accounts are invested in the PERS Fund and receive the Fund's actual earnings or losses. These earnings or losses are posted to side accounts at the end of each year.

Average Side Account Earnings 2006 to 2017	
Calendar Year	**Average Earnings/Loss**
2006	14.98%
2007	9.46%
2008	-26.75%
2009	18.47%
2010	12.13%
2011	2.15%
2012	14.09%
2013	15.59%
2014	7.39%
2015	1.82%
2016	7.15%
2017	15.23%

PERS Fund investment earnings available for crediting and actual distributions to Tier One and Tier Two member regular, variable, and Individual Account Program (IAP) accounts

		Distributions (%)			
Year	**Earnings (%)**	**Tier One**	**Tier Two**	**Variable Account**	**IAP**
1970	5.09	5.09		7.47	
1971	6.27	6.27		9.47	
1972	7.46	7.46		13.87	
1973	0.00	0.00		-16.39	
1974	0.00	5.50		-18.16	
1975	9.19	7.50		18.94	
1976	10.38	7.75		18.58	
1977	4.79	7.00		-2.62	
1978	7.37	7.00		7.03	
1979	12.32	11.09		20.40	
1980	16.92	13.00		29.94	
1981	4.37	7.50		-2.25	
1982	15.31	11.50		22.39	
1983	18.37	13.00		23.12	
1984	7.33	7.50		4.00	
1985	21.38	15.00		27.99	
1986	22.70	18.37		18.98	
1987	9.00	7.50		4.54	
1988	16.86	13.50		18.62	
1989	19.74	14.50		26.84	
1990	-1.53	8.00		-7.84	
1991	22.45	15.00		35.05	
1992	6.94	8.00		10.54	
1993	15.04	12.00		12.65	
1994	2.16	8.00		-1.76	
1995	20.78	12.50		29.92	
1996	24.42	21.00	24.42	21.06	
1997	20.42	18.70	20.42	28.87	
1998	15.43	14.10	13.63	21.45	
1999	24.89	11.33*	21.97	28.83	
2000	0.63	8.00	0.54	-3.24	
2001	-7.17	8.00	-6.66	-11.19	
2002	-8.93	8.00	-8.93	-21.51	
2003	23.79	8.00	22.00	34.68	
2004	13.80	8.00	13.27	13.00	12.77
2005	13.04	8.00	18.31**	8.29	12.80
2006	15.57	8.00	15.45	15.61	14.98
2007	10.22	7.97***	9.47	1.75	9.46
2008	-27.18	8.00	-27.18	-43.71	-26.75
2009	19.12	8.00	19.12	35.57	18.47
2010	12.44	8.00	12.44	15.17	12.13
2011	2.21	8.00	2.21	-7.80	2.15
2012	14.29	8.00	14.68	18.43	14.09
2013	15.76	8.00	15.62	25.74	15.59
2014	7.29	7.75	7.24	4.29	7.05
2015	2.21	7.75	1.87	-1.61	1.85
2016	6.9	7.50	7.15	8.76	7.13
2017	15.3	7.50	15.23	26.48	14.72

In determining plan funding, the actuary must project future earnings of the PERS Fund. This is called the "assumed earnings rate."

Historical assumed earnings rates are:

- 5.0% for 1971 - 1974
- 7.0% for 1975 - 1978
- 7.5% for 1979 - 1988
- 8.0% for 1989 - 2013
- 7.75% for 2014 - 2015
- 7.5% for 2016 - 2017
- 7.2% beginning January 1, 2018

*The PERS Board originally credited these accounts at 20%. That allocation was later reduced to 11.33% to comply with subsequent court decisions and legislative findings.

**Tier Two regular account crediting, based solely on earnings, was 13.74%. However, the PERS Board deployed $9 million from the Capital Preservation Reserve and $17 million from the Contingency Reserve that was added to Tier Two earnings. As a result, Tier Two was credited with a total of 18.31%. The dollars allocated from the reserves were originally withheld from Tier Two regular account earnings.

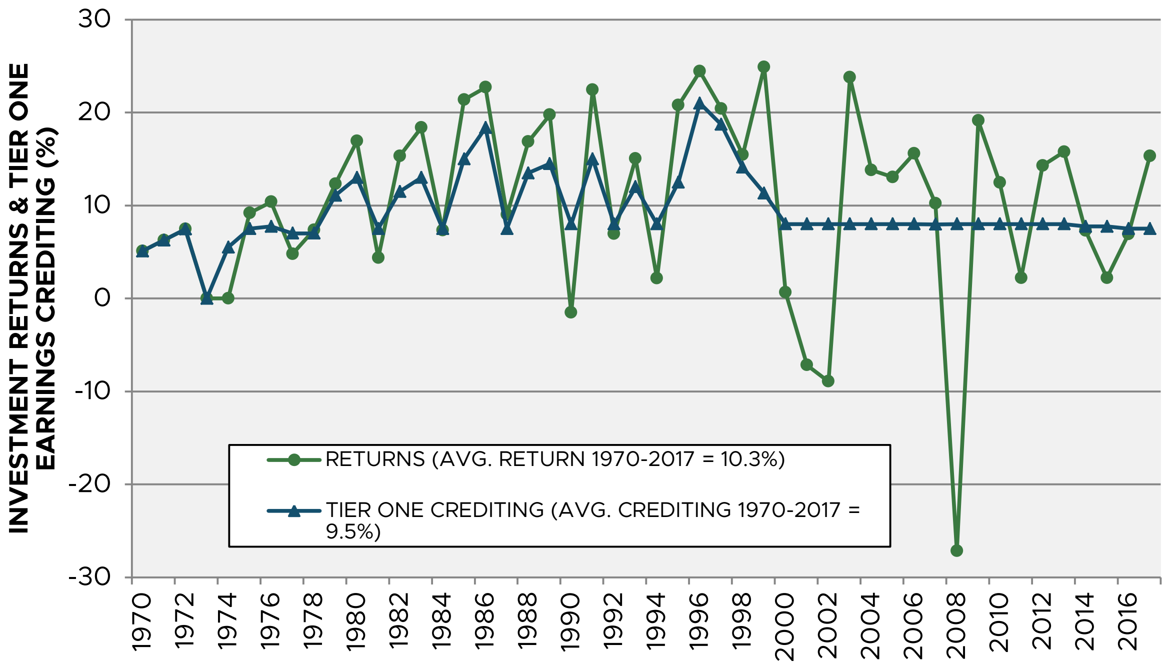
***After crediting Tier One accounts with the assumed rate of 8%, member attorney fees in the *Strunk* case were deducted by order of the Oregon Supreme Court resulting in an effective crediting rate of 7.97%.

4. System Revenue *(continued)*

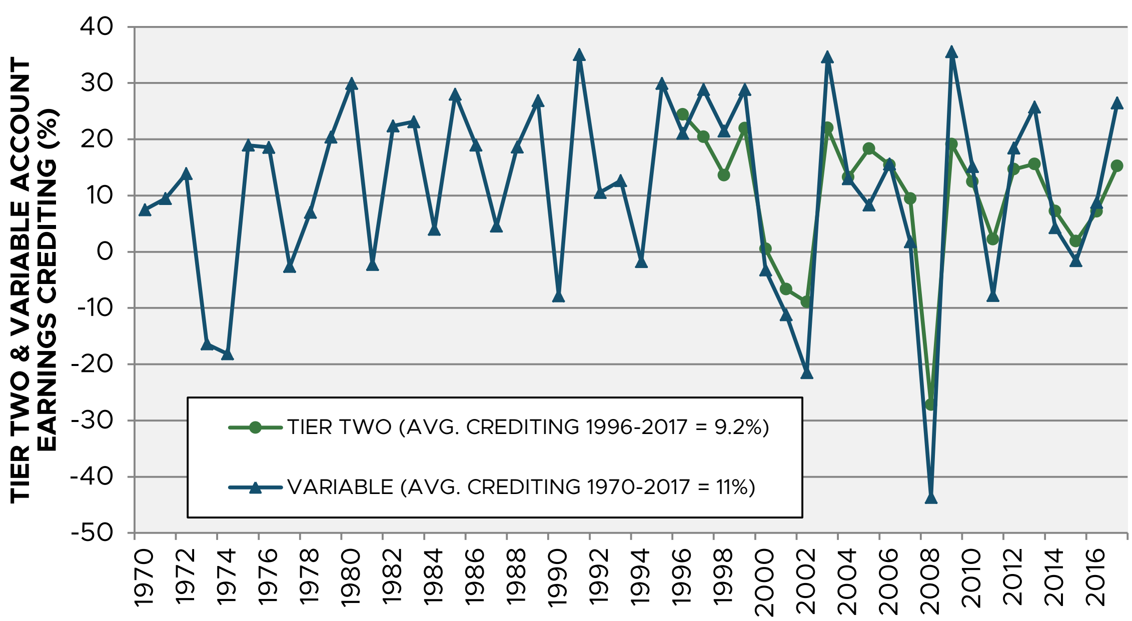
Tier One/Tier Two earnings crediting

Before January 1, 2004, Tier One/Tier Two member contributions were made to member accounts used to pay for part of their pension. These accounts continue to accrue annual earnings and losses until the member retires. Tier One member accounts receive the assumed earnings rate on an annual basis.

Regular account earnings available for crediting and actual distributions to Tier One member regular accounts based on 2017 earnings



Actual distributions to Tier Two member regular accounts and to Tier One/Tier Two member variable accounts (invested in an equity-only portfolio) based on 2017 earnings



5. Economic Impact of PERS Monthly Benefit Payments in 2017

Oregon PERS monthly benefits contribute to Oregon's economy

Oregon PERS paid approximately $3.92 billion in benefits (not including benefit payments from the Individual Account Program (IAP)) to PERS retirees living in Oregon in 2017. Funding for these benefits came mostly from investment earnings on contributions previously paid by members and public employers. These retirees spent a significant portion of this money on goods and services in Oregon, which helped support local businesses. These businesses then purchased goods, in part, from other local vendors adding to the Oregon workforce and economy.

Annual PERS monthly benefits generate $4.22 billion in total economic value to Oregon

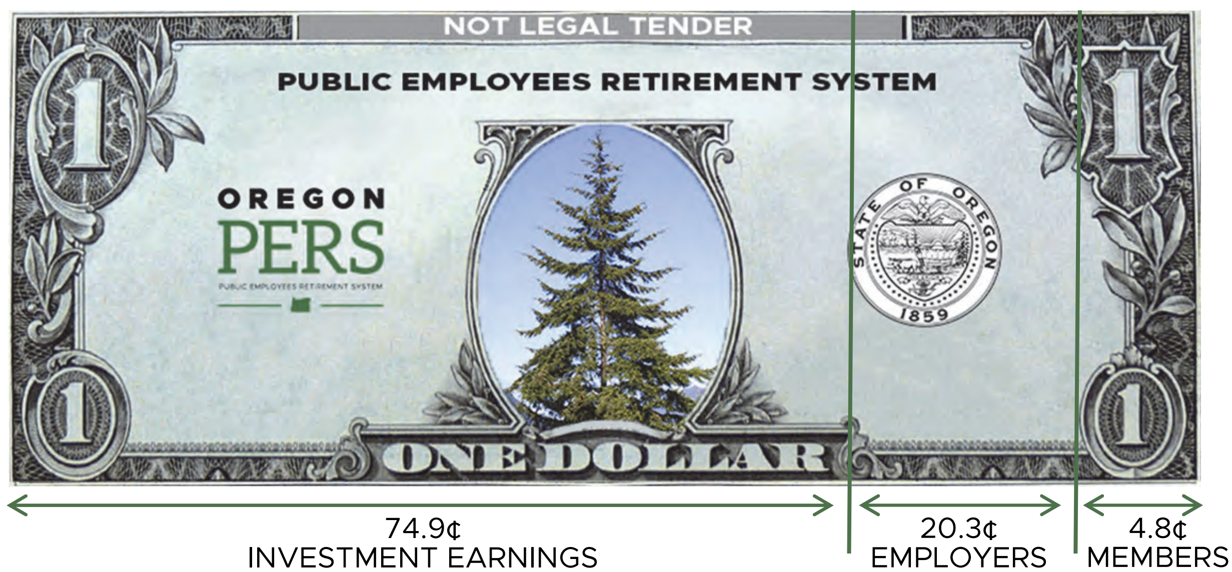
The $3.92 billion in annual benefit payments multiply to $4.22 billion in total economic value to Oregon when the full financial impact of these dollars spent in local communities is considered (based upon economic multipliers provided by the U.S. Department of Commerce's Bureau of Economic Analysis).

The economic activity generated by PERS monthly benefit payments sustain an estimated 35,449 Oregon jobs, and add approximately $1.27 billion in wages to Oregon's economy.

Additionally, the state of Oregon collected an estimated $215.7 million in income taxes on PERS retiree monthly benefits during 2017.

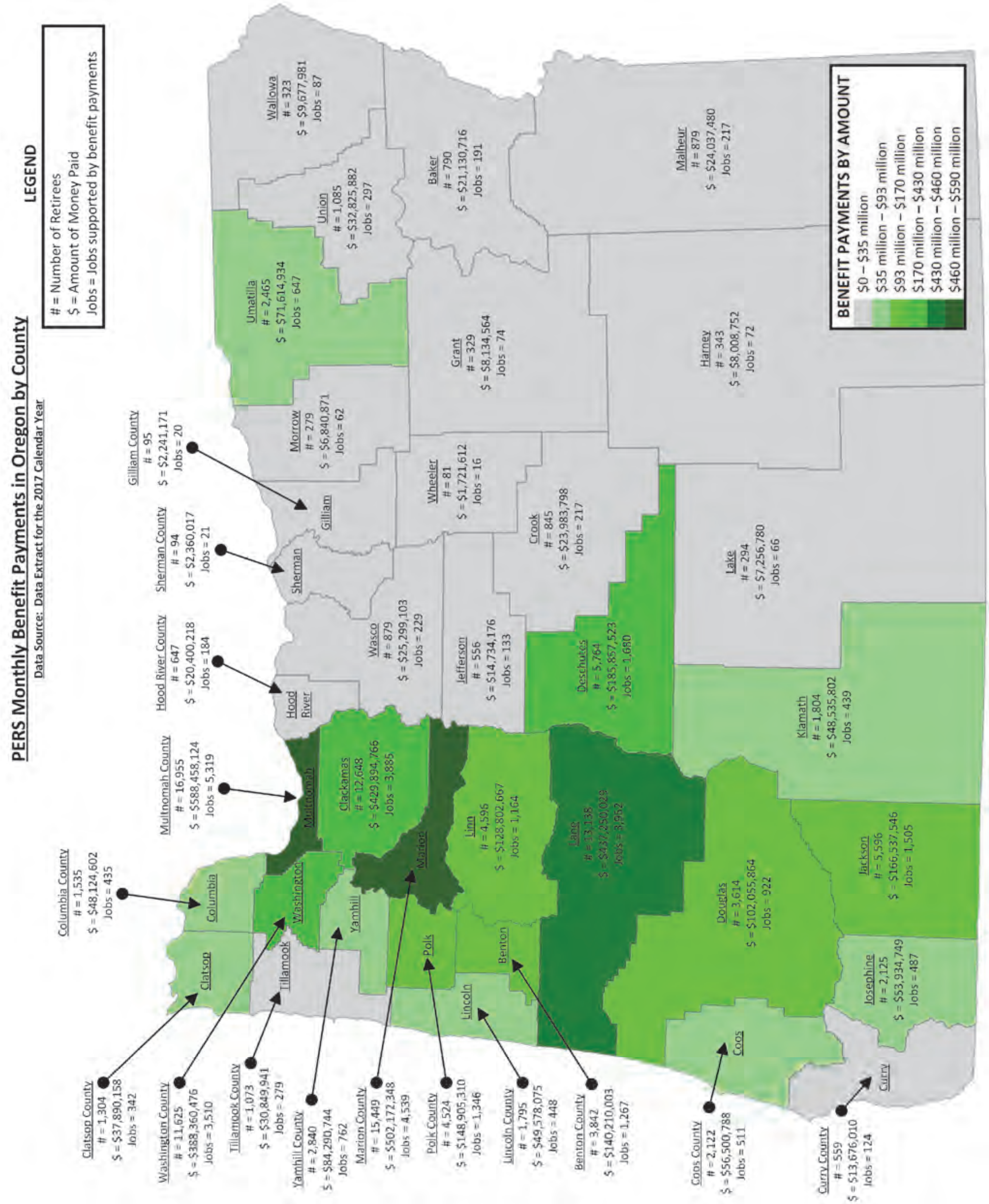
Investment income provided 74.9 percent of total PERS' revenues since 1970. Member contributions accounted for 4.8 percent, with employer contributions providing 20.3 percent.

Money for PERS benefit payments comes from three sources (1970-2017)



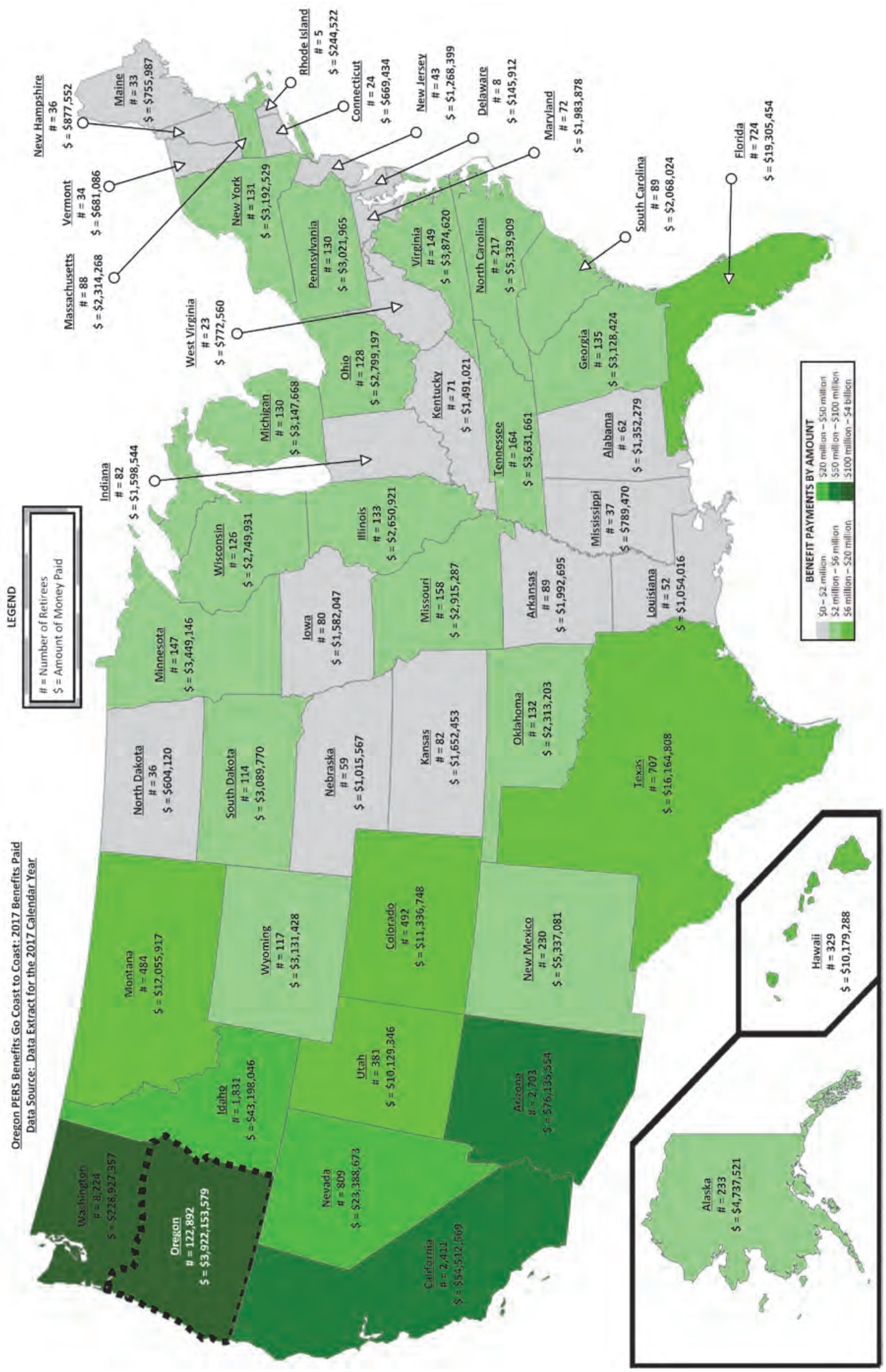
5. Economic Impact of PERS Benefit Payments in 2017 *(continued)*

Oregon PERS benefit payments by county (2017 calendar year)



5. Economic Impact of PERS Benefit Payments in 2017 *(continued)*

Oregon PERS benefit payments by state (2017 calendar year)



Pension System Terms

Accrued liability: The net present value of projected future benefits allocated to service already completed in accordance with the actuarial cost method.

Actuarial asset value: The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with a smoothing method.

Actuarial assumptions: Assumptions as to the occurrence of future events affecting pension costs, such as mortality, withdrawal, disablement, and retirement; and rates of investment earnings and other relevant items. Actual experience will vary from assumption, and at times the variance will be substantial.

Actuarial cost method: A technique used by actuaries to allocate the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial liability (UAL). Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Base employer contribution rates: Consists of the normal cost rate plus the UAL rate. This is paid by a combination of employer contributions and side account transfers. Base rates do not reflect the effects of side account rate offsets.

Combined valuation payroll: Projected payroll for the calendar year following the valuation date for Tier One, Tier Two, and OPSRP active members. This payroll is used to calculate UAL rates.

Funded ratio or funded status: The actuarial value of assets expressed as a percentage of the accrued liability.

Individual Account Program (IAP): An account-based benefit program that contains all member contributions (6% of covered payroll) made on or after January 1, 2004.

Net employer contribution rates: The rate funded by employer contributions, consisting of the base employer contribution rate minus the effect of side account rate offsets.

Normal cost: The annual cost assigned to the current year under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

Oregon Public Service Retirement Plan (OPSRP) Pension Program: The pension program covering members hired after August 28, 2003.

Rate collar: A methodology that limits the maximum allowable period-to-period change in employer contribution rates. The width of the rate collar is determined by the current contribution rate and funded status.

Side accounts: Side accounts are established for employers who make supplemental payments (a lump-sum payment in excess of the required employer contribution). For State and Local Government Rate Pool (SLGRP) employers, this supplemental payment is first applied toward the employer's transition liability, if any, with the remainder going into a side account. Side accounts are treated as pre-paid contributions. Employer contribution rates are first determined excluding side accounts (base employer contribution rate). Then, an amortized portion of the side account is used to offset the contribution otherwise required for each individual employer that has a side account (net employer contribution rate). While side accounts are excluded from valuation assets in determining contribution rates for pools and non-pooled employers, side accounts are included in valuation assets for financial reporting purposes such as the reporting of funded status.

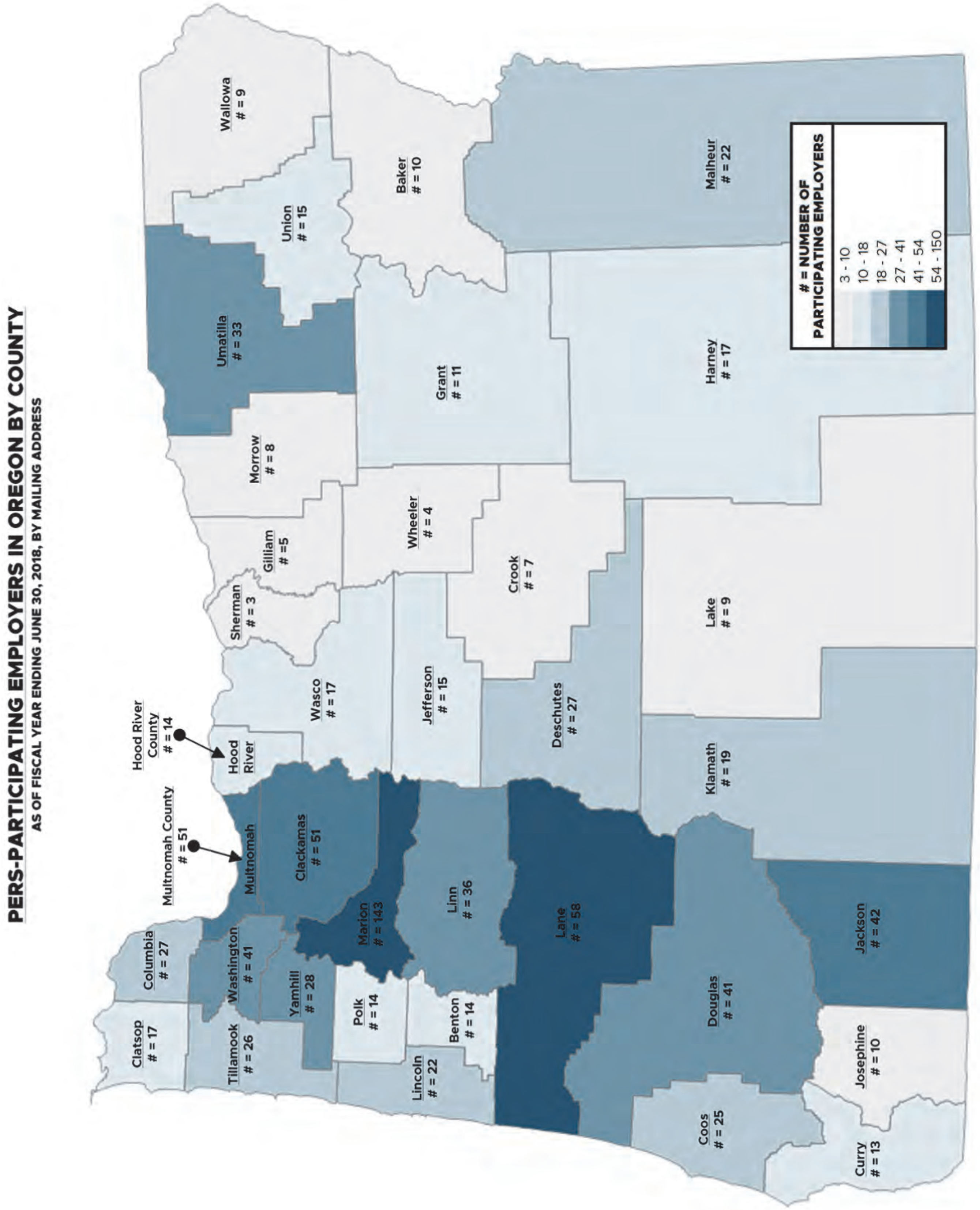
Total liability: The net present value of all projected future benefits attributable to all anticipated service (past *and* future) for current active and inactive members.

Tier One: The pension program covering members hired before January 1, 1996.

Tier Two: The pension program covering members hired from January 1, 1996, through August 28, 2003.

Unfunded actuarial liability (UAL): The excess of the actuarial accrued liability over the actuarial value of assets. The UAL is amortized over a fixed period of time to determine the UAL rate component of employer contribution rates.

Appendix A: PERS-Participating Employers



Note: Marion County is the official mailing address of many state agencies.

PERS-participating employers by county, according to mailing address (904)

BAKER (10)
Baker City, City of
Baker County
Baker County Library District
Baker School District #5J
Baker Valley Irrigation District
Baker Web Academy
Burnt River High School
Huntington School District #16J
Huntington, City of
Pine-Eagle School District #61

BENTON (14)
Adair Village, City of
Alsea School
Benton County
Corvallis School District #509J
Corvallis, City of
Kings Valley Charter School
Monroe Fire Department
Monroe School District #1J
Monroe, City of
Muddy Creek Charter School
Oregon State University
Philomath Fire Department
Philomath School District #17J
Philomath, City of

CLACKAMAS (51)
Alliance Charter Academy
Canby Fire District
Canby School District
Canby Utility Board
Canby, City of
Cascade Heights Public Charter School
Clackamas Community College
Clackamas County
Clackamas County ESD
Clackamas County Fair
Clackamas County Fire District 1
Clackamas County Vector Control District
Clackamas Middle College
Clackamas River Water
Clackamas River Water Providers
Clackamas Web Academy
Colton Fire Department
Colton School District #53
Estacada Cemetery Maintenance District
Estacada Fire Department
Estacada School District #108
Estacada, City of
Gladstone School District #115
Gladstone, City of
Happy Valley, City of
Hoodland Fire District #74
Housing Authority of Clackamas County
Lake Oswego School District
Lake Oswego, City of
Milwaukie, City of
Molalla RFPD #73
Molalla River Academy
Molalla River School District
Molalla, City of
Mulino Water District #23
North Clackamas County Water Commission
North Clackamas School District #12
Oak Lodge Water District
Oregon City School District #62
Oregon City, City of
Oregon Trail School District #46
Renaissance Public Academy
Sandy Fire Department
Sandy, City of
South Fork Water Board
Springwater Environmental Sciences School
Summit Learning Charter
Sunrise Water Authority
Three Rivers Charter School
West Linn, City of
Wilsonville, City of

CLATSOP (17)
Arch Cape Service District
Astoria, City of
Cannon Beach Academy
Cannon Beach RFPD
Cannon Beach, City of
Clatsop Community College
Clatsop County
Clatsop County School District #1C
Gearhart, City of
Jewell School District #8
Knappa School District #4
Knappa Svensen Burnside RFPD
Port of Astoria
Seaside Schools
Warrenton, City of
Warrenton-Hammond School District
Wickiup Water District

COLUMBIA (27)
Clatskanie Library District
Clatskanie People's Utility District
Clatskanie RFPD
Clatskanie School District #6J
Clatskanie, City of
Columbia City, City of
Columbia County
Columbia County 911 Communications District
Columbia Drainage Vector Control District
Columbia River Fire and Rescue
Columbia River Public Utility District
Greater St. Helens Parks and Recreation District
Mist-Birkenfeld RFPD
Port of St. Helens
Rainier Cemetery District
Rainier School District #13
Rainier, City of
Scappoose Public Library
Scappoose RFPD
Scappoose School District
Scappoose, City of
South Columbia Family School
St. Helens School District #502
St. Helens, City of
Vernonia Fire
Vernonia School District
Vernonia, City of

COOS (25)
Bandon School District
Bandon, City of
Charleston RFPD
Coos Bay School District #9
Coos Bay, City of
Coos County
Coos County Airport District
Coquille School District #8
Coquille, City of
Lakeside Water District
Lakeside, City of
Millington RFPD
Myrtle Point School District #41
Myrtle Point, City of
North Bend City Housing Authority
North Bend Public Schools
North Bend, City of
Oregon Dungeness Crab Commission
Oregon Virtual Academy
Port of Coos Bay
Powers School District
Powers, City of
South Coast ESD Region #7
Southwestern Oregon Community College
The Lighthouse School

CROOK (7)
Crook County
Crook County RFPD 1
Crook County School District
Insight School of Oregon Painted Hills
Ochoco Irrigation District
Powell Butte Community Charter School
Prineville, City of

CURRY (13)
Brookings, City of
Brookings-Harbor School District #17C
Central Curry School District #1
Chetco Community Public Library Board
Curry County
Curry Public Library
Gold Beach, City of
Harbor Water People's Utility District
Nesika Beach-Ophir Water District
Oregon Trawl Commission
Port Orford Public Library District
Port Orford, City of
Port Orford-Langlois School District #2CJ

DESCHUTES (27)
Bend International School
Bend Parks and Recreation
Bend, City of
Bend-La Pine Schools
Black Butte Ranch Police
Black Butte Ranch RFPD
Central Oregon Community College
Central Oregon Intergovernmental Council
Central Oregon Irrigation District
Central Oregon Regional Housing Authority
Cloverdale RFPD
Deschutes County
Deschutes County RFPD #2
Deschutes Public Library District
Desert Sky Montessori
High Desert Education Service District
Jefferson County Soil and Water Conservation District
La Pine RFPD
Redmond Area Parks and Recreation District
Redmond Fire and Rescue
Redmond Proficiency Academy
Redmond School District #2J
Redmond, City of
Sisters and Camp Sherman RFPD
Sisters School District

Sisters, City of
Sunriver Service District

DOUGLAS (41)
Camas Valley School District #21
Canyonville, City of
Days Creek School District #15
Douglas County
Douglas County ESD
Douglas County Fire District #2
Douglas County Soil and Water Conservation District
Drain, City of
Elkton School District #34
Elkton, City of
Glendale School District #77
Glide Fire Department
Glide School District #12
Green Sanitary District
Myrtle Creek, City of
North Douglas County Fire and EMS
North Douglas School District #22
Oakland School District
Oakland, City of
Reedsport School District
Reedsport, City of
Riddle School District
Riddle, City of
Roseburg Public Schools
Roseburg Urban Sanitary Authority
Roseburg, City of
Salmon Harbor and Douglas County
South Umpqua School District
Sutherlin School District #130
Sutherlin Water Control District
Sutherlin, City of
The Phoenix School
Tri-City Water and Sanitary Authority
Umpqua Community College
Winchester Bay Sanitary District
Winston, City of
Winston-Dillard Fire District
Winston-Dillard Schools
Winston-Dillard Water District
Yoncalla School District #32
Yoncalla, City of

GILLIAM (5)
Arlington Public Schools
Condon Admin. School District #25J
Condon, City of
Gilliam County
North Central ESD

GRANT (11)
Canyon City, Town of
Dayville School District #16J
Grant County
Grant County ESD
John Day School District
John Day, City of
Long Creek Schools
Monument School District #8
Mt. Vernon, City of
Prairie City School District #4
Prairie City, City of

HARNEY (17)
Burns, City of
Crane Elementary School
Crane Union High School
Diamond School District #7
Double O School District
Drewsey School
Frenchglen School District
Harney County
Harney County School District #3
Harney ESD Region #17
Harney Hospital
High Desert Parks and Recreation District
Hines, City of
Pine Creek School
Silvies River Web Academy
South Harney School District #33
Suntex School District

HOOD RIVER (14)
Cascade Locks, City of
Crystal Springs Water District
East Fork Irrigation District
Farmers Irrigation District
Hood River County
Hood River County School District
Hood River, City of
Ice Fountain Water District
Odell Sanitary District
Parkdale Fire District
Port of Cascade Locks
Port of Hood River
West Side Fire District
Wy'East Fire District

JACKSON (42)
Applegate Valley RFPD #9
Armadillo Technical Institute
Ashland Parks Commission
Ashland Public Schools
Ashland, City of
Butte Falls School District
Butte Falls, Town of
Central Point School District #6
Central Point, City of
Crater Lake Charter Academy
Eagle Point School District #9
Eagle Point, City of
Evans Valley Fire District #6
Gold Hill, City of
Housing Authority of Jackson County
Jackson County
Jackson County Fire District #3
Jackson County Fire District #4
Jackson County Fire District #5
Jackson County Vector Control
Jacksonville, City of
Logos Public Charter School
Madrone Trail Public Charter School
Medford Irrigation District
Medford School District #549C
Medford Water Commission
Medford, City of
Phoenix, City of
Phoenix-Talent School District #4
Pinehurst School
Prospect School District
River's Edge Academy Charter School
Rogue River Fire District
Rogue River Valley Irrigation District
Rogue River, City of
Rouge River School District
Shady Cove, City of
Southern Oregon ESD
Southern Oregon University
Talent Irrigation District
Talent, City of

The Valley School of Southern Oregon

JEFFERSON (15)
Ashwood School
Black Butte School District
Crooked River Ranch RFPD
Culver School District #4
Culver, City of
Deschutes Valley Water District
Jefferson County
Jefferson County EMS District
Jefferson County ESD
Jefferson County Library District
Jefferson County RFPD #1
Lake Chinook Fire and Rescue District
Madras School District
Madras, City of
Metolius, City of

JOSEPHINE (10)
Cave Junction, City of
Grants Pass Irrigation District
Grants Pass School District
Grants Pass, City of
Illinois Valley Fire District
Josephine County
Rogue Community College
Sunny Wolf Charter School
Three Rivers School District
Woodland Charter School

KLAMATH (19)
Chiloquin, City of
Chiloquin-Agency Lake RFPD
Crescent RFPD
EagleRidge High School
Horsefly Irrigation District
Klamath Community College
Klamath County
Klamath County Emergency Communications District
Klamath County Fire District #1
Klamath County School District
Klamath Falls City Schools
Klamath Falls, City of
Klamath Housing Authority
Klamath Vector Control District
Malin, City of
Merrill, City of
Oregon Institute of Technology
Sage Community School
South Suburban Sanitary District

LAKE (9)
Adel School District #21
Lake County
Lake County ESD
Lake County Library District
Lake County School District #7
Lakeview, Town of
North Lake School District #14
Paisley School District
Plush School District

LANE (58)
Bethel School District
Bridge Charter Academy
Coburg Community Charter School
Coburg RFPD
Coburg, City of
Cottage Grove, City of
Creswell School District #40
Creswell, City of
Crow-Applegate-Lorane School District #66
Dexter RFPD
Dunes City, City of

Eugene School District #4J
Eugene Water and Electric Board
Eugene, City of
Fern Ridge Community Library
Fern Ridge School District
Florence, City of
Goshen Fire District
Junction City Fire Department
Junction City School District #69
Junction City, City of
Lane Community College
Lane Council of Governments
Lane County
Lane County ESD
Lane Fire Authority
Lowell RFPD
Lowell School District
Lowell, City of
Mapleton School District
Mapleton Water District
Marcola School District #79
McKenzie Fire and Rescue
McKenzie School District
Mohawk Valley Fire
Mountain View Academy
Oakridge School District
Oakridge, City of
Pleasant Hill Fire Department
Pleasant Hill School District
Rainbow Water District
Ridgeline Montessori
Santa Clara RFPD
Siuslaw Public Library
Siuslaw RFPD #1
Siuslaw School District #97J
South Lane County Fire and Rescue
South Lane School District
Springfield Academy of Arts & Academics
Springfield School District #19
Springfield, City of
The Village School
Triangle Lake Schools
University of Oregon
Veneta, City of
West Lane Technical Learning Center
Western Lane Ambulance District
Westfir, City of

LINCOLN (22)
Central Oregon Coast Fire and Rescue District
Depoe Bay RFPD
Depoe Bay, City of
Eddyville Charter School
Lincoln City, City of
Lincoln County
Lincoln County School District
Newport, City of
North Lincoln Fire and Rescue District #1
Oregon Coast Community College
Oregon Salmon Commission
Port of Newport
Seal Rock RFPD
Seal Rock Water District
Siletz Rural Fire Protection District
Siletz Valley Early College Academy
Siletz Valley School
Southwest Lincoln County Water District
Toledo, City of
Waldport, City of
Yachats RFPD
Yachats, City of

LINN (36)
Albany, City of
Brownsville RFPD
Central Linn School District #552C
Community Services Consortium
Greater Albany Public Schools #8J
Halsey, City of
Halsey-Shedd RFPD
Harrisburg Fire and Rescue
Harrisburg School District #7
Harrisburg, City of
Lebanon Aquatic District
Lebanon Community School District
Lebanon Fire District
Lebanon, City of
Linn County
Linn-Benton Community College
Linn-Benton Housing Authority
Linn-Benton-Lincoln ESD
Lourdes Charter School
Lyons Fire District
Lyons, City of
Mill City RFPD
Mill City, City of
Millersburg, City of
Oregon Cascades West Council of Governments
Oregon Connections Academy
Sand Ridge Charter School
Santiam Canyon School District
Scio Fire District
Scio School District #95C
Sweet Home Cemetery Maintenance District
Sweet Home Charter School
Sweet Home Fire and Ambulance District
Sweet Home School District #55
Sweet Home, City of
Tangent RFPD

MALHEUR (22)
Adrian School District #61
Annex Elementary School
Four Rivers Community School
Harper School District #66
Jordan Valley School District #3
Jordan Valley, City of
Juntura Grade School
Juntura Road District #4
Malheur County
Malheur ESD Region #14
Nyssa Road Assessment District #2
Nyssa School District #26
Nyssa, City of
Ontario School District #8C
Ontario, City of
Owyhee Irrigation District
Rural Road Assessment District #3
Treasure Valley Community College
Vale School District #84
Vale, City of
Valley View Cemetery Maintenance District
W W Jones School

MARION (143)
Appraiser Certification and Licensure Board
Aumsville RFPD
Aumsville, City of
Aurora RFPD
Aurora, City of
Board of Accountancy
Board of Architect Examiners
Board of Chiropractic Examiners
Board of Examiners for Engineering and Land Surveying
Board of Geologist Examiners
Board of Optometry
Board of Parole and Post-Prison Supervision
Board of Pharmacy
Bureau of Labor and Industries
Cascade School District #5
Chemeketa Community College
City County Insurance Services
Commission on Indian Services
Commission on Judicial Fitness and Disability
Construction Contractors Board
Department of Administrative Services
Department of Agriculture
Department of Aviation
Department of Consumer and Business Services
Department of Corrections
Department of Education
Department of Energy
Department of Environmental Quality
Department of Human Services
Department of Justice
Department of Land Conservation and Development
Department of Revenue
Department of State Lands
Department of Transportation
Department of Veterans' Affairs
District Attorneys Department
Eagle Charter School
Employment Department
Employment Relations Board
Forestry Department
Frontier Charter Academy
Geology and Mineral Industries
Gervais School District #1
Gervais, City of
Health Related Licensing Boards
Higher Education Coordinating Commission
Howard Street Charter School, Inc.
Hubbard RFPD
Hubbard, City of
Idanha-Detroit RFPD
Jefferson RFPD
Jefferson School District #14CJ
Jefferson, City of
Judges PERS
Judicial Department
Keizer Fire Department
Keizer, City of
Land Use Board of Appeals
Landscape Contractors Board
League of Oregon Cities
Legislative Administration Committee
Legislative Assembly
Legislative Committees
Legislative Fiscal Office
Legislative Policy and Research Committee
Local Government Personnel Institute
Long Term Care Ombudsman
Marion Area Multi-Agency Emergency Telecom Center
Marion County

Marion County Fire District #1
Marion County Housing Authority
Mental Health Regulatory Agency
Mid-Valley Behavioral Care Network
Military Department
Military Department (Federal Employees)
Mount Angel, City of
Mt. Angel Fire District
Mt. Angel School District #91
North Marion School District #15
North Santiam School District #29J
NorthWest Senior & Disability Services
Office of Legislative Counsel
Office of the Governor
Oregon Advocacy Commission Office
Oregon Board of Dentistry
Oregon Board of Massage Therapists
Oregon Board of Medical Examiners
Oregon Business Development Department
Oregon Commission for the Blind
Oregon Community College Association
Oregon Corrections Enterprises
Oregon Criminal Justice Commission
Oregon Department of Fish and Wildlife
Oregon Education Investment Board
Oregon Forest Resources Institute
Oregon Government Ethics Commission
Oregon Health Authority
Oregon Hop Commission
Oregon Housing and Community Services
Oregon Liquor Control Commission
Oregon Municipal Electric Utilities Association
Oregon Parks and Recreation Department
Oregon Racing Commission
Oregon School Boards Association
Oregon State Board of Nursing
Oregon State Library
Oregon State Police
Oregon State Treasury
Oregon Watershed Enhancement Board
Oregon Youth Authority
Psychiatric Security Review Board
Public Defense Services Commission
Public Employees Retirement System
Public Safety Standards and Training
Public Utility Commission
Real Estate Agency
Salem Housing Authority
Salem, City of
Salem-Keizer Public Schools
Secretary of State
Silver Falls Library District
Silver Falls School District
Silverton Fire District
Silverton, City of
St. Paul School District
State Accident Insurance Fund
State Board of Clinical Social Workers
State Board of Tax Practitioners
State Lottery Commission
State Marine Board
Stayton Fire District
Stayton, City of
Sublimity Fire District
Suburban East Salem Water District
Teacher Standards and Practices Commission
Travel Information Council
Turner Fire District
Turner, City of
Water Resources Department
Willamette ESD
Woodburn Fire District
Woodburn School District
Woodburn, City of

MORROW (8)
Boardman RFPD
Boardman, City of
Heppner, City of
Irrigon, City of
Morrow County Schools
North Morrow Vector Control District
Oregon Trail Library District
West Extension Irrigation District

MULTNOMAH (51)
Arthur Academy Charter School
Centennial School District #28
Center for Advanced Learning
Corbett School District #39
Corbett Water District
David Douglas School District
Fairview, City of
Gresham, City of
Gresham-Barlow School District #10
Home Forward
Kairos PDX
Knova Learning Oregon
Le Monde French Immersion
Public Charter School
Lewis and Clark Montessori Charter School
Metro
Metro East Web Academy
Mt. Hood Community College
Multnomah County
Multnomah County Drainage
Multnomah County ESD
Multnomah County RFPD #14
Multnomah Learning Academy
Opal School
Oregon Beef Council
Oregon Dairy Products
Commission
Oregon Film and Video
Oregon Health & Science University
Oregon Patient Safety Commission
Oregon Potato Commission
Oregon Tourism Commission
Oregon Wheat Commission
Parkrose School District
Physical Therapist Licensing Board
Port of Portland
Portland Community College
Portland Development Commission
Portland Public Schools
Portland State University
Portland Village School
Portland, City of
Reynolds School District
Riverdale School
Rockwood Water People's Utility District
Sauvie Island School
The Cottonwood School of Civics and Science
The Emerson School
The Ivy School
Trillium Charter School
Troutdale, City of
West Multnomah Soil and Water Conservation District
Wood Village, City of

POLK (14)
Central School District #13J
Dallas Community School
Dallas School District
Dallas, City of
Falls City School District
Falls City, City of
Independence, City of
Luckiamute Valley Charter School
Monmouth, City of
Polk County
Polk County Fire District #1
Polk Soil and Water Conservation District
West Valley Housing Authority
Western Oregon University

SHERMAN (3)
Moro, City of
Sherman County
Sherman County School District

TILLAMOOK (26)
Bay City, City of
Fairview Water District
Garibaldi, City of
Manzanita, City of
Neah-Kah-Nie School District
Nehalem Bay Fire and Rescue
Nehalem Bay Health District
Nehalem Bay Wastewater Agency
Neskowin Regional Sanitary
Authority
Neskowin Regional Water
District
Nestucca RFPD
Nestucca School District #101
Netarts Water District
Netarts-Oceanside RFPD
Netarts-Oceanside Sanitary District
Port of Garibaldi
Port of Tillamook Bay
Rockaway Beach, City of
Tillamook Bay Community College
Tillamook County Emergency
Communications District
Tillamook County Soil and Water Conservation District
Tillamook Fire District
Tillamook People's Utility District
Tillamook Public Schools
Tillamook, City of
Wheeler, City of

UMATILLA (33)
Athena, City of
Athena-Weston School District #29RJ
Blue Mountain Community College
East Umatilla County RFPD
Echo School District
Echo, City of
Helix School District
Helix, City of
Hermiston School District #8R
Hermiston, City of
InterMountain ESD
Ione School District
Milton-Freewater Unified School District
Milton-Freewater, City of
Nixyaawii Community School
Pendleton School District #16R
Pendleton, City of
Pilot Rock School District #2R
Pilot Rock, City of
Port of Umatilla
Stanfield School District
Stanfield, City of
Ukiah School
Umatilla County
Umatilla County Fire District #1
Umatilla County Soil and Water District
Umatilla County Special Library District
Umatilla Fire Department
Umatilla School District #6R
Umatilla, City of
Umatilla-Morrow Radio and Data District
Weston Cemetery
Weston, City of

UNION (15)
Cove School District
Eastern Oregon University
Elgin School District #23
Elgin, City of
Imbler RFPD
Imbler School District
Imbler, City of
La Grande Public Schools
La Grande RFPD
La Grande, City of
North Powder School District
North Powder, City of
Northeast Oregon Housing Authority
Tri-County Cooperative Weed Management
Union County School District

WALLOWA (9)
Enterprise School District #21
Enterprise, City of
Joseph School District #6
Joseph, City of
Troy School District #54
Wallowa County
Wallowa County Region #18 ESD
Wallowa School
Wallowa, City of

WASCO (17)
Columbia Gorge Community College
Dufur Schools
Dufur, City of
Maupin, City of
Mid-Columbia Center for Living
Mid-Columbia Fire and Rescue
Mosier Community School
Mosier Fire District
North Central Public Health District
North Wasco County Parks and Recreation
North Wasco County School District #21
Northern Oregon Corrections
Port of The Dalles
South Wasco County School District #1
Wasco County
Wasco County ESD
Wasco County Soil and Water Conservation District

WASHINGTON (41)
Arco Iris Spanish Immersion Charter School
Banks Fire District #13
Banks School District
Banks, City of
Beaverton School District
Beaverton, City of
City View Charter School
Clean Water Services
Cornelius, City of
Durham, City of
Forest Grove Community School
Forest Grove School District
Forest Grove, City of
Gaston Public Schools
Gaston RFPD
Gaston, City of
Hillsboro School District #1J
Hillsboro, City of
Hope Chinese Charter School
King City, City of
Metropolitan Area Communication Commission
MITCH Charter School
North Plains, City of
Northwest Regional ESD
Oregon State Bar
Oregon State Bar Professional Liability Fund
Oregon Virtual Education East
Oregon Virtual Education West
Sherwood Charter School
Sherwood, City of
Tigard, City of
Tigard-Tualatin School District #23J
Tigard-Tualatin School District #88J
Tualatin Valley Fire and Rescue
Tualatin Valley Irrigation District
Tualatin Valley Water District
Tualatin, City of
Washington County
Washington County Consolidated Comms. Agency
West Linn School District
West Slope Water District

WHEELER (4)
Fossil School District #21J
Fossil, City of
Mitchell School
Spray School District #1

YAMHILL (28)
Amity Fire District
Amity School District
Amity, City of
Carlton, City of
Dayton Public Schools
Dayton, City of
Dundee, City of
Eola Hills Charter School
Lafayette, City of
McMinnville Schools
McMinnville Water and Light Department
McMinnville, City of
Newberg School District #29JT
Newberg, City of
Perrydale School District #21
Sheridan AllPrep Academy
Sheridan Fire District
Sheridan Japanese School Foundation
Sheridan School District #48J
Sheridan, City of
West Valley Fire District
Willamina School District #30J
Willamina, City of
Yamhill Communications Agency
Yamhill County
Yamhill Fire Protection District
Yamhill, City of
Yamhill-Carlton School District #1

Key Acronyms
RFPD = Rural Fire Protection District

ESD = Education Service District

Appendix B: Replacement Ratio Study (RRS) Exclusions and Assumptions

(see pages 10-12)

EXCLUSIONS

Job Class Exclusions

The study is limited to PERS plan retirees in the General Service and Police & Fire job classes from January 1990 through December 2017. Beneficiaries and alternate payees were also excluded, as the inclusion of these populations would skew the results due to the wide range of payout scenarios related to death and divorce benefits.

Retirement Option Exclusions

All lump-sum benefit types were excluded due to the distorting effect of significant payouts at one time on replacement ratio results.

Other Exclusions

- Any record that fell outside the January 1990 - December 2017 range.
- Any record that had a greater than one-year gap between termination date and retirement date.

ASSUMPTIONS

The following assumptions were used in this study:

- Any account with a variable balance at the date of retirement was considered a variable account member.
- For final average salary (FAS), the monthly FAS from the member's actual benefit calculation was used where available. When monthly FAS could not be obtained, we used the average salary of the three high calendar years of a member's career. This definition of FAS may not match the definition on which the member's actual benefit was calculated.
- Monthly gross benefit includes HB3349 benefits for qualifying retirees.

SPECIAL NOTES

The averages and percentages displayed on the Replacement Ratio sheets are based upon the respective actual source data. The calculations on each Replacement Ratio sheet are not directly derived from one another. For instance, if the Average Monthly Gross benefit column is divided by the Average Monthly Salary column, it will not equal the Average Replacement Ratio column because the Average Replacement Ratio is derived from the average of replacement ratios in the source data. This method avoids distortions resulting from averaging averages. This is also the case with all of the median calculations. This method of analyzing the data provides a more accurate picture of the actual dataset being used.

Records of members who retired in previous years and then returned to work only to retire again later will be counted in the year of original retirement and again in the year of the second retirement. Adjusting the historical record in these scenarios would otherwise distort year-over-year results.

Records for members who have retired with both Class 1 (General Service) and Class 2 (Police and Fire) job segments had the General Service job segment removed. Removing these records avoids double counting salaries and members.

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

TIER 1/TIER 2 AND OPSRP PENSION BENEFITS
RHIA/RHIPA RETIREE MEDICAL BENEFITS

December 31, 2017 Actuarial Valuation

Prepared by:

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September 28, 2018

Retirement Board
Oregon Public Employees Retirement System

Dear Members of the Board,

As part of our engagement with the Board, we performed an actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2017. Our findings are set forth in this actuarial valuation report. This report reflects the benefit provisions in effect as of December 31, 2017.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

This valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While the valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated herein in July 2017.

Some of the actuarial computations presented in this report are for purposes of determining the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report are for purposes of assisting the System and participating employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions as summarized in this report. This report does not include results determined under GASB Statements Nos. 67 and 68, or under GASB Statements Nos. 74 and 75, which will be provided separately. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman's work is prepared solely for the use and benefit of the Oregon Public Employees Retirement System.

Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. No third party recipient of Milliman's work product should rely upon this report. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

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

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

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

Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

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

Table of Contents

Executive Summary

Executive Summary

Milliman prepared this report for the Oregon Public Employees Retirement System to:

- Present Milliman's actuarial estimates of the system-wide liabilities and expenses of the Oregon Public Employees Retirement System (PERS), including pension benefits provided through Tier 1/Tier 2 and the Oregon Public Service Retirement Plan (OPSRP), and retiree medical benefits provided through the Retiree Health Insurance Account (RHIA) and the Retiree Health Insurance Premium Account (RHIPA), as of December 31, 2017 for PERS to incorporate, as PERS deems appropriate, in its financial statements; and
- Provide information on system-wide average employer contribution rates and employer contribution rates for the School District rate pool and the State and Local Government Rate Pool (SLGRP) for the biennium beginning July 1, 2019.

This valuation does not cover the defined contribution Individual Account Program (IAP). Except where otherwise explicitly noted, contribution rates in this valuation do not include contributions to the IAP. In addition, the valuation does not include an allowance for employer debt service payments on pension obligation bonds.

Summarizing a key result of this report, the system-average collared "net" employer contribution rate for the 2019-2021 biennium increased by more than 4% of payroll compared to the rate currently in effect for the 2017-2019 biennium. This increase primarily results from continued systematic rate increases over several biennia to reflect the 2015 Oregon Supreme Court ruling in *Moro v. State of Oregon*, along with rate increases resulting from updates to valuation assumptions in recent experience studies. Further discussion and explanation of the change in collared rates can be found in our August 2018 presentation materials to the PERS Board.

Of concern, even with the rate increase noted above the system-average uncollared employer contribution rate remains almost 4% of payroll above the collared rate for 2019-2021. Because of this, if actual experience is near assumption and assumptions remain unchanged in the next rate-setting valuation, we anticipate a system-average collared rate increase for the 2021-2023 biennium similar to the increase for the 2019-2021 biennium calculated in this valuation. The magnitude of such a 2021-2023 increase would differ between SLGRP employers and School District employers. This is because currently the difference between the uncollared rate and the collared base rate is greater for the SLGRP than for the School District pool, as shown later in this section of the report. In the event that long-term future experience mirrors the valuation assumptions, this increase will be needed to allow the system's unfunded liability to be systematically amortized over time by a combination of employer contributions and actual investment earnings. For more information on projections of future rate increases, we encourage readers of this report to review our financial modeling presentations to the PERS Board. The most recent such presentation was given in December 2017, and our next presentation will be at the December 2018 PERS Board meeting.

Projected Benefit Payments and the Fundamental Cost Equation

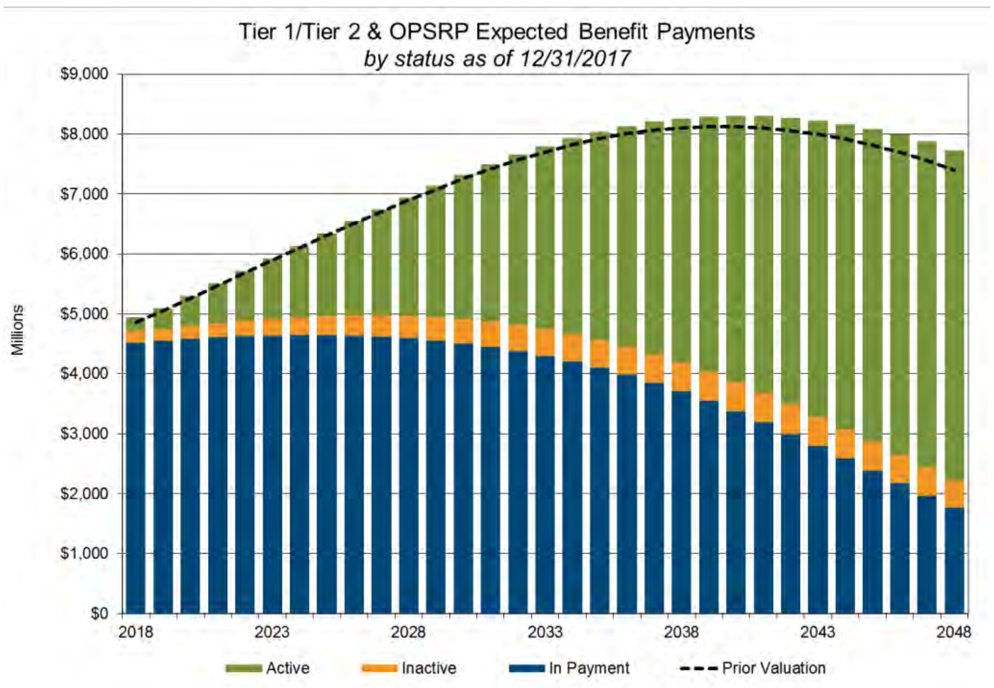
The actuarial liabilities contained in this report are calculated from a projection of benefit payments. This projection reflects the current plan provisions, assumptions, and demographic information documented herein. The stream of projected future benefit payments is converted to a net present value as of the valuation date based on the valuation's investment return assumption, which currently is 7.20%. The total net present value is then assigned to past, present, and future service according to the actuarial cost method. The portion assigned to the past is called the **actuarial accrued liability**[1], while the portion assigned to the current year is referred to as the **normal cost**.

Actuarial valuations provide a tool for measuring a System's progress towards funding its benefit obligations and adjusting budgeted contributions as appropriate to reflect changing circumstances. Even though they affect actuarial funded status and contribution rate calculations, assumptions regarding plan investment returns and participant experience do not affect the ultimate long-term cost of the program, which is governed by the **fundamental cost equation**:

Benefits + Expenses = Contributions + Investment Earnings

From a plan funding perspective, contributions are the balancing item in the equation. To the extent actual plan investment earnings underperform compared to assumption, contributions must increase to fund the defined level of benefits; if investments outperform the assumption, contributions can decrease.

The graph below illustrates projected benefit payments from the System calculated in both the current valuation and the prior valuation, organized by member status as of the actuarial valuation date. The graph includes the estimated effects on projected benefits of anticipated future service by current active members, including the assumed effects of future salary increases. The graph does not include expected benefit payments for members hired after the valuation date. The dotted line illustrates the shape of the graph from the prior valuation, which was performed as of December 31, 2016. As shown in the graph, there was little change in the projected benefits calculated in the current valuation.



[1] *Bolded terms from the Executive Summary are defined in the report glossary.*

Employer Contribution Rates

Pension Contribution Rates

This report presents system average employer contribution rates calculated as of December 31, 2017. When adopted by the PERS Board, the employer contribution rates presented will be first effective July 1, 2019. The December 31, 2015 valuation presented the employer contribution rates that were adopted by the PERS Board for July 1, 2017 through June 30, 2019.

Employer pension contribution rates consist of a normal cost rate and a rate to amortize the Unfunded Accrued Liability (UAL). Normal cost rates are calculated and charged separately to the Tier 1/Tier 2, OPSRP general service and OPSRP police and fire payrolls. UAL rates are calculated separately for Tier 1/Tier 2 and OPSRP, but each UAL rate so developed is then charged across all payrolls. Rates for individual employers are adjusted if the employer maintains a side account or has a **pre-SLGRP liability or surplus**. The table below compares the average employer contribution rates for each type of payroll calculated for this valuation to the rates in effect from July 1, 2017 through June 30, 2019.

Collared Pension Contribution Rates (Excludes IAP)						
	Effective July 1, 2019			Effective July 1, 2017		
Payroll	Tier 1/Tier 2	OPSRP General Service	OPSRP Police & Fire	Tier 1/Tier 2	OPSRP General Service	OPSRP Police & Fire
Normal Cost Rate	15.27%	8.40%	13.03%	15.07%	8.02%	12.79%
Tier 1/Tier 2 UAL Rate[1]	12.19%	12.19%	12.19%	7.79%	7.79%	7.79%
OPSRP UAL Rate	1.45%	1.45%	1.45%	1.27%	1.27%	1.27%
Total Pension Rate	**28.91%**	**22.04%**	**26.67%**	**24.13%**	**17.08%**	**21.85%**
Average Adjustment[2]	(6.91%)	(6.91%)	(6.91%)	(6.62%)	(6.62%)	(6.62%)
Net Pension Rate	**22.00%**	**15.13%**	**19.76%**	**17.51%**	**10.46%**	**15.23%**

[1] *Includes Multnomah Fire District #10*

[2] *Adjustments shown are for side accounts and pre-SLGRP liabilities and are shown on system-wide average basis. For this purpose, adjustments are not assumed to be limited when an individual employer reaches a 0% contribution rate.*

Average normal cost and collared UAL rates calculated in this valuation both increased compared to the contribution rates calculated in the December 31, 2015 valuation, which produced rates effective July 1, 2017. This is primarily due to continued systematic UAL rate increases via the rate collar, the mechanics of which are detailed later in this report, along with the effect of a lower investment return assumption.

Pension contribution rates differ for each Tier 1/Tier 2 rate pool. This report calculates the specific rates for each rate pool. Tier 1/Tier 2 rates for independent employers (employers that do not participate in a Tier 1/Tier 2 rate pool) are calculated in separate reports for each employer. Changes from biennium to biennium in pension contribution rates for each rate pool (or independent employer) are confined to a **rate collar** depending on **funded status**. The table below shows the employer pension contribution rates for each Tier 1/Tier 2 rate pool calculated in this valuation compared to the rates in effect as of July 1, 2017, along with the average adjustment to those rates for side account rate offsets and for pre-SLGRP and Transition Liability/(Surplus) charges and credits.

Tier 1/Tier 2 Collared Pension Contribution Rates (Excludes IAP)				
	Effective July 1, 2019		Effective July 1, 2017	
	SLGRP	School Districts	SLGRP	School Districts
Normal Cost Rate	15.83%	13.79%	15.78%	13.28%
Tier 1/Tier 2 UAL Rate[1]	10.43%	16.73%	6.10%	12.15%
Total Pension Rate	**26.26%**	**30.52%**	**21.88%**	**25.43%**
Average Adjustment[2]	(5.68%)	(10.66%)	(5.52%)	(10.26%)
Net Pension Rate	**20.58%**	**19.86%**	**16.36%**	**15.17%**

[1] *Includes Multnomah Fire District #10*

[2] *Adjustments shown are for side accounts and pre-SLGRP liabilities and are shown on a rate pool average basis. For this purpose, adjustments are not assumed to be limited when an individual employer reaches a 0% contribution rate.*

The Tier 1/Tier 2 contribution rates shown here are after reflecting the effects of the rate collar. Due to the impact of the *Moro* decision and assumption changes (primarily lower investment return), both the SLGRP and the School District rate pool have “before collar” (or “uncollared”) contribution rates that exceed the maximum single biennium rate increase allowed by the collar. The impact of the collar adjustment for each rate pool is shown below. The contribution rate increases deferred by the rate collar will be reflected in future rate-setting periods. In other words, if all actual future experience matches or is near the assumptions in this valuation, in addition to the increases effective for the July 1, 2019 to June 30, 2021 biennium illustrated in this report, we would expect additional increases in the July 1, 2021 to June 30, 2023 biennium. As already noted previously in the table above, the “average adjustment” in the table below quantifies the effects of side accounts and pre-SLGRP liabilities on a rate pool average basis.

Collar Impact on Tier 1/Tier 2 Pension Contribution Rates		
	Effective July 1, 2019	
	SLGRP	School Districts
Total Pension Rate Before Collar	30.94%	32.45%
Collar Adjustment	(4.68%)	(1.93%)
Total Pension Rate After Collar	**26.26%**	**30.52%**
Average Adjustment	(5.68%)	(10.66%)
Net Pension Rate	**20.58%**	**19.86%**

Retiree Healthcare Contribution Rates

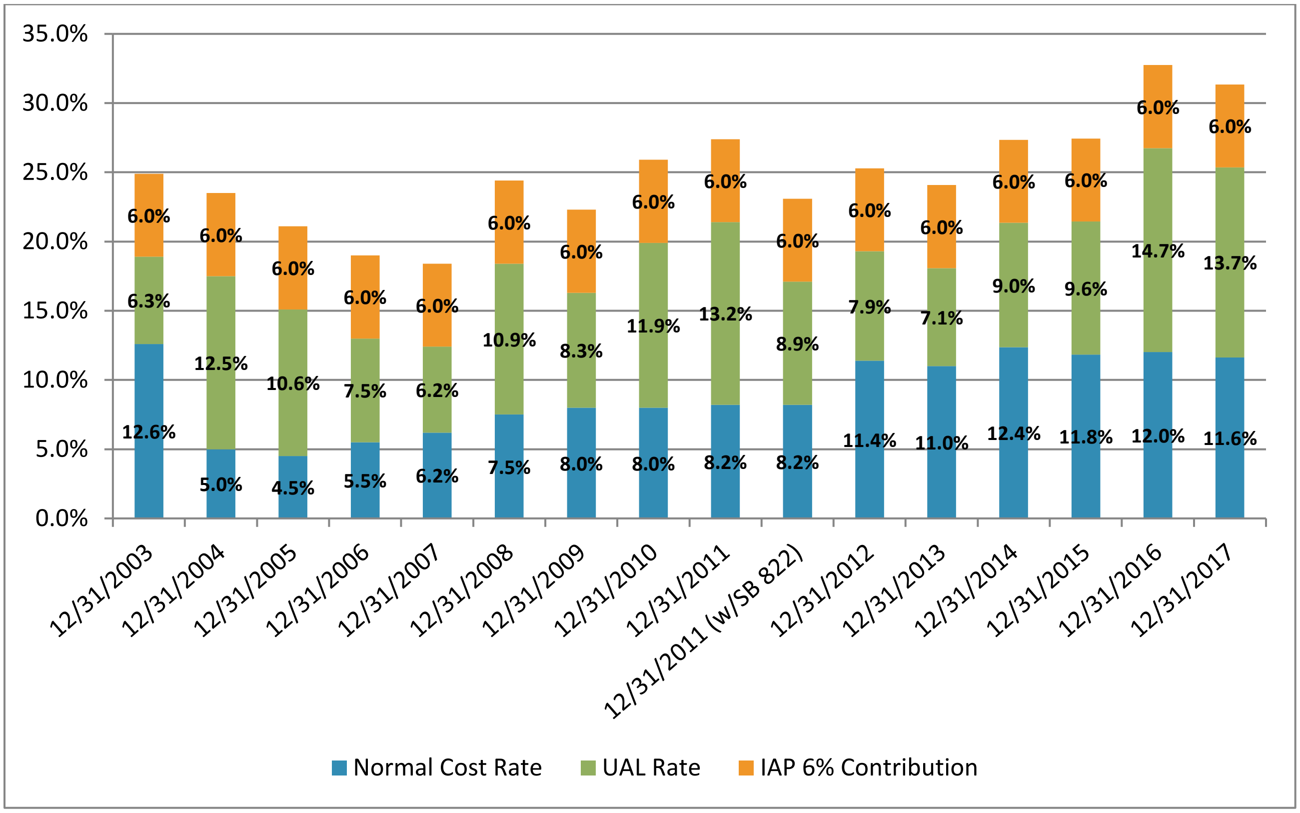
In addition to the pension contribution rates, all employers contribute to the Retirement Health Insurance Account (RHIA). Further, State Agencies and State Judiciary also contribute to the Retiree Health Insurance Premium Account (RHIPA). Only Tier 1 and Tier 2 members are eligible for these benefits, so the normal cost rates are only charged to Tier 1/Tier 2 payroll, but the UAL rates are charged to all payrolls. For each type of payroll used in this valuation the table below compares the employer contribution rates calculated in this valuation to the rates in effect from July 1, 2017 through June 30, 2019. The funded status for both retiree healthcare programs has historically lagged those of the defined benefit pension programs. In response to this, the UAL on the retiree healthcare programs is amortized over a ten-year period, which is shorter than the pension program amortization periods, in an effort to more rapidly improve funded status. Funded status for both programs have materially improved since the amortization change was implemented, with the funded status for the larger RHIA program now above 100%. With its funded status over 100%, the RHIA UAL contribution rate was set to 0.00% of payroll for 2019-2021, a decrease of 0.43% of payroll from the UAL rate in effect for the 2017-2019 biennium.

Retiree Healthcare Contribution Rates						
	Effective July 1, 2019			Effective July 1, 2017		
Payroll	Tier 1/Tier 2	OPSRP General Service	OPSRP Police & Fire	Tier 1/Tier 2	OPSRP General Service	OPSRP Police & Fire
RHIA Normal Cost Rate	0.06%	0.00%	0.00%	0.07%	0.00%	0.00%
RHIA UAL Rate	0.00%	0.00%	0.00%	0.43%	0.43%	0.43%
Total RHIA rate	**0.06%**	**0.00%**	**0.00%**	**0.50%**	**0.43%**	**0.43%**
RHIPA Normal Cost Rate	0.12%	0.00%	0.00%	0.11%	0.00%	0.00%
RHIPA UAL Rate	0.27%	0.27%	0.27%	0.38%	0.38%	0.38%
Total RHIPA rate	**0.39%**	**0.27%**	**0.27%**	**0.49%**	**0.38%**	**0.38%**

Combined Pension and Retiree Healthcare Contribution Rates

The system-wide average combined pension and retiree healthcare contribution rates are shown below for each valuation since December 31, 2003. As shown below, the average normal cost rate declined dramatically after the 2003 valuation, primarily due to the change in the actuarial cost method from entry age normal (EAN) to projected unit credit (PUC) made in the December 31, 2004 valuation. The PUC method allocates benefits projected to be paid under the Money Match formula to past service with a 0% normal cost allocation to current year service. As additional long-service Tier 1 members retired under the Money Match formula, the normal cost rate gradually increased over the subsequent valuations. A change back to EAN in the December 31, 2012 valuation increased the normal cost rate, as the EAN method allocates a portion of benefits projected to be paid under the Money Match formula to current year service. The system-wide average normal cost rate is now expected to drift down gradually in the future toward the OPSRP normal cost rate (currently 8.92%) as new OPSRP members replace retiring Tier 1 and Tier 2 members. The OPSRP normal cost rate is expected to increase slowly over time due to anticipated improvements in life expectancy. The average UAL rate increased since the prior rate-setting valuation as of December 31, 2015, primarily due to the effects of continued recognition of collared UAL rate increases and the change to the investment return assumption.

System-Wide Average Collared Base Contribution Rates – Combined Pension and Retiree Healthcare



For an individual employer, base pension rates are adjusted for side account rate offsets to develop net pension rates paid by the employer. Side accounts are the result of employer supplemental deposits, typically financed through a pension obligation bond. When a supplemental deposit is made, a side account is established (after any Transition Liabilities related to joining the SLGRP have been paid) and used to offset the otherwise required contribution. As of December 31, 2017, the system has approximately $5.6 billion in unamortized side accounts, slightly higher than last year. At a system-average level, side accounts now reduce employer contribution rates by 6.51% of payroll, but there is wide variation between employers.

For individual employers in the SLGRP, the rates shown above are also adjusted for amortization payments on pre-SLGRP liabilities. The average adjustment to individual employer rates due to side accounts and pre-SLGRP liabilities is shown on a combined basis in the table on page 4.

Limits on Future Pension Contribution Rates

The minimum and maximum rates that can be effective July 1, 2021 for each Tier 1/Tier 2 rate pool (prior to adjustments) are shown in the table below. The limits are calculated and applied on an individual employer basis for independent employers. The contribution rates for employers in Tier 1/Tier 2 pooling arrangements (i.e., the SLGRP and School Districts rate pool) are adjusted from the rates of the pool to reflect side account rate offsets, charges or credits for pre-SLGRP liabilities, and adjustments to the normal cost rates of SLGRP employers to reflect the employer's ratio of general service to police and fire payroll. These adjustments are not limited by the rate collar.

The size of the rate collar depends on the funded status of a rate pool or employer. When funded status is less than 60 percent or above 140 percent, the size of the rate collar is twice the size of the "single collar" that applies when funded status is between 70 percent and 130 percent. The rate collar provides a graded schedule between the single and double rate collars if the funded status, excluding side accounts, is between 60% and 70% or 130% and 140%.

Limits on Future Tier 1/Tier 2 Pension Contribution Rates		
	Effective July 1, 2021	
	SLGRP	School Districts
Between 70% and 130% Funded		
Minimum Rate	21.01%	24.42%
Maximum Rate	31.51%	36.62%
Less than 60% or Greater than 140% Funded		
Minimum Rate	15.76%	18.32%
Maximum Rate	36.76%	42.72%

For Rate Pools funded between 60% and 70% or between 130% and 140% the limits vary linearly between the rates shown above.

Funded Status

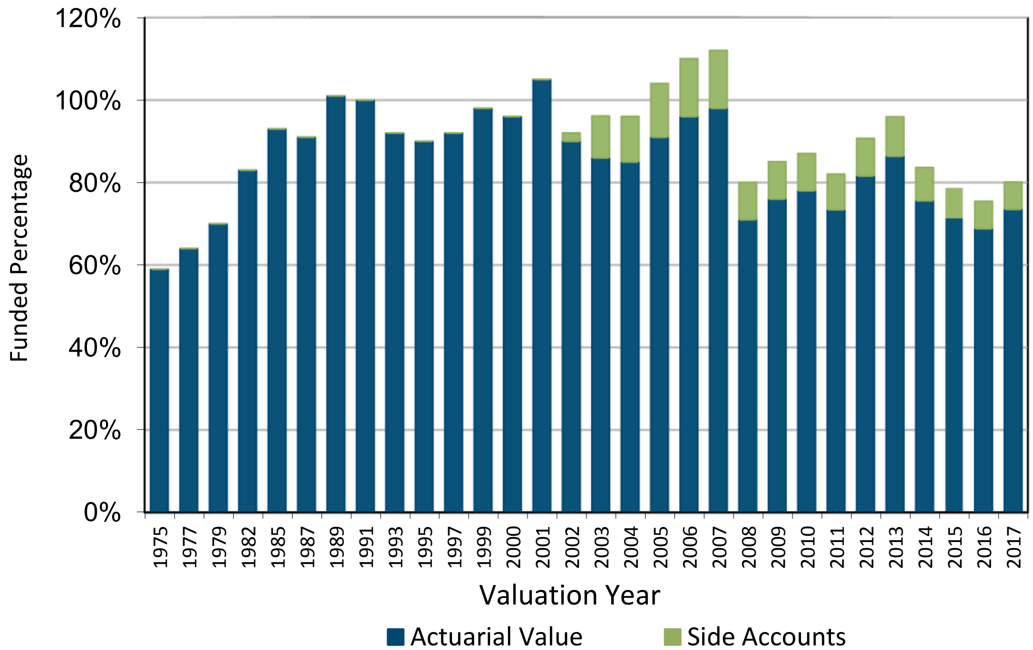
The table below shows the funded status of the various pension rate pools both on the basis used to calculate the contribution rate for each rate pool and after adjustment for side accounts (assuming side accounts offset Tier 1/Tier 2 liabilities). For this exhibit, all independent employers, including State Judiciary, have been grouped together.

	SLGRP	School Districts	Independent Employers	OPSRP	Pension System Totals[1]
December 31, 2017					
Actuarial accrued liability	$42,150.7	$29,677.4	$6,536.3	$5,634.7	$84,056.1
Actuarial value of assets	$30,899.7	$21,924.7	$4,932.9	$4,116.5	$61,764.9
Funded status	**73.3%**	**73.9%**	**75.5%**	**73.1%**	**73.5%**
Side accounts	$2,466.3	$3,009.7	$85.3	$0.0	$5,561.2
Funded status reflecting side accounts	**79.2%**	**84.0%**	**76.8%**	**73.1%**	**80.1%**
December 31, 2016					
Actuarial accrued liability	$40,351.3	$29,152.2	$6,690.8	$4,717.0	$80,970.3
Actuarial value of assets	$28,032.6	$19,952.9	$4,770.0	$3,021.4	$55,670.2
Funded status	**69.5%**	**68.4%**	**71.3%**	**64.1%**	**68.8%**
Side accounts	$2,385.0	$2,917.2	$86.6	$0.0	$5,388.8
Funded status reflecting side accounts	**75.4%**	**78.5%**	**72.6%**	**64.1%**	**75.4%**

Amounts in millions

[1] *Includes Multnomah Fire District #10*

As shown in the graph below, the funded status of the system generally improved until the market decline of 2000-2002. After the decline, funded status generally improved for several years due to better than expected investment returns until 2008, when it decreased significantly due to investment losses. Funded status then improved through the December 31, 2013 valuation due to legislative changes in plan provisions and investment gains during 2012 and 2013. Funded status declined in the December 31, 2014 valuation due to the combined effects of the *Moro* decision and assumption changes. It continued decreasing in subsequent years due to the combined effects of investment losses and adoption of a lower assumed rate of return, but improved in the current valuation due to 2017 investment returns.



The retiree medical benefits are funded using a 401(h) account within the pension trust. The table below shows the funded status of the retiree medical programs. The funded status of the RHIA and RHIPA programs improved since the prior valuation due the effects of investment returns, employer contributions, and actual member plan election experience.

	December 31, 2017			December 31, 2016		
	RHIA	RHIPA	Total	RHIA	RHIPA	Total
Actuarial accrued liability	$437.6	$69.4	$506.9	$463.7	$67.9	$531.6
Actuarial value of assets	$553.3	$29.8	$583.1	$465.0	$19.1	$484.1
Funded status	**126.4%**	**43.0%**	**115.0%**	**100.3%**	**28.1%**	**91.1%**

Amounts in millions

Asset Changes

Since December 31, 2016, contributions (including supplemental deposits but excluding side account rate offset transfers) for pension benefits have increased assets by 2.0% while benefit payments decreased assets by about 7.2%. On the whole, assets increased by 9.6%, since the investment returns of approximately 14.8% (including a $534 million transfer from the Contingency Reserve) were enough to offset the system's negative cash flow position.

	Amount	Percentage of Beginning Market Value
Market Value of Assets, December 31, 2016	**$63,232.2**	
Contributions	1,255.9	2.0%
Investment Income (less administrative expenses)	9,375.1	14.8%
Benefit Payments	(4,546.8)	(7.2%)
Market Value of Assets, December 31, 2017	**$69,316.4**	**109.6%**

Amounts in millions

The Tier 1 Rate Guarantee Reserve that is used to pay for the interest crediting rate guarantee on active Tier 1 member accounts when actual investment earnings are below the assumed rate has increased from a reserve of $181 million as of December 31, 2016 to a reserve of $511 million as of December 31, 2017 due to investment performance and Tier 1 retirement patterns in 2017. Tier 1 non-retired member accounts that are linked to the Rate Guarantee Reserve decreased from $4.8 billion on December 31, 2016 to $4.1 billion on December 31, 2017 due to retirements during the year of Tier 1 active members.

Market values are reported to Milliman by PERS. It is our understanding that the December 31 market values of select real estate and private equity investments are reported on a three-month lag basis. This valuation report does not attempt to quantify the impact of any such lag effects.

Liability Changes

Since December 31, 2016, the system-wide actuarial accrued liability has increased primarily due to the interest on the liability as current active members get closer to retirement. The normal cost, or the present value of projected future benefits for active members allocated to that year of service, was about one-quarter of the value of benefits paid out during the year. The remaining increase in the actuarial accrued liability was attributable to demographic experience, which includes actual experience differing from assumption, data corrections, and the effect of new members joining the system during the year. The largest demographic experience effects in descending order of magnitude resulted from data corrections, pay increases differing from assumption, active retirement rates differing from assumption, interest crediting on member account balances differing from assumption, and new members entering the system.

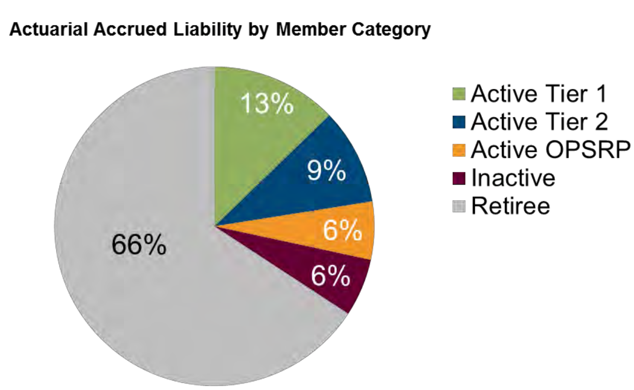
	Amount	Percentage of Beginning AAL
Actuarial Accrued Liability, December 31, 2016	**$81,501.8**	
Normal Cost	1,141.4	1.4%
Benefit Payments	(4,546.8)	(5.6%)
Interest	5,745.5	7.0%
Assumption & Method Changes	0.0	0.0%
Plan Changes	0.0	0.0%
Demographic Experience	721.1	0.9%
Actuarial Accrued Liability, December 31, 2017	**$84,563.0**	**103.8%**

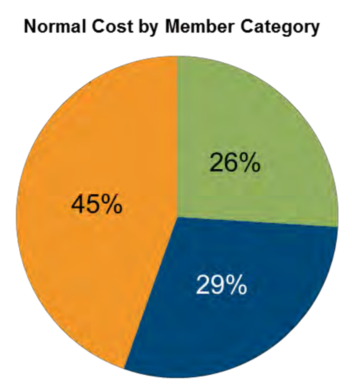
Amounts in millions

The Oregon Public Employees Retirement System is a mature system. There are currently 1.19 active members in the system for every annuitant (including retired members and beneficiaries). By comparison, the average ratio in NASRA's November 2017 Public Fund Survey is 1.42. Since contributions to the system are based on active payroll, a lower active-to-annuitant ratio means there are fewer active member payroll dollars to support any actuarial gains or losses, such as for investment experience varying from assumption, in comparison to peer systems. The ratio of active members to annuitants may decline further as a significant portion of the active members are currently eligible to retire.

The left-hand chart below illustrates the distribution of the system's actuarial accrued liability by member pension tier and status. While the majority of active liability is attributable to Tier 1 members, 72% of the system's total actuarial accrued liability is due to members who are no longer actively working in covered employment. Only 15% of the liability is attributable to active Tier 2 and OPSRP members. Of the actuarial accrued liability that is attributable to actives, a large portion is located at or near prime retirement ages.

The right-hand chart below illustrates the distribution of the system's normal cost. Tier 2 members account for 29% of the system's normal cost compared to about 9% of the system's actuarial accrued liability. OPSRP members account for 45% of the normal cost compared to just 6% of the actuarial accrued liability.



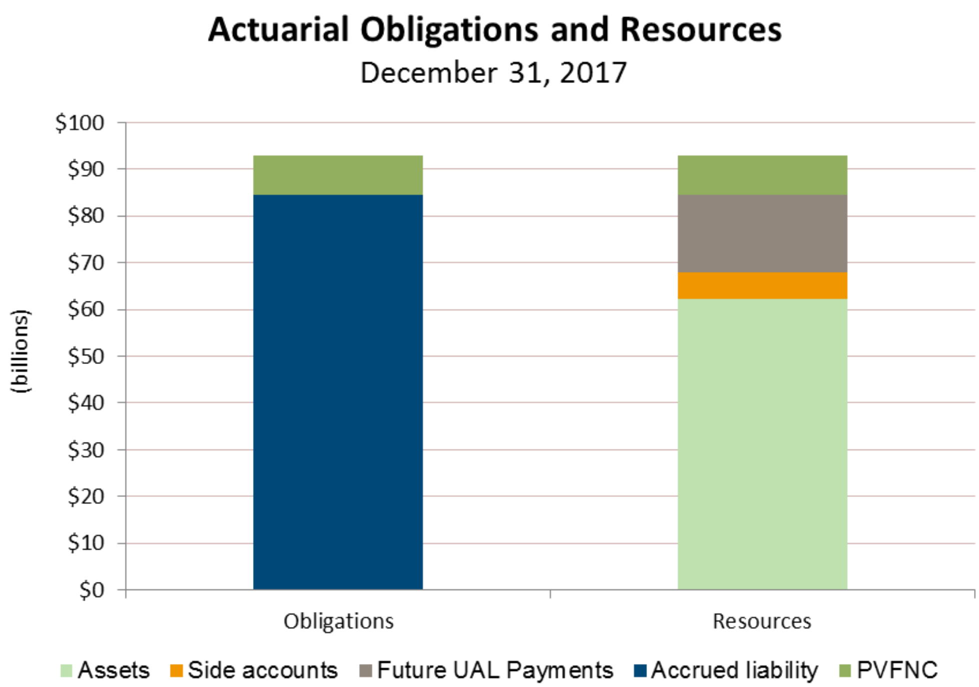


Actuarial Obligations and Resources

The actuarial accrued liability discussed above is the present value of benefits allocated to past service by the actuarial cost allocation method. The **total actuarial present value of benefits** (also referred to as "total liability") is a broader measure that reflects both the actuarial accrued liability and the **present value of future**

normal cost (PVFNC) for current members. Conceptually, the total actuarial present value of benefits can be thought of as the total expected benefit obligation, in today's dollars, associated with members as of the valuation date for service throughout their working careers, including assumed service subsequent to the actuarial valuation date. As of December 31, 2017, the total actuarial present value of benefits for the system was $92.9 billion.

The resources to fund this expected obligation include assets the system has set aside as of the valuation date, plus the present value of expected future contributions to normal cost and UAL payments. By definition, the resources and obligations are equal in this "actuarial balance sheet", as shown in the graph below.



Contributions to future normal costs and UAL payments are made as a percent of subject member salary, known as valuation payroll. The table below shows the amount of projected salary in the year following the valuation date as well as the present value of all future projected salary amounts for members included in the valuation.

	Projected Valuation Payroll for Year Subsequent to Valuation Date	Present Value of Future Valuation Payroll[1]
Tier 1/Tier 2	$4,246.9	$26,094.7
OPSRP General Service	5,187.5	49,568.2
OPSRP Police & Fire	664.5	8,158.7
Total	**$10,098.9**	**$83,821.7**

Amounts in millions

[1] *For members as of the valuation date.*

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described after the summary. **Combined valuation payroll** is the projected Tier 1/Tier 2 payroll plus OPSRP payroll for the calendar year subsequent to the actuarial valuation date.

	Actuarial Valuation as of		
	December 31, 2017	December 31, 2016	Percent Change
Tier 1/Tier 2 Pension			
Actuarial accrued liability	$78,421.4	$76,253.3	3%
Actuarial value of assets	$57,648.4	$52,648.8	9%
Unfunded actuarial accrued liability	$20,773.0	$23,604.4	(12%)
Funded status	74%	69%	
UAL as a percentage of payroll	206%	239%	
Normal cost	$648.7	$697.4	(7%)
Tier 1/Tier 2 valuation payroll	$4,246.9	$4,516.7	(6%)
Normal cost rate	15.27%	15.44%	
OPSRP Pension			
Actuarial accrued liability	$5,634.7	$4,717.0	19%
Actuarial value of assets	$4,116.5	$3,021.4	36%
Unfunded actuarial accrued liability	$1,518.2	$1,695.6	(10%)
Funded status	73%	64%	
UAL as a percentage of payroll	15%	17%	
Normal cost	$522.2	$483.5	8%
OPSRP valuation payroll	$5,852.0	$5,355.8	9%
Normal cost rate	8.92%	9.03%	
Combined Pension			
Actuarial accrued liability	$84,056.1	$80,970.3	4%
Actuarial value of assets	$61,764.9	$55,670.2	11%
Unfunded actuarial accrued liability	$22,291.2	$25,300.1	(12%)
Funded status	73%	69%	
Combined valuation payroll	$10,098.9	$9,872.6	2%
UAL as a percentage of payroll	221%	256%	
Normal cost	$1,170.9	$1,180.9	(1%)
Combined valuation payroll	$10,098.9	$9,872.6	2%
Normal cost rate	11.59%	11.96%	

Amounts in millions

	Actuarial Valuation as of		
	December 31, 2017	December 31, 2016	Percent Change
RHIA			
Actuarial accrued liability	$437.6	$463.7	(6%)
Actuarial asset value	$553.3	$465.0	19%
Unfunded actuarial accrued liability	($115.7)	($1.3)	8,508%
Funded status	126%	100%	
Combined valuation payroll	$10,098.9	$9,872.6	2%
UAL as a percentage of payroll	(1%)	(0%)	
Normal cost	$2.5	$3.0	(16%)
Tier 1/Tier 2 valuation payroll	$4,246.9	$4,516.7	(6%)
Normal cost rate	0.06%	0.07%	
RHIPA			
Actuarial accrued liability	$69.4	$67.9	2%
Actuarial asset value	$29.8	$19.1	56%
Unfunded actuarial accrued liability	$39.5	$48.8	(19%)
Funded status	43%	28%	
Combined valuation payroll	$2,984.5	$2,881.4	4%
UAL as a percentage of payroll	1%	2%	
Normal cost	$1.4	$1.5	(3%)
Tier 1/Tier 2 valuation payroll	$1,212.2	$1,276.0	(5%)
Normal cost rate	0.12%	0.12%	

Amounts in millions

Data Summary

A brief summary of the data underlying the current and prior valuations follows. As shown below, the active member count increased about 0.3%, while the system's total member population increased by about 2.0%. The data section of this report provides additional detail. State Judiciary is included in the Tier 1 counts.

	December 31, 2017				December 31, 2016
	Tier 1	Tier 2	OPSRP	Total	Total
Active Members					
Count	22,749	35,958	114,295	173,002	172,483
Average age	56.1	51.2	42.7	46.2	46.4
Average total service	25.2	16.9	6.1	10.9	11.1
Average prior year covered salary	$78,492	$70,429	$48,405	$56,939	$56,140
Inactive Members[1]					
Count	13,188	15,166	17,349	45,703	45,321
Average age	59.5	53.6	47.5	53.0	53.4
Average monthly deferred benefit	$2,068	$772	$406	$1,007	$1,053
Retired Members and Beneficiaries[1]					
Count	127,687	13,180	4,115	144,982	138,783
Average age	72.3	67.5	66.8	71.7	71.6
Average monthly benefit[2]	$2,817	$1,004	$478	$2,586	$2,521
Total Members	**163,624**	**64,304**	**135,759**	**363,687**	**356,587**

[1] *Inactive and Retiree counts are shown by lives within the system. In other words, a member is counted once for purposes of this exhibit, regardless of their service history for different rate pools. This contrasts with the method used to count inactive participants in some of the later exhibits of this report.*

[2] *The average monthly benefit reflects an estimated adjustment for the effect of the Supreme Court decision in Moro v. State of Oregon for records that were not already adjusted in the data provided.*

Effects of Changes

Effective with the December 31, 2017 actuarial valuation the following changes were made:

Assumption Changes

There were no changes to actuarial assumptions since the December 31, 2016 actuarial valuation.

Method Changes

There were no changes to actuarial methods since the December 31, 2016 actuarial valuation.

Plan Changes

There were no changes to plan provisions since the December 31, 2016 actuarial valuation.

System-Wide Assets

System-Wide Assets

The table below reconciles the market value of assets, as provided by PERS, to the asset values used in this valuation.

	Tier 1/Tier 2	OPSRP	Side Accounts	Contingency and Capital Preservation Reserve	Rate Guarantee Reserve	RHIA and RHIPA	System Totals
Amount reported by PERS December 31, 2017	$58,495.1	$4,116.5	$5,561.2	$50.0	$510.5	$583.1	$69,316.4
Adjustment for Recognized Transition Liability Receivable	(510.1)	0.0	0.0	0.0	0.0	0.0	(510.1)
Adjustment for Negative Rate Guarantee Reserve	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Pre-SLGRP Liabilities	(336.6)	0.0	0.0	0.0	0.0	0.0	(336.6)
December 31, 2017 Actuarial Value of Assets	$57,648.4	$4,116.5	$5,561.2	$50.0	$510.5	$583.1	$68,469.7

Amounts in millions

PERS calculates the amount that should be transferred from side accounts to employer reserves in Tier 1/ Tier 2 and OPSRP for rate relief on a monthly basis. PERS does not track net Pre-SLGRP liabilities.

Employer supplemental deposits establish individual side accounts within the pension trust. The side accounts are treated as prepaid contributions. Employer contribution rates are first determined excluding side accounts. Then, an amortized portion of the side account is used to offset the contribution otherwise required for the individual employers that have side accounts. While side accounts are excluded from valuation assets in determining contribution rates for each of the rate pools, side accounts are included in valuation assets for financial reporting purposes such as the reporting of funded status.

In addition, pension assets are held in the Contingency Reserve, the Capital Preservation Reserve, and the Tier 1 Rate Guarantee Reserve (RGR). As shown below, at December 31, 2017 the RGR was in surplus status of $511 million. It is possible for the RGR to be in deficit at its year-end measurement date, which occurred most recently at December 31, 2012. It is our understanding that if a RGR deficit arose and then persisted for five years, employers may be required to restore the Tier 1 Rate Guarantee Reserve.

Tier 1/Tier 2 assets are adjusted by the net outstanding balance of pre-SLGRP liabilities to arrive at the actuarial value of assets. These notional employer-specific balances, created at the formation of the SLGRP and at later dates when additional employers join the pool, are treated akin to receivables to the SLGRP from individual employers (for pre-SLGRP liabilities) or payables – in the form of future rate offsets – from the SLGRP assets to individual employers (for pre-SLGRP surpluses). For accounting purposes, PERS recognizes outstanding pre-SLGRP liabilities as receivables in the system financial statements. However, for funding purposes, future contributions associated with pre-SLGRP liabilities are not current assets of the system. The resulting adjustment for Transition Liability receivables is shown above.

Finally, assets are held in separate accounts established under Internal Revenue Code Section 401(h) (the Retirement Health Insurance Account (RHIA) and the Retiree Health Insurance Premium Account (RHIPA)) to provide retiree medical benefits.

Reconciliation of Pension and Retiree Healthcare Assets

The following table reconciles the changes in the system-wide assets from December 31, 2016 to December 31, 2017. The reconciliation of assets is provided by PERS.

	Tier 1/Tier 2	OPSRP	Side Accounts	Contingency Reserve	Capital Preservation Reserve	Rate Guarantee Reserve	RHIA and RHIPA	System Totals
Additions								
1. Contributions								
a. Employer	$579.3	$571.1	$29.0	-	-	-	$61.8	$1,241.2
b. Transfer from side accounts[1]	$652.8	-	($652.8)	-	-	-	-	-
c. Judge member contributions	$1.8	-	-	-	-	-	-	$1.8
d. Member service purchases	$12.9	-	-	-	-	-	-	$12.9
e. Recognized transition liability receivable	-	-	-	-	-	-	-	-
f. Total	**$1,246.8**	**$571.1**	**($623.8)**	**-**	**-**	**-**	**$61.8**	**$1,255.9**
2. Net investment income								
a. Transfers	$533.7	-	-	($533.7)	-	-	-	-
b. From investments	$7,658.4	$554.6	$796.3	-	-	$329.7	$75.7	$9,414.7
c. Total	**$8,192.1**	**$554.6**	**$796.3**	**($533.7)**	**-**	**$329.7**	**$75.7**	**$9,414.7**
3. Other[2]	$3.1	$0.0	-	-	-	-	-	$3.1
4. Total additions	**$9,442.0**	**$1,125.6**	**$172.5**	**($533.7)**	**-**	**$329.7**	**$137.5**	**$10,673.7**
Deductions								
5. Retirement and survivor benefits	($4,467.1)	($24.6)	-	-	-	-	($37.0)	($4,528.7)
6. Death Benefits	($3.7)	-	-	-	-	-	-	($3.7)
7. Refund of contributions	($14.4)	-	-	-	-	-	-	($14.4)
9. Administrative expenses	($35.1)	($5.9)	($0.1)	-	-	-	($1.5)	($42.7)
10. Total deductions	**($4,520.3)**	**($30.5)**	**($0.1)**	**-**	**-**	**-**	**($38.6)**	**($4,589.5)**
11. Net change	**$4,921.7**	**$1,095.1**	**$172.4**	**($533.7)**	**-**	**$329.7**	**$99.0**	**$6,084.2**
12. Net assets held in trust for pension benefits								
a. Beginning of year	$53,573.4	$3,021.4	$5,388.8	$583.7	-	$180.8	$484.1	$63,232.2
b. End of year	**$58,495.1**	**$4,116.5**	**$5,561.2**	**$50.0**	**-**	**$510.5**	**$583.1**	**$69,316.4**

Amounts in millions

[1] *Side account transfers shown in this exhibit are all credited to Tier 1/Tier 2 assets. We understand the portion to be credited to OPSRP is credited through the employer contribution line of the exhibit.*

[2] *Includes TRFA transfer from Metlife and adjustments by PERS.*

Reconciliation of Side Accounts

Side accounts are established for employers who make supplemental payments (a lump sum payment in excess of the required employer contribution). For SLGRP employers, this supplemental payment is first applied toward the employer's Transition Liability, if any, and any excess is established in a Side Account. A reconciliation of the side accounts from December 31, 2016 to December 31, 2017, is shown below on a rate pool basis. For this exhibit, all independent employers are grouped together.

	SLGRP	School Districts	Independent Employers	System Totals
Side Accounts, December 31, 2016	**\$2,385.0**	**\$2,917.2**	**\$86.6**	**\$5,388.8**
Deposits during 2017	25.0	3.0	1.0	29.0
Interest	353.3	430.1	12.9	796.3
Administrative expenses	(0.0)	(0.1)	(0.0)	(0.1)
Transfers to employer reserves	(302.1)	(340.6)	(10.0)	(652.8)
Side Accounts, December 31, 2017	**\$2,461.2**	**\$3,009.7**	**\$90.4**	**\$5,561.2**
Side accounts for new SLGRP employers	5.1		(5.1)	0.0
Side Accounts, January 1, 2018	**\$2,466.3**	**\$3,009.7**	**\$85.3**	**\$5,561.2**

Amounts in millions

Development of Side Account Rate Relief

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period and expressing the result as a percentage of combined valuation payroll. For side accounts established on or before December 31, 2009, the fixed period ends December 31, 2027. For side accounts established later, the fixed period ends 18 years after the first rate-setting valuation following its creation. The table below shows the average rate relief attributable to side accounts for each rate pool. While results are shown at a rate pool level, the rate relief provided by side accounts varies from employer to employer.

	December 31, 2017			
	SLGRP	School Districts	Independent Employers	System Totals
1. Side Account	\$2,466.3	\$3,009.7	\$85.3	\$5,561.2
2. Combined valuation payroll	\$5,897.8	\$3,314.2	\$886.9	\$10,098.9
3. Average Amortization Factor[1]	8.387	8.519	8.518	8.460
4. Average Side Account Rate Relief *(1. ÷ 2. ÷ 3.)*	**4.99%**	**10.66%**	**1.13%**	**6.51%**

Amounts in millions

[1] *Weighted average*

Pension Plan Valuation

Tier 1/Tier 2 Pension Assets

Summary of Actuarial Value of Assets

This section summarizes the Tier 1/Tier 2 pension valuation assets as of the current and prior actuarial valuation. For valuation purposes, Tier 1/Tier 2 pension assets are divided among the State & Local Government Rate Pool (SLGRP), the School Districts rate pool, and various independent employers to determine employer contribution rates. For this system-wide report, all independent employers, including State Judiciary, have been grouped together as if they were a rate pool.

	SLGRP	School Districts	Independent Employers	Tier 1/Tier 2 Totals[1]
December 31, 2017				
Member reserves	$3,327.3	$1,808.7	$449.8	$5,585.9
Employer reserves	15,393.8	10,337.6	2,534.6	28,132.0
Benefit in force reserves	12,515.2	9,778.4	1,948.5	24,267.2
Net outstanding pre-SLGRP liabilities	(336.6)			(336.6)
Total actuarial value of assets	**$30,899.7**	**$21,924.7**	**$4,932.9**	**$57,648.4**
December 31, 2016				
Member reserves	$3,665.3	$1,977.8	$525.1	$6,168.1
Employer reserves	13,754.5	8,969.8	2,402.3	24,994.9
Benefit in force reserves	10,999.7	9,005.4	1,842.7	21,872.7
Net outstanding pre-SLGRP liabilities	(386.8)			(386.8)
Total actuarial value of assets	**$28,032.6**	**$19,952.9**	**$4,770.0**	**$52,648.8**

Amounts in millions

[1] *Includes Multnomah Fire District #10.*

Pre-SLGRP liabilities and surpluses are notional balances specific to individual employers or groups of employers. For contribution rate calculations, pre-SLGRP liabilities are treated akin to receivables to the SLGRP from the individual employers and pre-SLGRP surpluses are treated akin to payables (in the form of future rate offsets) from the SLGRP assets to individual employers. The assets of the SLGRP used to calculate the pooled contribution rate reflect the net outstanding balance of these items.

Side accounts are treated as pre-paid contributions. Consequently, they are not reflected in the actuarial value of assets shown above. The actuarial value of assets for each rate pool is used to develop the contribution rate for that pool. Side accounts are used by employers to pay a portion of the base contribution rate via a side account rate offset and deduction mechanism. The net impact of side accounts is shown in a separate section of this report.

Reconciliation of Actuarial Value of Assets

The table below shows a reconciliation of the actuarial value of assets from the prior valuation to the current valuation for each of the rate pools. Again, independent employers, including State Judiciary, are treated as if they were a single rate pool for purposes of the system-wide report.

	SLGRP	School Districts	Independent Employers	Tier 1/Tier 2 Totals[1]
Actuarial value of assets, December 31, 2016	**$28,032.6**	**$19,952.9**	**$4,770.0**	**$52,648.8**
Contributions				
Employer	$397.1	$178.4	$85.1	$660.6
Side account transfers	302.1	340.6	10.0	652.8
Member	0.0	0.0	1.8	1.8
Total contributions	**$699.2**	**$519.0**	**$97.0**	**$1,315.2**
Investment income	4,002.3	2,852.6	682.0	7,517.0
Benefit payments and expenses	(2,305.4)	(1,821.5)	(388.9)	(4,520.4)
Adjustments[2]	170.5	421.6	40.4	654.9
Actuarial value of assets, December 31, 2017	**$30,599.3**	**$21,924.7**	**$5,200.5**	**$57,615.6**
Employers joining the SLGRP	300.4		(267.6)	32.9
Actuarial value of assets, January 1, 2018	**$30,899.7**	**$21,924.7**	**$4,932.9**	**$57,648.4**

Amounts in millions

[1] *Includes Multnomah Fire District #10.*

[2] *Adjustments include a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, member service purchases, an employer merger, and other adjustments made by PERS.*

Employers Joining the SLGRP

Effective January 1, 2018, one independent employer joined the State & Local Government Rate Pool (SLGRP). The employer's experience through December 31, 2017 was maintained independently, but its liabilities and assets are included with the SLGRP in this report in order to develop contribution rates that will become effective July 1, 2019. The table below summarizes the changes to assets and liabilities for the SLGRP due to this employer joining the SLGRP. Note that, by design, the UAL as a percentage of payroll does not change for the SLGRP, ensuring the SLGRP's UAL rate is not affected by employers joining the pool. This is accomplished by calculating a Transition Liability/(Surplus) for each new employer joining the pool.

	State & Local Government Rate Pool		
Tier 1/Tier 2 Pension	**December 31, 2017**	**Employers Joining Pool**	**January 1, 2018**
Actuarial Accrued Liability			
Active Members			
Tier 1 General Service	$5,080.3	$19.5	$5,099.8
Tier 1 Police & Fire	1,162.4	0.0	1,162.4
Tier 1 Total	**6,242.7**	**19.5**	**6,262.2**
Tier 2 General Service	3,362.6	26.7	3,389.3
Tier 2 Police & Fire	1,304.5	0.0	1,304.5
Tier 2 Total	**4,667.1**	**26.7**	**4,693.8**
Total Active Members	**$10,909.8**	**$46.2**	**$10,956.0**
Inactive Members	**2,831.4**	**15.2**	**2,846.7**
Retired Members and Beneficiaries	**28,032.9**	**315.1**	**28,348.0**
Total Actuarial Accrued Liability	**$41,774.2**	**$376.6**	**$42,150.7**
Actuarial Value of Assets			
Member reserves	$3,316.2	$11.1	$3,327.3
Employer reserves	15,276.5	117.3	15,393.8
Benefit in force reserves	12,376.1	139.1	12,515.2
Net outstanding pre-SLGRP liabilities	(369.5)	32.9	(336.6)
Total Actuarial Value of Assets	**$30,599.3**	**$300.4**	**$30,899.7**
Unfunded Accrued Liability	**$11,174.9**	**$76.1**	**$11,251.0**
Funded Percentage	73.2%	79.8%	73.3%
Combined Valuation Payroll	$5,857.9	$39.9	$5,897.8
Unfunded Accrued Liability as % of Combined Valuation Payroll	**190.8%**	**190.8%**	**190.8%**

Amounts in millions

Outstanding Balance of Pre-SLGRP Liabilities

In the valuation, pre-SLGRP liabilities are treated as assets of the SLGRP. That is, a pre-SLGRP liability is treated as a receivable owed to the SLGRP by the employer. Pre-SLGRP surpluses are treated as payables from the SLGRP to employers.

Prior to the formation of the SLGRP, the State and Community Colleges were pooled together and some employers participated in the Local Government Rate Pool (LGRP). The UAL attributable to the State and Community Colleges or the LGRP at the time the SLGRP was formed is maintained separately from the SLGRP, and is reduced by contributions and increased for interest charges at the assumed interest rate.

Similarly, when an independent employer joins the SLGRP, a Transition Liability or Surplus is calculated to ensure that each employer enters the pool on a comparable basis. The Transition Liability for each employer is maintained separately from the SLGRP, and is reduced by contributions and increased for interest charges at the assumed interest rate. The Transition Surplus for each employer is also maintained separately from the SLGRP, and is amortized over time through contribution rate offsets and credited with interest at the assumed interest rate. The table below shows the reconciliation of the pre-SLGRP pooled liability attributable to the State and Community Colleges and the LGRP from the last valuation to the current valuation. It also shows the reconciliation of the total Transition Liability or Surplus from the last valuation to the current valuation.

	State and Community Colleges	Local Government Rate Pool	Transition	Total
Pre-SLGRP liability/(surplus), January 1, 2017	**$514.0**	**($218.6)**	**($682.3)**	**($386.8)**
Employer contributions	(64.0)	26.4	80.9	43.3
Supplemental payments	0.0	0.0	(0.1)	(0.1)
Interest	32.4	(13.8)	(43.3)	(24.7)
Employer mergers/adjustments	0.0	0.0	(1.1)	(1.1)
Pre-SLGRP liability/(surplus), December 31, 2017	**$482.4**	**($206.0)**	**($645.9)**	**($369.5)**
Employers joining the SLGRP			32.9	32.9
Pre-SLGRP liability/(surplus), January 1, 2018	**$482.4**	**($206.0)**	**($613.0)**	**($336.6)**

Amounts in millions

Tier 1/Tier 2 Pension Liabilities

Normal Cost

The normal cost represents the present value of benefits allocated to the next year of service by the actuarial cost method. If all current actuarial assumptions are met in both past and future years, the normal cost represents the percent of payroll that would need to be contributed each year to fully fund plan benefits during each member's working career.

A summary of the normal cost by assumed cause of future termination of service is shown below on a system-wide basis for the Tier 1/Tier 2 pension benefits.

	December 31, 2017	December 31, 2016	Percent Change
Normal Cost			
Service Retirement	$434.1	$464.5	(6.6%)
Withdrawal	156.5	173.3	(9.7%)
Duty Disability	2.7	3.1	(11.9%)
Nonduty Disability	13.3	14.2	(6.5%)
Death	4.6	4.9	(5.6%)
Administrative Expenses	37.5	37.5	0.0%
Total Normal Cost	**$648.7**	**$697.4**	**(7.0%)**

Amounts in millions

Reconciliation of Change in Normal Cost

The decrease in normal cost since the prior valuation is primarily due to the reduction in active Tier 1/Tier 2 members as members retire from the closed Tier 1/Tier 2 group.

The table below reconciles the normal cost from the prior valuation to the current valuation.

	Tier 1/Tier 2 Pension
Normal Cost, December 31, 2016	**$697.4**
Expected increase (decrease)	(41.0)
Assumption and method changes	0.0
Plan changes	0.0
Deviations from expected experience	
Pay increases	$1.9
Interest crediting experience	3.8
All other sources	(13.4)
Total demographic (gains) and losses	**($7.7)**
Normal Cost, December 31, 2017	**$648.7**

Amounts in millions

Summary of Normal Cost by Group and Tier

A summary of the normal cost by tier and employment category for each rate pool is shown below. Again, independent employers, including State Judiciary, are treated as if they were a single rate pool for purposes of the system-wide report.

	December 31, 2017				December 31, 2016	
	SLGRP	School Districts	Independent Employers	Tier 1/ Tier 2 Totals	Tier 1/ Tier 2 Totals	Percent Change
Normal Cost[1]						
Tier 1 General Service	$145.2	$89.4	$20.2	$254.9	$295.2	(13.7%)
Tier 2 General Service	138.5	109.0	17.5	265.0	268.3	(1.2%)
Tier 1 Police & Fire	36.9	0.3	12.2	49.5	56.4	(12.3%)
Tier 2 Police & Fire	60.9	0.3	18.2	79.3	77.5	2.3%
Total Normal Cost	**$381.5**	**$199.0**	**$68.1**	**$648.7**	**$697.4**	**(7.0%)**

Amounts in millions

[1] *Includes assumed administrative expenses. Assumed expenses allocated pro-rata based on normal cost.*

Actuarial Accrued Liability

The actuarial accrued liability represents the present value of benefits allocated to prior years of service by the actuarial cost method. A summary of the actuarial accrued liability is shown below on a system-wide basis for the Tier 1/Tier 2 pension benefits.

	December 31, 2017	December 31, 2016	Percent Change
Active Members	$18,914.1	$19,564.2	(3.3%)
Inactive Members	4,539.9	5,033.5	(9.8%)
Retired Members and Beneficiaries	54,967.4	51,655.5	6.4%
Total Actuarial Accrued Liability	**$78,421.4**	**$76,253.3**	**2.8%**

Amounts in millions

Actuarial Accrued Liability

A summary of actuarial accrued liabilities based on member status, tier and employment category is shown in the table below. For this exhibit, all independent employers, including State Judiciary, have been grouped together.

	December 31, 2017				December 31, 2016	
	SLGRP	School Districts	Independent Employers	Tier 1 / Tier 2 Totals[1]	Tier 1 / Tier 2 Totals[1]	Percent Change
Active Members						
Tier 1 General Service	$5,080.3	$3,456.7	$609.2	$9,146.2	$10,173.1	(10.1%)
Tier 1 Police & Fire	1,162.4	4.8	409.9	1,577.1	1,729.4	(8.8%)
Tier 1 Total	**6,242.7**	**3,461.5**	**1,019.0**	**10,723.3**	**11,902.5**	**(9.9%)**
Tier 2 General Service	3,362.6	2,666.0	465.8	6,494.3	6,124.1	6.0%
Tier 2 Police & Fire	1,304.5	5.3	386.6	1,696.5	1,537.6	10.3%
Tier 2 Total	**4,667.1**	**2,671.3**	**852.4**	**8,190.8**	**7,661.7**	**6.9%**
Total Active Members	**$10,909.8**	**$6,132.8**	**$1,871.5**	**$18,914.1**	**$19,564.2**	**(3.3%)**
Inactive Members	**2,831.4**	**1,395.7**	**312.8**	**4,539.9**	**5,033.5**	**(9.8%)**
Retired Members and Beneficiaries	**28,032.9**	**22,148.9**	**4,728.6**	**54,967.4**	**51,655.5**	**6.4%**
Total Tier 1/ Tier 2 Pension Liability, December 31,	**$41,774.2**	**$29,677.4**	**$6,912.8**	**$78,421.4**	**$76,253.3**	**2.8%**
Employers joining the SLGRP	376.6		(376.6)	0.0	0.0	
Total Tier 1/ Tier 2 Pension Liability, January 1,	**$42,150.7**	**$29,677.4**	**$6,536.3**	**$78,421.4**	**$76,253.3**	**2.8%**

Amounts in millions

[1] *Includes Multnomah Fire District #10.*

Reconciliation of Change in Actuarial Accrued Liability

The change in actuarial accrued liability since the last valuation reflects the experience of the system. The actuarial accrued liability is expected to increase due to benefits earned during the year and interest, and to decrease due to benefits paid during the year.

The table below reconciles the actuarial accrued liability from the last valuation to this valuation.

	Tier 1/Tier 2 Pension
Actuarial Accrued Liability December 31, 2016	**$76,253.3**
Expected change	1,527.3
Assumption and method changes	0.0
Plan changes	0.0
Deviations from expected experience	
Retirements from active status	$146.8
Disability retirements	(1.8)
Active mortality and withdrawal	12.5
Pay increases	70.7
Interest crediting experience	95.7
Inactive mortality	18.6
Data corrections	273.0
Other	24.1
Total demographic (gains) and losses	**$639.8**
New Entrants	1.2
Actuarial Accrued Liability December 31, 2017	**$78,421.4**

Amounts in millions

Tier 1/Tier 2 Pension Unfunded Accrued Liability (UAL)

Calculation of UAL

The Unfunded Accrued Liability (UAL) represents the difference between the actuarial accrued liability and the valuation assets. To determine uncollared and collared base employer contribution rates, the UAL is calculated excluding side accounts. The calculated collared base contribution rate is later offset by an amortized portion of the side accounts for individual employers with such accounts. A summary of the UAL by rate pool is shown on the following table. All independent employers, including State Judiciary, have been grouped together.

	SLGRP	School Districts	Independent Employers	Tier 1 / Tier 2 Totals[1]
December 31, 2017				
1. Actuarial accrued liability	$42,150.7	$29,677.4	$6,536.3	$78,421.4
2. Actuarial value of assets	$30,899.7	$21,924.7	$4,932.9	$57,648.4
3. Unfunded accrued liability *(2. - 1.)*	$11,251.0	$7,752.7	$1,603.4	$20,773.0
4. Funded percentage *(2. ÷ 1.)*	73.3%	73.9%	75.5%	73.5%
5. Combined valuation payroll	$5,897.8	$3,314.2	$886.9	$10,098.9
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	190.8%	233.9%	180.8%	205.7%
December 31, 2016				
1. Actuarial accrued liability	$40,351.3	$29,152.2	$6,690.8	$76,253.3
2. Actuarial value of assets	$28,032.6	$19,952.9	$4,770.0	$52,648.8
3. Unfunded accrued liability *(2. - 1.)*	$12,318.7	$9,199.2	$1,920.9	$23,604.4
4. Funded percentage *(2. ÷ 1.)*	69.5%	68.4%	71.3%	69.0%
5. Combined valuation payroll	$5,714.0	$3,240.7	$917.8	$9,872.6
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	215.6%	283.9%	209.3%	239.1%

Amounts in millions

[1] *Includes Multnomah Fire District #10.*

Reconciliation of UAL Bases

Beginning with the December 31, 2007 actuarial valuation, each odd-year valuation has established a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. As part of the 2012 review of actuarial methods and assumptions, the PERS Board decided to reset the Tier 1/Tier 2 amortization period to 20 years effective with the December 31, 2013 valuation. This means the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer was re-amortized over a 20 year period as a level percentage of projected future payroll. For the December 31, 2015 and subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases.

The UAL amortization schedules are shown for the SLGRP and School District rate pools below. UAL bases for independent employers are developed individually for each employer, and are shown in each employer's individual valuation report.

SLGRP					
Amortization Base	**UAL December 31, 2016**	**Payment**	**Interest**	**UAL December 31, 2017**	**Next Year's Payment**
December 31, 2013	$3,857.8	$305.7	$266.0	$3,818.0	$316.4
December 31, 2015	6,831.9	499.9	472.7	6,804.7	517.4
December 31, 2017	N/A	N/A	N/A	628.2	44.4
Total				**$11,251.0**	**$878.2**

Amounts in millions

School Districts					
Amortization Base	**UAL December 31, 2016**	**Payment**	**Interest**	**UAL December 31, 2017**	**Next Year's Payment**
December 31, 2013	$3,402.1	$269.6	$234.6	$3,367.0	$279.1
December 31, 2015	4,560.1	333.7	315.5	4,542.0	345.4
December 31, 2017	N/A	N/A	N/A	(156.3)	(11.0)
Total				**$7,752.7**	**$613.4**

Amounts in millions

Actuarial Gain or Loss since Prior Valuation

In every actuarial valuation, assumptions are made as to the future experience of the plan and covered group of participants. Whenever there is a difference between the actual experience and that anticipated by the actuarial assumptions, there is an actuarial gain or loss to the plan. Gains are the result of experience that is more financially favorable to the system than assumed (i.e., serves to reduce the unfunded accrued liability or increase the surplus), while losses are the result of financially unfavorable experience to the system.

The table below shows the development of the actuarial gain (or loss) for the Tier 1/Tier 2 pension benefits for the year ending December 31, 2017. For this exhibit, all independent employers, including State Judiciary, have been grouped together.

	SLGRP	School District	Independent Employers	Tier 1/Tier 2 Totals[1]
1. Expected actuarial accrued liability				
a. Actuarial accrued liability at January 1, 2017	$40,351.3	$29,152.2	$6,690.8	$76,253.3
b. Normal cost (excluding expenses) at January 1, 2017	384.6	203.6	71.7	659.9
c. Benefit payments (excluding expenses) for fiscal year ending December 31, 2017	(2,287.6)	(1,807.4)	(385.5)	(4,485.2)
d. Interest	2,836.8	2,041.2	470.4	5,352.5
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	$41,285.2	$29,589.5	$6,847.5	$77,780.5
f. Change in actuarial accrued liability at December 31, 2017, due to assumption, method, and plan changes	0.0	0.0	0.0	0.0
g. Expected actuarial accrued liability at December 31, 2017 *(e. + f.)*	$41,285.2	$29,589.5	$6,847.5	$77,780.5
2. Actuarial accrued liability at December 31, 2017	$41,774.2	$29,677.4	$6,912.8	$78,421.4
3. Liability gain/(loss) *(1.g. - 2)*	**($489.0)**	**($87.9)**	**($65.4)**	**($640.9)**
4. Expected actuarial value of assets				
a. Actuarial value of assets at January 1, 2017	$28,032.6	$19,952.9	$4,770.0	$52,648.8
b. Actual contributions for 2017	699.2	519.0	97.0	1,315.2
c. Benefit payments and expenses for fiscal year ending December 31, 2017	(2,305.4)	(1,821.5)	(388.9)	(4,520.4)
d. Assumed investment return	1,961.1	1,389.7	332.3	3,675.3
e. Expected actuarial value of assets before changes *(a. + b. + c. + d.)*	$28,387.6	$20,040.2	$4,810.4	$53,118.9
f. Change in actuarial value of assets at December 31, 2017, due to assumption changes	0.0	0.0	0.0	0.0
g. Expected actuarial value of assets at December 31, 2017 *(e. + f.)*	$28,387.6	$20,040.2	$4,810.4	$53,118.9
5. Actuarial value of assets as of December 31, 2017	$30,599.3	$21,924.7	$5,200.5	$57,615.6
6. Asset gain/(loss) *(5. - 4.g.)*	**$2,211.7**	**$1,884.5**	**$390.1**	**$4,496.6**
7. Net actuarial gain/(loss) *(3. + 6.)*	**$1,722.7**	**$1,796.6**	**$324.7**	**$3,855.7**

Amounts in millions

[1] *Includes Multnomah Fire District #10.*

Reconciliation of the UAL

The table below reconciles the UAL from the last valuation to this valuation. For this exhibit, all independent employers, including State Judiciary, have been grouped together.

	SLGRP	School Districts	Independent Employers	Tier 1 / Tier 2 Totals[1]
UAL, December 31, 2016	$12,318.7	$9,199.2	$1,920.9	$23,604.4
Normal cost	384.6	203.6	71.7	659.9
Administrative expenses	17.8	14.0	3.3	35.2
Contributions	(699.2)	(519.0)	(97.0)	(1,315.2)
Liability (gain) or loss	489.0	87.9	65.4	640.9
Asset (gain) or loss	(2,211.7)	(1,884.5)	(390.1)	(4,496.6)
Assumption, method, and plan changes	0.0	0.0	0.0	0.0
Interest at 7.20%	875.7	651.5	138.1	1,677.2
UAL, December 31, 2017	**$11,174.9**	**$7,752.7**	**$1,712.4**	**$20,805.9**
Employers joining SLGRP	76.1		(109.0)	(32.9)
UAL, January 1, 2018	**$11,251.0**	**$7,752.7**	**$1,603.4**	**$20,773.0**

Amounts in millions

[1] *Includes Multnomah Fire District #10.*

Tier 1/Tier 2 Pension Contribution Rate Development

Normal Cost Rates

The table below shows the development of the system-wide weighted average Tier 1/ Tier 2 normal cost rate.

	December 31, 2017	December 31, 2016	Percent Change
Normal Cost			
a. Service Retirement	$434.1	$464.5	(6.6%)
b. Withdrawal	156.5	173.3	(9.7%)
c. Duty Disability	2.7	3.1	(11.9%)
d. Nonduty Disability	13.3	14.2	(6.5%)
e. Death	4.6	4.9	(5.6%)
f. Administrative Expenses	37.5	37.5	0.0%
g. Total Normal Cost	**$648.7**	**$697.4**	**(7.0%)**
Tier 1/Tier 2 Valuation Payroll	**$4,246.9**	**$4,516.7**	**(6.0%)**
Average Normal Cost Rate			
a. Service Retirement	10.22%	10.28%	
b. Withdrawal	3.69%	3.84%	
c. Duty Disability	0.06%	0.07%	
d. Nonduty Disability	0.31%	0.31%	
e. Death	0.11%	0.11%	
f. Administrative Expenses	0.88%	0.83%	
g. Average Normal Cost Rate	**15.27%**	**15.44%**	

Amounts in millions

The table below shows the development of the Tier 1/Tier 2 normal cost rate for the various rate pools. For this exhibit, all independent employers, including State Judiciary, have been grouped together.

	SLGRP	School Districts	Independent Employers	Tier 1 / Tier 2 Totals
Normal Cost				
Tier 1 General Service	$145.2	$89.4	$20.2	$254.9
Tier 2 General Service	138.5	109.0	17.5	265.0
Tier 1 Police & Fire	36.9	0.3	12.2	49.5
Tier 2 Police & Fire	60.9	0.3	18.2	79.3
Total Normal Cost	**$381.5**	**$199.0**	**$68.1**	**$648.7**
Tier 1/Tier 2 Valuation Payroll				
Tier 1 General Service	$845.4	$569.1	$108.1	$1,522.7
Tier 2 General Service	1,095.5	871.9	137.2	2,104.7
Tier 1 Police & Fire	165.8	1.3	54.2	221.4
Tier 2 Police & Fire	303.8	1.3	93.0	398.1
Total Valuation Payroll	**$2,410.6**	**$1,443.7**	**$392.6**	**$4,246.9**
Average Normal Cost Rates				
Tier 1 General Service	17.17%	15.72%	18.72%	16.74%
Tier 2 General Service	12.64%	12.50%	12.72%	12.59%
Tier 1 Police & Fire	22.26%	21.17%	22.60%	22.34%
Tier 2 Police & Fire	20.05%	20.94%	19.51%	19.93%
Average Rates				
Tier 1 Average	18.01%	15.73%	20.01%	17.45%
Tier 2 Average	14.25%	12.52%	15.47%	13.76%
General Service Average	14.62%	13.77%	15.36%	14.33%
Police & Fire Average	20.83%	21.06%	20.65%	20.79%
System Average	**15.83%**	**13.79%**	**17.35%**	**15.27%**
Member Contributions			0.43%	0.04%
Employer System Average	**15.83%**	**13.79%**	**16.92%**	**15.23%**

Amounts in millions

UAL Rates Prior to Application of the Rate Collar

The Tier 1/Tier 2 UAL rate prior to application of the rate collar is determined by calculating the sum of next year's scheduled amortization payments to the Tier 1/Tier 2 UAL as a percentage of combined (Tier 1/Tier 2 plus OPSRP) valuation payroll.

The following table develops the Tier 1/Tier 2 UAL rate separately for each of the rate pools. For this exhibit, all independent employers, including State Judiciary, have been grouped together.

	SLGRP	School Districts	Independent Employers	Tier 1 / Tier 2 Totals[1]
December 31, 2017				
1. Total UAL	$11,251.0	$7,752.7	$1,603.4	$20,773.0
2. Next year's UAL payment	$878.2	$613.4	$123.6	$1,615.2
3. Combined valuation payroll	$5,897.8	$3,314.2	$886.9	$10,098.9
4. UAL rate *(2 ÷ 3)*	**14.89%**	**18.51%**	**13.94%**	**15.99%**
December 31, 2016				
1. Total UAL	$12,318.7	$9,199.2	$1,920.9	$23,604.4
2. Next year's UAL payment	$920.7	$690.6	$142.2	$1,753.5
3. Combined valuation payroll	$5,714.0	$3,240.7	$917.8	$9,872.6
4. UAL rate *(2 ÷ 3)*	**16.11%**	**21.31%**	**15.49%**	**17.76%**

Amounts in millions

[1] *While the Tier 1/Tier 2 Total UAL amount includes the UAL for Multnomah Fire District #10 (MFD), the UAL rate for MFD is developed separately in this report and is added to the rates shown in this table.*

Pre-SLGRP Pooled Rate

Prior to the formation of the SLGRP, the State and Community Colleges were pooled together and some employers participated in the Local Government Rate Pool (LGRP). The Tier 1/Tier 2 UAL attributable to the State and Community Colleges and the LGRP at the time the SLGRP was formed is maintained separately from the Tier 1/Tier 2 UAL for the SLGRP. The balance of the pre-SLGRP pooled liability attributable to the State and Community Colleges or the LGRP on the valuation date is amortized over the period ending December 31, 2027 and expressed as a percentage of the pool's combined (Tier 1/Tier 2 plus OPSRP) valuation payroll.

The following table develops the Pre-SLGRP pooled rate separately for the State and Community College Pool and the LGRP.

	December 31, 2017	December 31, 2016
State and Community College Pool		
1. Total pre-SLGRP pooled liability	$482.4	$514.0
2. Combined valuation payroll	$3,388.6	$3,282.6
3. Amortization Factor	8.312	8.994
4. Pre-SLGRP pooled rate *(1. ÷ 2. ÷ 3.)*	**1.71%**	**1.74%**
Local Government Rate Pool		
1. Total pre-SLGRP pooled liability	($206.0)	($218.6)
2. Combined valuation payroll	$1,475.6	$1,444.6
3. Amortization Factor	8.312	8.994
4. Pre-SLGRP pooled rate *(1. ÷ 2. ÷3.)*	**(1.68%)**	**(1.68%)**

Amounts in millions

Transition Liability or Surplus Rate

When an employer joins the SLGRP, a Transition Liability or Surplus is calculated to ensure that each employer enters the pool on a comparable basis. The Transition Liability or Surplus for each employer is maintained separately from the Tier 1/Tier 2 UAL for the SLGRP. The Transition Liability is amortized over a fixed period, and is expressed as a percentage of the employer's combined (Tier 1/Tier 2 plus OPSRP) valuation payroll. The Transition Surplus for each employer is also maintained separately from the SLGRP, and is amortized over a fixed period via contribution rate offsets as a percentage of the employer's combined valuation payroll. For employers joining the SLGRP prior to December 31, 2009, the fixed period ends December 31, 2027. For all others, the fixed period ends 18 years after the date the employer joined the SLGRP.

The following table develops the average rate impact across all employers with outstanding Transition Liabilities or Surpluses as of the valuation date. The amortization factor below reflects the weighted average of the amortization periods for all such employers.

	December 31, 2017	December 31, 2016
1. Total transition liability/(surplus)	($613.0)	($682.3)
2. Combined valuation payroll	$2,365.0	$2,264.0
3. Average Amortization Factor[1]	8.587	9.042
4. Average transition liability/(surplus) rate *(1. ÷ 2. ÷ 3.)*	**(3.02%)**	**(3.33%)**

Amounts in millions

[1] *Weighted average*

Multnomah Fire District #10 UAL Rate

The Multnomah Fire District #10 UAL rate is determined by amortizing Multnomah Fire District #10's unfunded accrued liability over the period ending December 31, 2027, and expressing the result as a percentage of combined valuation payroll.

As part of 2003 legislation, the Multnomah Fire District #10 UAL was allocated to all Tier 1/Tier 2 employers. Multnomah Fire District #10 was allocated $50,000 of the outstanding UAL, which was fully paid in November, 2003. Of the remaining UAL, City of Portland is allocated 21.8743%, while all Tier 1/Tier 2 employers, including City of Portland, share in the remaining 78.1257%. Four employers (City of Gresham, City of Fairview, City of Wood Village, and City of Troutdale) are required to pay twice the rate that is determined under item 6.b. below. Thus, the combined valuation payroll for all Tier 1/Tier 2 employers, shown below in item 4.b., includes twice the valuation payroll for those four employers.

	December 31, 2017	December 31, 2016
1. Actuarial accrued liability		
a. Active members	$0.0	$0.0
b. Inactive members	0.0	0.0
c. Retired members and beneficiaries	57.0	58.9
d. Total actuarial accrued liability	$57.0	$58.9
2. Actuarial value of assets		
a. Employer reserve	($134.1)	($131.7)
b. Members reserve	0.0	0.0
c. Benefits in force reserve	25.2	25.0
d. Total actuarial value of aseets	($108.9)	($106.7)
3. Multnomah FD #10 UAL *(1.d. - 2.d.)*	$165.9	$165.7
a. Portion allocated to City of Portland *(21.8743% x 3.)*	$36.3	$36.2
b. Portion allocated to all T1/T2 employers *(78.1257% x 3.)*	$129.6	$129.4
4. Combined valuation payroll		
a. City of Portland	$384.4	$362.9
b. All employers[1]	$10,152.6	$9,925.0
5. Amortization factor	8.312	8.994
6. Multnomah FD #10 UAL Rate		
a. City of Portland *(3.a. ÷ 4.a. ÷ 5.)*	1.14%	1.11%
b. All Tier 1 / Tier 2 employers *(3.b. ÷ 4.b. ÷ 5.)*	0.15%	0.14%
7. Total Multnomah FD #10 UAL Rate		
a. City of Portland *(6.a. + 6.b.)*	1.29%	1.25%
b. City of Gresham, City of Fairview, City of Wood Village, City of Troutdale *(2 x 6.b.)*	0.30%	0.28%
c. All other Tier 1 / Tier 2 employers *(6.b.)*	0.15%	0.14%

Amounts in millions

[1] *For weighting purposes, includes double valuation payroll for each of the four employers listed in 7.b.*

Calculated Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the development of the total Tier 1/Tier 2 contribution rate for each rate pool as of the valuation date. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates are applied to combined (Tier 1/Tier 2 plus OPSRP) valuation payroll. These rates are adjusted on an individual employer basis for side accounts and pre-SLGRP liabilities, if applicable. Weighted average adjustments for side accounts and pre-SLGRP liabilities are shown in the table. For individual employers, these adjustments cannot reduce the pension contribution rate below 0.00%. Note that independent employers, other than the State Judiciary, are subject to a minimum employer contribution rate of 6.00% that is not taken into account in the average rates below.

July 1, 2019 Rates Calculated as of December 31, 2017				
	SLGRP	School Districts	Independent Employers	Tier 1 / Tier 2 Totals
Tier 1/Tier 2 pension contribution rates				
Employer normal cost rate	15.83%	13.79%	16.92%	15.23%
Member normal cost rate			0.43%	0.04%
Uncollared UAL rate	14.89%	18.51%	13.94%	15.99%
Multnomah FD #10 rate	0.22%	0.15%	0.16%	0.19%
Total Tier 1/Tier 2 pension rate	**30.94%**	**32.45%**	**31.45%**	**31.45%**
Average adjustments				
Pre-SLGRP liability/(surplus) rate	(0.69%)	N/A	N/A	(0.40%)
Side account rate	(4.99%)	(10.66%)	(1.13%)	(6.51%)
Total average adjustment	**(5.68%)**	**(10.66%)**	**(1.13%)**	**(6.91%)**
Uncollared net pension contribution rate	**25.26%**	**21.79%**	**30.32%**	**24.54%**

Calculation of Rate Collar

Due to the rate collar, employer base contribution rates will not generally change by more than the greater of 3 percent of payroll or 20% of the current contribution rate. However, if the funded percentage is below 60% or above 140%, the size of the rate collar is doubled. If the funded percentage is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale. All rate collar calculations are performed excluding amounts and contribution rates attributable to pre-SLGRP liabilities, side accounts and member IAP contributions. Retiree medical rates are also excluded from the rate collar calculation.

The table below develops the impact of the collar for each of the Tier 1/Tier 2 rate pools. Although the calculation is performed individually for independent employers, the table shows the calculation as if independent employers were a single rate pool. Note that independent employers, other than the State Judiciary, are subject to a minimum employer contribution rate of 6.00% that is not taken into account in the calculation below.

July 1, 2019 Rates Calculated as of December 31, 2017				
Calculation of Collar Adjustments	**SLGRP**	**School Districts**	**Independent Employers**	**Tier 1 / Tier 2 Totals[1]**
1. Current employer contribution rate	21.88%	25.43%	19.96%	22.88%
2. Size of rate collar				
a. Preliminary size of rate collar (*greater of 3% or 20% x 1.)*	4.38%	5.09%	3.99%	4.58%
b. Funded percentage	73%	74%	75%	74%
c. Size of rate collar *(If b. < 60% or b. > 140%, 2 x a. If b. is 70%-130%, a. Otherwise, graded rate between a. and 2 x a.)*	**4.38%**	**5.09%**	**3.99%**	
3. July 1, 2019 Minimum employer contribution rate *(1. - 2.c.)*	17.50%	20.34%	15.97%	
4. July 1, 2019 Maximum employer contribution rate *(1. + 2.c.)*	26.26%	30.52%	23.95%	
5. July 1, 2019 employer contribution rate before collar	30.94%	32.45%	31.02%	
6. July 1, 2019 employer contribution rate after collar *(5., but not less than 3. or more than 4.)*	26.26%	30.52%	23.95%	
7. Impact of collar *(6. - 5.)*[2]	**(4.68%)**	**(1.93%)**	**(7.07%)**	**(3.99%)**

[1] The average Tier 1/Tier 2 rate has been recalculated based on current valuation payroll.

[2] The impact of collar shown for the system-wide column is the weighted average of the impact shown for each rate pool.

Calculated Employer Contribution Rate Summary (Post-Rate Collar)

Any needed adjustment to reflect the effects of the rate collar is made to the UAL rate. The table below summarizes the average rates effective July 1, 2019 by pool and component. Although the rate collar is applied individually for independent employers, the table shows the average rates as if independent employers were a single rate pool. Note that independent employers, other than the State Judiciary, are subject to a minimum employer contribution rate of 6.00% that is not taken into account in the average rates below.

July 1, 2019 Rates Calculated as of December 31, 2017				
	SLGRP	School Districts	Independent Employers	Tier 1 / Tier 2 Totals
Tier 1/Tier 2 pension contribution rates				
Employer normal cost rate	15.83%	13.79%	16.92%	15.23%
Member normal cost rate			0.43%	0.04%
Collared UAL rate	10.21%	16.58%	6.87%	12.00%
Multnomah FD #10 rate	0.22%	0.15%	0.16%	0.19%
Total Tier 1/Tier 2 pension rate	**26.26%**	**30.52%**	**24.38%**	**27.46%**
Average adjustments				
Pre-SLGRP liability/(surplus) rate	(0.69%)	N/A	N/A	(0.40%)
Side account rate	(4.99%)	(10.66%)	(1.13%)	(6.51%)
Total average adjustment	**(5.68%)**	**(10.66%)**	**(1.13%)**	**(6.91%)**
Collared net pension contribution rate	**20.58%**	**19.86%**	**23.25%**	**20.55%**

OPSRP Assets

Information on OPSRP assets is shown in the section of this report covering the system-wide assets. As of December 31, 2017, the actuarial value of assets for OPSRP is $4,116.5 million.

OPSRP Liabilities

Normal Cost

The normal cost represents the present value of projected future benefits allocated to the next year of service by the actuarial cost method. If all current actuarial assumptions are met in past and future years, the normal cost represents the percent of payroll that would need to be contributed each year to fully fund each member's plan benefits during his or her working career.

A summary of the normal cost by assumed cause of future termination of service is shown below for the current and prior year.

	December 31, 2017			December 31, 2016		
	General Service	Police & Fire	Total	General Service	Police & Fire	Total
Pre-Retirement Disability						
Duty	$0.6	$1.0	$1.6	$0.6	$0.9	$1.5
Non-Duty	8.1	0.9	9.0	7.3	0.9	8.2
Total Pre-Retirement Disability	**$8.7**	**$1.9**	**$10.6**	**$7.9**	**$1.8**	**$9.7**
Other Benefits						
Service Retirement	$369.5	$77.7	$447.2	$341.8	$72.3	$414.1
Withdrawal	41.6	4.0	45.6	38.1	3.7	41.9
Death	4.3	0.7	5.0	3.9	0.6	4.6
Duty Disability Retirement	0.3	0.7	1.1	0.3	0.6	0.9
Non-Duty Disability Retirement	5.6	0.8	6.4	5.1	0.8	5.8
Total Other Benefits	**$421.2**	**$83.9**	**$505.1**	**$389.3**	**$78.0**	**$467.3**
Assumed Administrative Expenses	5.8	0.7	6.5	5.8	0.7	6.5
Total Normal Cost	**$435.7**	**$86.6**	**$522.2**	**$402.9**	**$80.6**	**$483.5**

Amounts in millions

Reconciliation of Change in Normal Cost

The increase in the normal cost since the prior valuation is primarily attributable to the effect of new entrants to the OPSRP program. The table below reconciles the normal cost from the prior valuation to the current valuation.

	OPSRP
Normal Cost, December 31, 2016	**$483.5**
Expected increase (decrease)	(11.5)
Assumption and method changes	0.0
Plan changes	0.0
New entrants	41.3
Deviations from expected experience	
Pay increases	$12.9
All other sources	(4.0)
Total demographic (gains) and losses	**$8.9**
Normal Cost, December 31, 2017	**$522.2**

Amounts in millions

Actuarial Accrued Liability

The actuarial accrued liability represents the present value of projected future benefits allocated to prior years of service by the actuarial cost method. For active members, a summary of the actuarial accrued liability by assumed cause of future termination of service is shown below for the current and prior year.

	December 31, 2017			December 31, 2016		
	General Service	Police & Fire	Total	General Service	Police & Fire	Total
Active Members						
Pre-retirement Duty Disability	$1.3	$2.2	$3.5	$1.0	$1.9	$2.9
Pre-retirement Non-Duty Disability	74.7	7.3	82.0	64.8	6.6	71.3
Service Retirement	3,818.7	695.9	4,514.6	3,220.2	610.2	3,830.4
Withdrawal	207.8	17.4	225.3	182.5	16.0	198.5
Death	40.3	5.8	46.2	34.1	5.0	39.1
Duty Disability Retirement	2.2	4.1	6.3	2.2	4.1	6.2
Non-Duty Disability Retirement	54.9	6.7	61.6	47.0	6.0	53.0
Total Active Members	**$4,199.8**	**$739.5**	**$4,939.3**	**$3,551.7**	**$649.7**	**$4,201.4**
Inactive Members			385.2			314.5
Retired Members and Beneficiaries			310.1			201.1
Total Actuarial Accrued Liability			**$5,634.7**			**$4,717.0**

Amounts in millions

Reconciliation of Change in Actuarial Accrued Liability

The change in actuarial accrued liability since the last valuation reflects the experience of the system. The actuarial accrued liability is expected to increase due to benefits earned during the year and interest, and to decrease due to benefits paid during the year. The table below reconciles the actuarial accrued liability from the last valuation to this valuation.

	OPSRP
Actuarial Accrued Liability December 31, 2016	**$4,717.0**
Expected change	808.3
Assumption and method changes	0.0
Plan changes	0.0
Deviations from expected experience	
Retirements from active status	$0.7
Disability retirements	(1.8)
Active mortality and withdrawal	(10.2)
Pay increases	97.7
Inactive mortality	(2.0)
Data corrections	(27.9)
Other	(14.2)
Total demographic (gains) and losses	**$42.3**
New entrants	67.1
Actuarial Accrued Liability December 31, 2017	**$5,634.7**

Amounts in millions

OPSRP Unfunded Accrued Liability (UAL)

Calculation of UAL

The Unfunded Accrued Liability (UAL) represents the difference between the actuarial accrued liability and the valuation assets. The UAL is amortized over combined (Tier 1/Tier 2 and OPSRP) valuation payroll. The table below shows the OPSRP UAL, funded status, and UAL as a percentage of combined valuation payroll.

	December 31, 2017	December 31, 2016
1. Actuarial accrued liability	$5,634.7	$4,717.0
2. Actuarial value of assets	$4,116.5	$3,021.4
3. Unfunded accrued liability *(2. - 1.)*	$1,518.2	$1,695.6
4. Funded percentage *(2. ÷ 1.)*	73.1%	64.1%
5. Combined valuation payroll	$10,098.9	$9,872.6
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	15.0%	17.2%

Amounts in millions

Reconciliation of UAL Bases

Beginning with the December 31, 2007, actuarial valuation, each odd-year valuation establishes a 16-year closed-period amortization base for outstanding OPSRP UAL amounts. For odd-year valuations subsequent to December 31, 2007, this amortization base is calculated based on the total OPSRP UAL as of that valuation date less the remaining unamortized balance of any OPSRP UAL bases established at previous odd-year valuation dates. In other words, OPSRP experience from December 31, 2015 to December 31, 2017 is amortized based on a 16-year amortization schedule beginning December 31, 2017.

Reconciliation of UAL Bases					
Amortization Base	UAL December 31, 2016	Payment	Interest	UAL December 31, 2017	Next Year's Payment
December 31, 2007	($51.4)	($8.4)	($3.4)	($46.4)	($8.7)
December 31, 2009	131.7	17.3	8.8	123.2	17.9
December 31, 2011	50.8	5.6	3.4	48.6	5.8
December 31, 2013	447.7	43.5	30.6	434.7	45.0
December 31, 2015	750.2	65.3	51.5	736.4	67.5
December 31, 2017	N/A	N/A	N/A	221.7	18.4
Total				**$1,518.2**	**$146.0**

Amounts in millions

Actuarial Gain or Loss since Prior Valuation

In every actuarial valuation, assumptions are made as to the future experience of the plan and covered group of participants. Whenever there is a difference between the actual experience and that anticipated by the actuarial assumptions, there is an actuarial gain or loss to the plan. Gains are the result of experience that is more financially favorable to the system than anticipated (i.e., serves to reduce the unfunded accrued liability or increase the surplus), while losses are the result of experience that is financially unfavorable to the system.

The table below develops the actuarial gain or loss for OPSRP for the year ending December 31, 2017.

	OPSRP
1. Expected actuarial accrued liability	
a. Actuarial accrued liability at January 1, 2017	$4,717.0
b. Normal cost (excluding expenses) at January 1, 2017	477.0
c. Benefit payments (excluding expenses) for year ending December 31, 2017	(24.6)
d. Interest	355.9
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	$5,525.3
f. Change in actuarial accrued liability at December 31, 2017, due to assumption and method changes	0.0
g. Change in actuarial accrued liability at December 31, 2017, due to plan changes	0.0
h. Expected actuarial accrued liability at December 31, 2017 *(e. + f. + g.)*	$5,525.3
2. Actuarial accrued liability at December 31, 2017	$5,634.7
3. Liability gain/(loss) *(1.h. - 2)*	**($109.4)**
4. Expected actuarial value of assets	
a. Actuarial value of assets at January 1, 2017	$3,021.4
b. Actual contributions for 2017	571.1
c. Benefit payments and expenses for fiscal year ending December 31, 2017	(30.5)
d. Assumed investment return	237.0
e. Expected actuarial value of assets at December 31, 2017 *(a. + b. + c. + d.)*	$3,798.9
5. Actuarial value of assets as of December 31, 2017	$4,116.5
6. Asset gain/(loss) *(5. - 4.e.)*	**$317.6**
7. Net actuarial gain/(loss) *(3. + 6.)*	**$208.2**

Amounts in millions

Reconciliation of the UAL

The table below summarizes the changes in UAL since the prior valuation.

The 2017 liability loss is primarily due to pay increases differing from assumption and due to new entrants to the OPSRP program.

	OPSRP
UAL, December 31, 2016	**$1,695.6**
Normal cost (including actual administrative expenses)	482.9
Contributions	(571.1)
Liability (gain) or loss	109.4
Asset (gain) or loss	(317.6)
Assumption and method changes	0.0
Plan changes	0.0
Interest at 7.20%	118.9
UAL, December 31, 2017	**$1,518.2**

Amounts in millions

OPSRP Contribution Rate Development

Normal Cost Rates

The table below shows the development of the OPSRP normal cost rates.

	December 31, 2017			December 31, 2016		
	General Service	Police & Fire	Total	General Service	Police & Fire	Total
Normal Cost						
Pre-retirement Disability Benefits	$8.7	$1.9	$10.6	$7.9	$1.8	$9.7
All Other Benefits	421.2	83.9	505.1	389.3	78.0	467.3
Assumed Administrative Expenses	5.8	0.7	6.5	5.8	0.7	6.5
Total Normal Cost	**$435.7**	**$86.6**	**$522.2**	**$402.9**	**$80.6**	**$483.5**
OPSRP Valuation Payroll	**$5,187.5**	**$664.5**	**$5,852.0**	**$4,746.4**	**$609.4**	**$5,355.8**
Normal Cost Rate						
Pre-retirement Disability Benefits	0.17%	0.29%	0.18%	0.17%	0.29%	0.18%
All Other Benefits	8.12%	12.63%	8.63%	8.20%	12.80%	8.72%
Assumed Administrative Expenses	0.11%	0.11%	0.11%	0.12%	0.12%	0.12%
Total Normal Cost Rate	**8.40%**	**13.03%**	**8.92%**	**8.49%**	**13.22%**	**9.03%**

Amounts in millions

UAL Rates

The UAL rate is determined by calculating the sum of next year's scheduled amortization payments to the UAL as a percentage of combined (Tier 1/Tier 2 and OPSRP) valuation payroll.

	December 31, 2017	December 31, 2016
1. Total UAL	$1,518.2	$1,695.6
2. Next year's UAL payment	$146.0	$153.7
3. Combined valuation payroll	$10,098.9	$9,872.6
4. UAL rate *(2 ÷ 3)*	**1.45%**	**1.56%**

Amounts in millions

Calculated Employer Contribution Rates (Pre-Rate Collar)

The following table summarizes the OPSRP contribution rate for general service and police & fire members as of the valuation date, prior to application of the rate collar.

The normal cost rates apply to OPSRP payroll only, but the UAL rate is applied to combined (Tier 1/Tier 2 and OPSRP) valuation payroll. These rates, after the application of the rate collar, are combined with each employer's Tier 1/Tier 2 rates (other than Tier 1/Tier 2 normal cost rate) to determine each employer's pension contribution rate on OPSRP payroll.

July 1, 2019 Rates Calculated as of December 31, 2017			
	General Service	Police & Fire	Average Rate
OPSRP pension contribution rates			
Employer normal cost rate	8.40%	13.03%	8.92%
Uncollared UAL rate	1.45%	1.45%	1.45%
Uncollared OPSRP pension rate	**9.85%**	**14.48%**	**10.37%**

Calculation of Rate Collar

The rate collar restricts the average OPSRP contribution rate so it generally cannot change by more than the greater of 3 percent of payroll or 20% of the current average OPSRP contribution rate. However, if the funded percentage is below 60% or above 140%, the size of the collar is doubled. If the funded percentage is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale. All collar calculations are performed based on the weighted average OPSRP contribution rate, and any adjustment due to the collar is applied to the OPSRP UAL rate.

The table below shows the calculation of and any adjustment for the rate collar.

July 1, 2019 Rates Calculated as of December 31, 2017	General Service	Police & Fire	Average Rate
1. Current employer contribution rate	9.29%	14.06%	9.83%
2. Size of rate collar			
a. Preliminary size of rate collar (*greater of 3% or 20% x 1.)*			3.00%
b. Funded percentage			73%
c. Size of rate collar ***(If b. < 60% or b. > 140%, 2 x a. If b. is 70%-130%, a. Otherwise, graded rate between a. and 2 x a.)***			**3.00%**
3. July 1, 2019 Minimum employer contribution rate *(1. - 2.c.)*			6.83%
4. July 1, 2019 Maximum employer contribution rate *(1. + 2.c.)*			12.83%
5. July 1, 2019 employer contribution rate before collar	9.85%	14.48%	10.37%
6. July 1, 2019 employer contribution rate after collar *(5., but not less than 3. or more than 4.)*	9.85%	14.48%	10.37%
7. Impact of collar *(6. - 5.)*	**0.00%**	**0.00%**	**0.00%**

Calculated Employer Contribution Rates (Post-Rate Collar)

The table below summarizes the OPSRP contribution rate for general service and police & fire members as of the valuation date, after adjustments for the rate collar.

July 1, 2019 Rates Calculated as of December 31, 2017	General Service	Police & Fire	Average Rate
OPSRP pension contribution rates			
Employer normal cost rate	8.40%	13.03%	8.92%
Collared UAL rate	1.45%	1.45%	1.45%
Collared OPSRP pension rate	**9.85%**	**14.48%**	**10.37%**

Retiree Healthcare Valuation

Retiree Healthcare Assets

Assets

A reconciliation of retiree healthcare assets is shown below. The reconciliation of assets is provided by PERS.

	RHIA	RHIPA	Retiree Healthcare Totals
Additions			
1. Employer contributions	$49.2	$12.6	$61.8
2. Net investment income	72.8	2.9	75.7
3. Other	0.0	0.0	0.0
4. Total additions	**$122.0**	**$15.6**	**$137.5**
Deductions			
4. Healthcare Premium Subsidies	($32.4)	($4.6)	($37.0)
5. Administrative expenses	(1.3)	(0.3)	(1.5)
6. Total deductions	**($33.7)**	**($4.9)**	**($38.6)**
7. Net change	**$88.2**	**$10.7**	**$99.0**
8. Net assets held in trust for benefits			
a. Beginning of year	$465.0	$19.1	$484.1
b. End of year	**$553.3**	**$29.8**	**$583.1**

Amounts in millions

Retiree Healthcare Liabilities

Normal Cost

A summary of the normal cost by assumed cause of future termination of service is shown below for the current and prior year.

	RHIA			RHIPA		
	December 31, 2017	December 31, 2016	Percent Change	December 31, 2017	December 31, 2016	Percent Change
Normal Cost						
Service Retirement	$1.8	$2.2		$1.3	$1.4	
Withdrawal	0.6	0.7		0.0	0.0	
Disability	0.1	0.1		0.1	0.1	
Death	0.0	0.0		0.0	0.0	
Total Normal Cost	**$2.5**	**$3.0**	**(16.4%)**	**$1.4**	**$1.5**	**(3.0%)**

Amounts in millions

The table below reconciles the normal cost from the prior valuation to the current valuation.

	RHIA	RHIPA
Normal Cost December 31, 2016	**$3.0**	**$1.5**
Expected increase (decrease)	(0.2)	(0.1)
Assumption and method changes	0.0	0.0
Plan changes	0.0	0.0
Deviations from expected experience		
Demographic (gains) or losses	(0.3)	0.0
Normal Cost December 31, 2017	**$2.5**	**$1.4**

Amounts in millions

Actuarial Accrued Liability

A summary of the actuarial accrued liability by status is shown below for the current and prior year.

	RHIA			RHIPA		
	December 31, 2017	December 31, 2016	Percent Change	December 31, 2017	December 31, 2016	Percent Change
Actives	$71.7	$78.1	(8.2%)	$54.0	$53.5	0.8%
Inactive Members	22.0	23.9	(8.1%)	0.0	0.0	0.0%
Retired Members and Beneficiaries	343.9	361.7	(4.9%)	15.4	14.4	7.2%
Total Actuarial Accrued Liability	**$437.6**	**$463.7**	**(5.6%)**	**$69.4**	**$67.9**	**2.2%**

Amounts in millions

The change in actuarial accrued liability since the last valuation reflects the experience of the system. The actuarial accrued liability is expected to increase due to benefits earned during the year and interest, and to decrease due to benefits paid during the year. The table below reconciles the actuarial accrued liability from the last valuation to this valuation.

	RHIA	RHIPA	Total
Actuarial Accrued Liability December 31, 2016	**$463.7**	**$67.9**	**$531.6**
Expected change	2.9	1.7	4.6
Assumption and method changes	0.0	0.0	0.0
Plan changes	0.0	0.0	0.0
Deviations from expected experience			
Demographic (gains) or losses	(29.0)	(0.2)	(29.2)
Actuarial Accrued Liability December 31, 2017	**$437.6**	**$69.4**	**$506.9**

Amounts in millions

Retiree Healthcare Unfunded Accrued Liability (UAL)

Calculation of UAL

The Unfunded Accrued Liability (UAL) represents the difference between the actuarial accrued liability and the valuation assets. A summary of the UAL by program is shown on the following table.

	RHIA			RHIPA		
	December 31, 2017	December 31, 2016	Percent Change	December 31, 2017	December 31, 2016	Percent Change
1. Actuarial accrued liability	$437.6	$463.7	(5.6%)	$69.4	$67.9	2.2%
2. Actuarial value of assets	$553.3	$465.0	19.0%	$29.8	$19.1	56.1%
3. Unfunded accrued liability	($115.7)	($1.3)	8,508.2%	$39.5	$48.8	(18.9%)
4. Funded percentage *(2. ÷ 1.)*	126.4%	100.3%	26.1%	43.0%	28.1%	52.7%
5. Combined valuation payroll	$10,098.9	$9,872.6	2.3%	$2,984.5	$2,881.4	3.6%
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	(1.1%)	(0.0%)		1.3%	1.7%	

Amounts in millions

Reconciliation of UAL Bases

Beginning with the December 31, 2007 actuarial valuation, each rate-setting valuation establishes a 10-year amortization base for outstanding RHIA and RHIPA UAL amounts. For odd-year valuations subsequent to December 31, 2007, this amortization base is calculated based on the total UAL as of that valuation date less the remaining unamortized balance of any UAL bases established at previous odd-year valuation dates. In other words, RHIA and RHIPA experience from December 31, 2015 to December 31, 2017 is amortized based on a 10-year amortization schedule beginning December 31, 2017.

RHIA					
Amortization Base	**UAL December 31, 2016**	**Payment**	**Interest**	**UAL December 31, 2017**	**Next Year's Payment**
December 31, 2007	$43.1	$44.5	$1.4	$0.0	$0.0
December 31, 2009	27.5	9.8	1.6	19.3	10.2
December 31, 2011	(20.4)	(4.5)	(1.3)	(17.2)	(4.7)
December 31, 2013	(37.4)	(6.1)	(2.5)	(33.8)	(6.3)
December 31, 2015	(6.0)	(0.8)	(0.4)	(5.6)	(0.8)
December 31, 2017	N/A	N/A	N/A	(78.5)	(9.4)
Total				**($115.7)**	**($11.1)**

Amounts in millions

RHIPA					
Amortization Base	**UAL December 31, 2016**	**Payment**	**Interest**	**UAL December 31, 2017**	**Next Year's Payment**
December 31, 2007	$2.9	$3.0	$0.1	$0.0	$0.0
December 31, 2009	0.9	0.3	0.1	0.7	0.3
December 31, 2011	9.5	2.1	0.6	8.0	2.2
December 31, 2013	25.7	4.2	1.7	23.2	4.4
December 31, 2015	10.5	1.4	0.7	9.9	1.4
December 31, 2017	N/A	N/A	N/A	(2.2)	(0.3)
Total				**$39.5**	**$8.0**

Amounts in millions

Actuarial Gain or Loss since Prior Valuation

In every actuarial valuation, assumptions are made as to the future experience of the plan and covered group of participants. Whenever there is a difference between the actual experience and that anticipated by the actuarial assumptions, there is an actuarial gain or loss to the plan. Gains are the result of experience that is more financially favorable to the system than anticipated (i.e., serves to reduce the unfunded accrued liability or increase the surplus), while losses are the result of experience that is financially unfavorable to the system.

The table below shows the development of the actuarial gain (or loss) for RHIA and RHIPA for the plan year ending December 31, 2017.

	RHIA	RHIPA	Retiree Healthcare Totals
1. Expected actuarial accrued liability			
a. Actuarial accrued liability at January 1, 2017	$463.7	$67.9	$531.6
b. Normal cost at January 1, 2017	3.0	1.5	4.5
c. Benefit payments for fiscal year ending December 31, 2017	(32.4)	(4.6)	(37.0)
d. Interest	32.3	4.8	37.1
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	$466.6	$69.6	$536.1
f. Change in actuarial accrued liability at December 31, 2017, due to assumption and method changes	0.0	0.0	0.0
g. Change in actuarial accrued liability at December 31, 2017, due to plan changes	0.0	0.0	0.0
h. Expected actuarial accrued liability at December 31, 2017 *(e. + f. + g.)*	$466.6	$69.6	$536.1
2. Actuarial accrued liability at December 31, 2017	$437.6	$69.4	$506.9
3. Liability gain/(loss) *(1.h. - 2.)*	**$29.0**	**$0.2**	**$29.2**
4. Expected actuarial value of assets			
a. Actuarial value of assets at January 1, 2017	$465.0	$19.1	$484.1
b. Actual contributions for 2017	49.2	12.6	61.8
c. Benefit payments and expenses for fiscal year ending December 31, 2017	(33.7)	(4.9)	(38.6)
d. Assumed investment return	34.0	1.7	35.7
e. Expected actuarial value of assets before changes *(a. + b. + c. + d.)*	$514.5	$28.6	$543.1
f. Change in actuarial value of assets at December 31, 2017, due to assumption changes	0.0	0.0	0.0
g. Change in actuarial value of assets at December 31, 2017, due to plan changes	0.0	0.0	0.0
h. Expected actuarial value of assets at December 31, 2017 *(e. + f. + g.)*	$514.5	$28.6	$543.1
5. Actuarial value of assets at December 31, 2017	$553.3	$29.8	$583.1
6. Actuarial asset gain/(loss) *(5. - 4.h.)*	**$38.7**	**$1.3**	**$40.0**
7. Net actuarial gain/(loss) *(3. + 6.)*	**$67.8**	**$1.5**	**$69.2**

Reconciliation of UAL

The table below summarizes the changes in UAL since the prior valuation.

The significant decrease in the RHIA UAL is due to a combination of factors, including employer contributions, positive investment returns, lapsed coverage among eligible members, and lower participant than assumed.

The decrease in the RHIPA UAL is primarily due to employer contributions.

	RHIA	RHIPA
UAL, December 31, 2016	**($1.3)**	**$48.8**
Normal Cost (including actual administrative expenses)	4.3	1.8
Contributions	(49.2)	(12.6)
Liability (gain) or loss	(29.0)	(0.2)
Asset (gain) or loss	(38.7)	(1.3)
Assumption and method changes	0.0	0.0
Interest	(1.7)	3.1
UAL, December 31, 2017	**($115.7)**	**$39.5**

Amounts in millions

Retiree Healthcare Contribution Rate Development

Normal Cost Rate

The table below shows the development of the retiree healthcare normal cost rates. For RHIA, valuation payroll is shown on a system-wide basis. For RHIPA, valuation payroll is for the State of Oregon and the State Judiciary only.

	RHIA		RHIPA	
	December 31, 2017	December 31, 2016	December 31, 2017	December 31, 2016
Normal Cost	$2.5	$3.0	$1.4	$1.5
Tier 1/Tier 2 Valuation Payroll	$4,246.9	$4,516.7	$1,212.2	$1,276.0
Normal Cost Rate	**0.06%**	**0.07%**	**0.12%**	**0.12%**

Amounts in millions

The table below shows the development of the retiree healthcare normal cost rates for the various rate pools. For RHIA, valuation payroll is shown on a system-wide basis. For RHIPA, valuation payroll is for the State of Oregon and the State Judiciary only. For this exhibit, all independent employers, including State Judiciary, have been grouped together.

	December 31, 2017			
	SLGRP	School Districts	Independent Employers	Retiree Healthcare Total
1. Tier 1/ Tier 2 Valuation Payroll				
a. All Employers' Payroll	$2,410.6	$1,443.7	$392.6	$4,246.9
b. RHIPA Employers' Payroll	$1,188.3	$0.0	$23.9	$1,212.2
2. Normal Cost Rate				
a. RHIA	0.06%	0.06%	0.06%	0.06%
b. RHIPA	0.12%	0.00%	0.12%	0.12%
3. Weighted Average Normal Cost Rate ***[(1.a. x 2.a + 1.b. x 2.b.) / 1.a]***	**0.12%**	**0.06%**	**0.07%**	**0.09%**

UAL Rate

The UAL rate is determined by calculating the sum of next year's scheduled amortization payments to the UAL as a percentage of combined (Tier 1/Tier 2 and OPSRP) valuation payroll. For RHIPA, valuation payroll is for the State of Oregon and the State Judiciary only.

For RHIA, the UAL rate calculated under this method was less than 0.00% in this valuation. As a result, the PERS Board decided to apply a minimum UAL rate of 0.00% for the current valuation.

	RHIA		RHIPA	
	December 31, 2017	December 31, 2016	December 31, 2017	December 31, 2016
1. Total UAL	($115.7)	($1.3)	$39.5	$48.8
2. Next year's UAL payment	($11.1)	$41.9	$8.0	$11.0
3. Combined valuation payroll	$10,098.9	$9,872.6	$2,984.5	$2,881.4
4. UAL rate				
a. Preliminary UAL rate *(2 ÷ 3)*	(0.11%)	0.42%	0.27%	0.38%
b. Final UAL rate *(greater of a. or 0.00%)*	**0.00%**	**0.42%**	**0.27%**	**0.38%**

Amounts in millions

The table below shows the development of the retiree healthcare UAL rates for the various rate pools. For RHIA, combined valuation payroll is shown on a system-wide basis. For RHIPA, valuation payroll is for the State of Oregon and the State Judiciary only. For this exhibit, all independent employers, including State Judiciary, have been grouped together.

	December 31, 2017			
	SLGRP	School Districts	Independent Employers	Retiree Healthcare Total
1. Combined Valuation Payroll				
a. All Employers' Payroll	$5,897.8	$3,314.2	$886.9	$10,098.9
b. RHIPA Employers' Payroll	$2,960.6	$0.0	$23.9	$2,984.5
2. UAL Rate				
a. RHIA	0.00%	0.00%	0.00%	0.00%
b. RHIPA	0.27%	0.00%	0.27%	0.27%
3. Weighted Average UAL Rate *[(1.a. x 2.a + 1.b. x 2.b.) / 1.a]*	**0.14%**	**0.00%**	**0.01%**	**0.08%**

Amounts in millions

Calculated Employer Contribution Rate Summary

The following table summarizes the calculated employer contribution rates for the retiree healthcare programs. The normal cost rates are applied against Tier 1/Tier 2 payroll, but the UAL rates are applied against all payroll. For RHIPA, valuation payroll is for the State of Oregon and the State Judiciary only.

July 1, 2019 Rates Calculated as of December 31, 2017			
	State Agencies and Judiciary	All Other Employers	Retiree Healthcare Total
Normal Cost Rates			
RHIA	0.06%	0.06%	0.06%
RHIPA	0.12%	0.00%	0.03%
Total normal cost rate	**0.18%**	**0.06%**	**0.09%**
UAL Rates			
RHIA	0.00%	0.00%	0.00%
RHIPA	0.27%	0.00%	0.08%
Total UAL rate	**0.27%**	**0.00%**	**0.08%**
Total retiree healthcare rate	**0.45%**	**0.06%**	**0.17%**

Accounting / CAFR Exhibits

Accounting/CAFR Exhibits

The following information as of December 31, 2017 has been prepared and provided to Oregon PERS for inclusion in the Actuarial Section of the 2018 Comprehensive Annual Financial Report (CAFR):

- Schedule of Active Member Valuation Data
- Schedule of Retirees and Beneficiaries Added to and Removed from Rolls
- Schedules of Funding Progress by Rate Pool
- Solvency Test
- Analysis of Financial Experience
- Schedules of Funding Progress

These exhibits do not reflect GASB Statements No. 74 and 75, which were issued by GASB in June 2015 to replace Statements No. 43 and 45, and govern financial reporting for postemployment benefits other than pensions. GASB 74 governs plan reporting effective for fiscal years beginning after June 15, 2016, while GASB 75 governs employer reporting for fiscal years beginning after June 15, 2017. Milliman provided results for Oregon PERS under GASB 74 and 75 determined as of a June 30, 2017 measurement date in letters dated November 29, 2017 and March 20, 2018, respectively. The results for a measurement date of June 30, 2018 will be provided separately.

These exhibits do not reflect GASB Statements No. 67 and 68, issued by GASB in June 2012 to replace Statements No. 25 and 27. GASB 67 governs plan financial reporting effective for fiscal years beginning after June 15, 2013, while GASB 68 governs employer financial reporting for fiscal years beginning after June 15, 2014. Milliman provided results for Oregon PERS under GASB 67 and 68 determined as of a June 30, 2017 measurement date in letters dated November 29, 2017 and February 20, 2018, respectively. The results for a measurement date of June 30, 2018 will be provided separately.

Some employers have made supplemental deposits in addition to their regularly scheduled contributions. These deposits are placed in a side account within the pension trust and used to offset future contribution requirements of that employer. The Schedules of Funding Progress and Solvency Test include side accounts as part of the Plan's assets since those amounts are in a restricted trust available exclusively for the benefit of plan members.

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist Oregon PERS in completing its financial statements, but any accounting determination should be reviewed by your auditor.

The exhibits are provided on the following pages.

Actuarial Schedules

Schedule of Active Member Valuation Data

Valuation Date	Count	Annual Payroll (Thousands)	Average Annual Pay	% Increase in Average Pay	Number of Participating Employers[1]	
12/31/1993	137,513	$4,466,797	$32,483		N/A	
12/31/1995	141,471	$4,848,058	$34,269	5.5%	N/A	
12/31/1997	143,194	$5,161,562	$36,045	5.2%	N/A	
12/31/1999	151,262	$5,676,606	$37,528	4.1%	N/A	
12/31/2000	156,869	$6,195,862	$39,497	5.2%	N/A	
12/31/2001	160,477	$6,520,225	$40,630	2.9%	N/A	Old Basis
12/31/2001	160,477	$6,253,965	$38,971	—	N/A	New Basis[2]
12/31/2002	159,287	$6,383,475	$40,075	2.8%	N/A	
12/31/2003	153,723	$6,248,550	$40,648	1.4%	N/A	
12/31/2004	142,635	$6,306,447	$44,214	8.8%	806	
12/31/2005 [3]	156,501	$6,791,891	$43,398	(1.8%)	810	
12/31/2006	163,261	$7,326,798	$44,878	3.4%	758	
12/31/2007	167,023	$7,721,819	$46,232	3.0%	760	
12/31/2008	170,569	$8,130,136	$47,665	3.1%	766	
12/31/2009	178,606	$8,512,192	$47,659	(0.0%)	776	
12/31/2010	193,569	$8,750,064	$45,204	(5.2%)	787	
12/31/2011	170,972	$8,550,511	$50,011	10.6%	791	
12/31/2012	167,103	$8,590,879	$51,411	2.8%	798	
12/31/2013	162,185	$8,671,835	$53,469	4.0%	799	
12/31/2014	164,859	$9,115,767	$55,294	3.4%	802	
12/31/2015	168,177	$9,544,132	$56,751	2.6%	804	
12/31/2016	172,483	$9,872,557	$57,238	0.9%	805	
12/31/2017	173,002	$10,098,889	$58,374	2.0%	802	

[1] *Effective in 2006, participating employers are defined for this purpose as any employer with covered payroll during the prior year. In prior years, employers with liabilities but without covered payroll were included as well.*

[2] *Effective in 2001, the Annual Payroll excludes the member pick-up, if any.*

[3] *Effective with the 12/31/2005 valuation, OPSRP members and payroll are included.*

Actuarial Schedules

Schedule of Retirees and Beneficiaries Added to and Removed from Rolls

Annual Allowances are shown in thousands.

Valuation Date	Added to Rolls		Removed from Rolls		Rolls - End of Year		% Increase in Annual Allowances[2]	Average Annual Allowances
	Count	Annual Allowances[1]	Count	Annual Allowances	Count	Annual Allowances		
12/31/1993					60,841	$564,341	27.6%	$9,276
12/31/1995					64,796	$700,171	24.1%	$10,806
12/31/1997					69,624	$919,038	31.3%	$13,200
12/31/1999					82,819	$1,299,380	41.4%	$15,689
12/31/2000					82,458	$1,385,556	6.6%	$16,803
12/31/2001					85,216	$1,514,491	9.3%	$17,772
12/31/2002					89,482	$1,722,865	13.8%	$19,254
12/31/2003					97,777	$2,040,533	8.4%	$20,869
12/31/2004 [3]	6,754	$149,474	2,863	$35,151	101,668	$2,154,856	5.6%	$21,195
12/31/2005 [3]	4,472	$149,127	3,217	$36,784	102,923	$2,267,198	5.2%	$22,028
12/31/2006 [3]	5,060	$151,240	3,263	$39,735	104,720	$2,378,704	4.9%	$22,715
12/31/2007 [3]	5,385	$183,232	3,304	$40,590	106,801	$2,521,345	6.0%	$23,608
12/31/2008 [3]	5,963	$171,484	3,626	$47,062	109,138	$2,645,767	4.9%	$24,242
12/31/2009 [3]	6,377	$226,713	3,374	$46,228	112,141	$2,826,252	6.8%	$25,203
12/31/2010 [3]	6,359	$217,424	3,512	$51,627	114,988	$2,992,048	5.9%	$26,021
12/31/2011 [3]	8,715	$282,098	3,679	$55,633	120,024	$3,218,514	7.6%	$26,816
12/31/2012 [3]	7,023	$235,917	4,875	$59,353	122,172	$3,395,079	5.5%	$27,789
12/31/2013	9,724	$307,551	3,644	$66,607	128,252	$3,636,023	7.1%	$28,351
12/31/2014 [4]	6,910	$235,250	3,524	$66,621	131,638	$3,804,651	4.6%	$28,902
12/31/2015 [4]	8,566	$304,818	3,781	$73,305	136,423	$4,036,165	6.1%	$29,586
12/31/2016 [4]	6,413	$242,372	3,931	$80,903	138,905	$4,197,633	4.0%	$30,219
12/31/2017 [4]	10,075	$385,197	3,878	$83,921	145,102	$4,498,910	7.2%	$31,005

[1] *Additions to annual allowances reflect the combined effects of new retirements and COLA increases since the previous valuation date.*

[2] *Since last valuation date.*

[3] *Annual allowances reflect estimated adjustments to retiree benefits due to the implementation of the Strunk v. PERB, et al. and City of Eugene v. State of Oregon, PERB, et al. decisions.*

[4] *Annual allowances reflect estimated adjustments to retiree benefits for the Moro v. State of Oregon decision for records that were not already adjusted in the data provided.*

Actuarial Schedules

Schedule of Funding Progress by Rate Pool

The liabilities and assets resulting from the last six actuarial valuations are as follows *(dollar amounts in millions)*:

Actuarial Valuation Date	Actuarial Value of Assets[1,2] (a)	Actuarial Accrued Liability (AAL)[2] (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll[3] (c)	UAAL as a % of Covered Payroll ((b-a)/c)
Tier 1/Tier 2 State & Local Government Rate Pool						
12/31/2012 [4]	$28,022.3	$30,601.9	$2,579.5	91.6%	$3,043.7	84.7%
12/31/2013 [5]	$30,590.2	$31,738.8	$1,148.6	96.4%	$2,915.9	39.4%
12/31/2014 [6]	$31,162.6	$37,169.9	$6,007.3	83.8%	$2,827.9	212.4%
12/31/2015 [5]	$30,185.3	$38,396.8	$8,211.5	78.6%	$2,691.8	305.1%
12/31/2016	$30,417.6	$40,351.3	$9,933.7	75.4%	$2,546.7	390.1%
12/31/2017 [5]	$33,366.0	$42,150.7	$8,784.7	79.2%	$2,410.6	364.4%
Tier 1/Tier 2 School District Rate Pool						
12/31/2012 [4]	$21,202.1	$22,908.0	$1,705.8	92.6%	$1,769.0	96.4%
12/31/2013	$23,063.3	$23,392.6	$329.4	98.6%	$1,663.0	19.8%
12/31/2014 [6]	$23,361.2	$27,059.9	$3,698.7	86.3%	$1,626.0	227.5%
12/31/2015	$22,728.9	$27,670.7	$4,941.8	82.1%	$1,578.8	313.0%
12/31/2016	$22,870.2	$29,152.2	$6,282.0	78.5%	$1,532.7	409.9%
12/31/2017	$24,934.4	$29,677.4	$4,743.1	84.0%	$1,443.7	328.5%
Tier 1/Tier 2 Independent Employers and Judiciary						
12/31/2012 [4]	$4,479.4	$5,043.4	$564.0	88.8%	$529.0	106.6%
12/31/2013 [5]	$4,851.0	$5,164.3	$313.3	93.9%	$494.8	63.3%
12/31/2014 [6]	$4,967.4	$6,104.9	$1,137.4	81.4%	$479.2	237.4%
12/31/2015 [5]	$4,807.6	$6,327.1	$1,519.5	76.0%	$460.3	330.1%
12/31/2016	$4,856.6	$6,690.8	$1,834.3	72.6%	$437.3	419.5%
12/31/2017 [5]	$5,018.2	$6,536.3	$1,518.1	76.8%	$392.6	386.7%
OPSRP Rate Pool						
12/31/2012 [4]	$1,190.0	$1,795.6	$605.5	66.3%	$3,249.2	18.6%
12/31/2013	$1,630.2	$2,243.3	$613.2	72.7%	$3,598.1	17.0%
12/31/2014 [6]	$2,024.6	$3,064.1	$1,039.5	66.1%	$4,182.7	24.9%
12/31/2015	$2,389.1	$3,742.5	$1,353.5	63.8%	$4,813.3	28.1%
12/31/2016	$3,021.4	$4,717.0	$1,695.6	64.1%	$5,355.8	31.7%
12/31/2017	$4,116.5	$5,634.7	$1,518.2	73.1%	$5,852.0	25.9%
Postemployment Healthcare Benefits - Retirement Health Insurance Account						
12/31/2012	$291.6	$471.8	$180.2	61.8%	$5,341.7	3.4%
12/31/2013	$353.5	$473.6	$120.0	74.7%	$5,073.7	2.4%
12/31/2014	$395.9	$468.4	$72.5	84.5%	$4,933.1	1.5%
12/31/2015	$419.3	$465.6	$46.3	90.0%	$4,730.8	1.0%
12/31/2016	$465.0	$463.7	($1.3)	100.3%	$4,516.7	(0.0%)
12/31/2017	$553.3	$437.6	($115.7)	126.4%	$4,246.9	(2.7%)
Postemployment Healthcare Benefits - Retiree Health Insurance Premium Account						
12/31/2012	$4.4	$60.3	$55.9	7.4%	$1,478.4	3.8%
12/31/2013	$5.2	$61.2	$55.9	8.6%	$1,434.5	3.9%
12/31/2014	$7.2	$70.5	$63.3	10.2%	$1,406.3	4.5%
12/31/2015	$11.2	$67.8	$56.6	16.5%	$1,339.4	4.2%
12/31/2016	$19.1	$67.9	$48.8	28.1%	$1,276.0	3.8%
12/31/2017	$29.8	$69.4	$39.5	43.0%	$1,212.2	3.3%

Notes:

[1] *Side account assets are included with Tier 1/Tier 2 assets.*

[2] *Excludes effect of Multnomah Fire District (net UAAL of $166 million as of 12/31/2017).*

[3] *Covered payroll shown is for members of the rate pool benefiting from the specified program. For example, Tier 1/Tier 2 School District payroll is only payroll for Tier 1/Tier 2 members and excludes OPSRP. However, UAL is amortized using combined Tier 1/Tier 2 and*

[4] *The 12/31/2012 valuation reflects the benefit changes enacted by the 2013 Oregon Legislature in Senate Bills 822 and 861, as well as a change in cost method to Entry Age Normal.*

[5] *Reflects the transfer in assets and liabilities for new employers that joined the SLGRP effective January 1 following the valuation date.*

[6] *The 12/31/2014 valuation reflects benefit changes from the Oregon Supreme Court's ruling in Moro v. State of Oregon, which overturned portions of Senate Bills 822 and 861.*

Actuarial Schedules

Solvency Test

Pension and Retiree Healthcare Plans Combined

(dollar amounts in millions)

The schedule below shows results from the defined benefit pension plans and retiree healthcare plans on a consolidated basis. Results are also shown separately for each program: Tier 1/Tier 2, OPSRP, and retiree healthcare. Note that the defined benefit pension plan constitutes over 99% of the consolidated assets and liabilities.

Valuation Date[2]	Actuarial Accrued Liability[1]: Active Member Contributions (1)	Retired Members and Beneficiaries (2)	Other Members (3)	Valuation Assets[1,3]	Portion of Actuarial Accrued Liabilities Covered by Assets: (1)	(2)	(3)
12/31/2008	$8,341.5	$30,537.7	$15,895.7	$43,710.2	100%	100%	30%
12/31/2009 [4]	$8,392.0	$32,484.2	$16,470.1	$48,949.7	100%	100%	49%
12/31/2010	$8,407.9	$34,432.5	$17,070.2	$51,821.6	100%	100%	53%
12/31/2011 [4]	$7,779.7	$37,362.4	$16,551.8	$50,412.4	100%	100%	32%
12/31/2012 [5]	$7,704.9	$36,759.3	$16,473.1	$55,080.1	100%	100%	64%
12/31/2013 [4]	$7,120.1	$39,531.5	$16,476.8	$60,372.9	100%	100%	83%
12/31/2014 [6]	$6,950.4	$46,576.7	$20,470.8	$61,798.3	100%	100%	40%
12/31/2015 [4]	$6,476.8	$49,158.7	$21,094.5	$60,430.6	100%	100%	23%
12/31/2016	$6,168.1	$52,232.7	$23,101.0	$61,543.2	100%	100%	14%
12/31/2017 [4]	$5,585.9	$55,636.9	$23,340.3	$67,909.2	100%	100%	29%

[1] *Includes effect of Multnomah Fire District (net UAAL of $166 million as of 12/31/2017).*

[2] *An extensive revision of the actuarial assumptions occurs prior to each even-year valuation; therefore, the figures are not directly comparable.*

[3] *Includes the value of UAL Lump Sum Side Accounts.*

[4] *Reflects the transfer in assets and liabilities for new employers that joined the SLGRP effective January 1 following the valuation date.*

[5] *The 12/31/2012 valuation reflects the benefit changes enacted by the 2013 Oregon Legislature in Senate Bills 822 and 861, as well as a change in cost method to Entry Age Normal.*

[6] *The 12/31/2014 valuation reflects benefit changes from the Oregon Supreme Court's ruling in Moro v. State of Oregon, which overturned portions of Senate Bills 822 and 861.*

Actuarial Schedules

Solvency Test

Tier 1/Tier 2 Pension

(dollar amounts in millions)

Valuation Date[2]	Actuarial Accrued Liability[1] Active Member Contributions (1)	Retired Members and Beneficiaries (2)	Other Members (3)	Valuation Assets[1,3]	Portion of Actuarial Accrued Liabilities Covered by Assets (1)	(2)	(3)
12/31/2012 [4]	$7,704.9	$36,377.3	$14,527.4	$53,594.0	100%	100%	65%
12/31/2013 [5]	$7,120.1	$39,116.2	$14,114.1	$58,384.0	100%	100%	86%
12/31/2014 [6]	$6,950.4	$46,113.5	$17,331.0	$59,370.6	100%	100%	36%
12/31/2015 [5]	$6,476.8	$48,641.5	$17,335.7	$57,611.0	100%	100%	14%
12/31/2016	$6,168.1	$51,655.5	$18,429.6	$58,037.6	100%	100%	1%
12/31/2017 [5]	$5,585.9	$54,967.4	$17,868.1	$63,209.7	100%	100%	15%

[1] *Includes effect of Multnomah Fire District (net UAAL of $166 million as of 12/31/2017).*

[2] *An extensive revision of the actuarial assumptions occurs prior to each even-year valuation; therefore, the figures are not directly comparable.*

[3] *Includes the value of UAL Lump Sum Side Accounts.*

[4] *The 12/31/2012 valuation reflects the benefit changes enacted by the 2013 Oregon Legislature in Senate Bills 822 and 861, as well as a change in cost method to Entry Age Normal.*

[5] *Reflects the transfer in assets and liabilities for new employers that joined the SLGRP effective January 1 following the valuation date.*

[6] *The 12/31/2014 valuation reflects benefit changes from the Oregon Supreme Court's ruling in Moro v. State of Oregon, which overturned portions of Senate Bills 822 and 861.*

OPSRP Pension

(dollar amounts in millions)

Valuation Date[1]	Actuarial Accrued Liability Active Member Contributions (1)	Retired Members and Beneficiaries (2)	Other Members (3)	Valuation Assets	Portion of Actuarial Accrued Liabilities Covered by Assets (1)	(2)	(3)
12/31/2012 [2]	$0.0	$28.6	$1,766.9	$1,190.0	100%	100%	66%
12/31/2013	$0.0	$51.2	$2,192.1	$1,630.2	100%	100%	72%
12/31/2014 [3]	$0.0	$92.4	$2,971.6	$2,024.6	100%	100%	65%
12/31/2015	$0.0	$144.6	$3,597.9	$2,389.1	100%	100%	62%
12/31/2016	$0.0	$201.1	$4,515.9	$3,021.4	100%	100%	62%
12/31/2017	$0.0	$310.1	$5,324.5	$4,116.5	100%	100%	71%

[1] *An extensive revision of the actuarial assumptions occurs prior to each even-year valuation; therefore, the figures are not directly comparable.*

[2] *The 12/31/2012 valuation reflects the benefit changes enacted by the 2013 Oregon Legislature in Senate Bills 822 and 861, as well as a change in cost method to Entry Age Normal.*

[3] *The 12/31/2014 valuation reflects benefit changes from the Oregon Supreme Court's ruling in Moro v. State of Oregon, which overturned portions of Senate Bills 822 and 861.*

Retiree Healthcare (RHIA and RHIPA)

(dollar amounts in millions)

Retiree Health Insurance Account (RHIA)							
	Actuarial Accrued Liability						
Valuation Date[1]	Active Member Contributions (1)	Retired Members and Beneficiaries (2)	Other Members (3)	Valuation Assets	Portion of Actuarial Accrued Liabilities Covered by Assets (1)	(2)	(3)
12/31/2012 [2]	$0.0	$338.3	$133.5	$291.6	100%	86%	0%
12/31/2013	$0.0	$348.0	$125.6	$353.5	100%	100%	4%
12/31/2014	$0.0	$355.1	$113.3	$395.9	100%	100%	36%
12/31/2015	$0.0	$357.7	$107.9	$419.3	100%	100%	57%
12/31/2016	$0.0	$361.7	$102.0	$465.0	100%	100%	101%
12/31/2017	$0.0	$343.9	$93.7	$553.3	100%	100%	224%

[1] *An extensive revision of the actuarial assumptions occurs prior to each even-year valuation; therefore, the figures are not directly comparable.*

[2] *The 12/31/2012 valuation reflects a change in cost method to Entry Age Normal.*

Retiree Health Insurance Premium Account (RHIPA)							
	Actuarial Accrued Liability						
Valuation Date[1]	Active Member Contributions (1)	Retired Members and Beneficiaries (2)	Other Members (3)	Valuation Assets	Portion of Actuarial Accrued Liabilities Covered by Assets (1)	(2)	(3)
12/31/2012 [2]	$0.0	$15.1	$45.3	$4.4	100%	29%	0%
12/31/2013	$0.0	$16.1	$45.1	$5.2	100%	33%	0%
12/31/2014	$0.0	$15.7	$54.9	$7.2	100%	46%	0%
12/31/2015	$0.0	$14.9	$52.9	$11.2	100%	75%	0%
12/31/2016	$0.0	$14.4	$53.5	$19.1	100%	100%	9%
12/31/2017	$0.0	$15.4	$54.0	$29.8	100%	100%	27%

[1] *An extensive revision of the actuarial assumptions occurs prior to each even-year valuation; therefore, the figures are not directly comparable.*

[2] *The 12/31/2012 valuation reflects a change in cost method to Entry Age Normal.*

Actuarial Schedules

Analysis of Financial Experience

The schedule below shows results from the defined benefit pension plans and retiree healthcare plans on a consolidated basis. Results are also shown separately for each program on subsequent pages.

Gains and Losses in Unfunded Accrued Liability Resulting from Differences Between Assumed Experience and Actual Experience and Assumption Changes

(dollar amounts in millions)

Pension and Retiree Healthcare Plans	$ Gain (or Loss) for Year 2017	$ Gain (or Loss) for Year 2016
Type of Activity		
Retirements from Active Status	($143.9)	$69.0
Active Mortality and Withdrawal	(2.3)	(88.4)
Pay Increases	(168.4)	37.0
Contributions	94.2	98.5
Interest Crediting Experience	(95.7)	(5.4)
Investment Income	4,854.2	(38.5)
Retirement, Mortality and Lump Sums from Inactive Status	18.0	(0.4)
Retiree and Beneficiary Mortality	(34.6)	(5.9)
New Entrants	(68.3)	(80.2)
Other	(225.8)	0.3
Gain (or Loss) During Year from Financial Experience	**$4,227.3**	**($14.1)**
Non-Recurring Items		
Assumption Changes	0.0	(2,272.3)
Plan Changes	0.0	0.0
Composite Gain (or Loss) During Year	**$4,227.3**	**($2,286.3)**

The schedules below show results from the Tier 1/Tier 2 and OPSRP pension programs separately.

Gains and Losses in Unfunded Accrued Liability Resulting from Differences between Assumed Experience and Actual Experience and Assumption Changes

(dollar amounts in millions)

Tier 1/Tier 2 Pension Program	$ Gain (or Loss) for Year 2017	$ Gain (or Loss) for Year 2016
Type of Activity		
Retirements from Active Status	($145.1)	$66.9
Active Mortality and Withdrawal	(12.5)	(65.7)
Pay Increases	(70.7)	36.6
Contributions	49.4	78.4
Interest Crediting Experience	(95.7)	(5.4)
Investment Income	4,496.6	(46.8)
Retirement, Mortality and Lump Sums from Inactive Status	15.9	(1.8)
Retiree and Beneficiary Mortality	(34.6)	(6.5)
New Entrants	(1.2)	(0.5)
Other	(297.0)	7.8
Gain (or Loss) During Year from Financial Experience	**$3,905.1**	**$62.9**
Non-Recurring Items		
Assumption Changes	0.0	(2,096.4)
Plan Changes	0.0	0.0
Composite Gain (or Loss) During Year	**$3,905.1**	**($2,033.5)**

OPSRP Pension Program	$ Gain (or Loss) for Year 2017	$ Gain (or Loss) for Year 2016
Type of Activity		
Retirements from Active Status	$1.1	$2.1
Active Mortality and Withdrawal	10.2	(22.7)
Pay Increases	(97.7)	0.4
Contributions	41.6	18.0
Investment Income	317.5	9.5
Retirement, Mortality and Lump Sums from Inactive Status	2.0	1.3
Retiree and Beneficiary Mortality	(0.1)	0.6
New Entrants	(67.1)	(79.7)
Other	42.0	(18.4)
Gain (or Loss) During Year from Financial Experience	**$249.7**	**($88.8)**
Non-Recurring Items		
Assumption Changes	0.0	(173.7)
Plan Changes	0.0	0.0
Composite Gain (or Loss) During Year	**$249.7**	**($262.5)**

The schedule below shows results from the retiree healthcare programs.

Gains and Losses in Unfunded Accrued Liability Resulting from Differences Between Assumed Experience and Actual Experience and Assumption Changes

(dollar amounts in millions)

	$ Gain (or Loss) for Year			
	RHIA		RHIPA	
Retiree Healthcare Programs	**2017**	**2016**	**2017**	**2016**
Type of Activity				
Contributions	$2.4	($0.8)	$0.9	$2.9
Investment Income	38.7	(1.0)	1.3	(0.2)
Other	29.0	8.2	0.2	2.7
Gain (or Loss) During Year from Financial Experience	**$70.2**	**$6.4**	**$2.3**	**$5.4**
Non-Recurring Items				
Assumption Changes	0.0	(1.5)	0.0	(0.7)
Plan Changes	0.0	0.0	0.0	0.0
Composite Gain (or Loss) During Year	**$70.2**	**$4.9**	**$2.3**	**$4.8**

Actuarial Schedules

Schedules of Funding Progress

(dollar amounts in millions)

Actuarial Valuation Date	Actuarial Value of Assets[1] (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a % of Covered Payroll ((b-a)/c)
Pension Benefits - Tier 1/Tier 2 and OPSRP[2]						
12/31/2008	$43,520.6	$54,259.5	$10,738.9	80.2%	$8,130.1	132.1%
12/31/2009 [3]	$48,729.2	$56,810.6	$8,081.4	85.8%	$8,512.2	94.9%
12/31/2010	$51,583.6	$59,329.5	$7,746.0	86.9%	$8,750.1	88.5%
12/31/2011 [3]	$50,168.2	$61,198.4	$11,030.2	82.0%	$8,550.5	129.0%
12/31/2012 [4]	$54,784.1	$60,405.2	$5,621.1	90.7%	$8,590.9	65.4%
12/31/2013 [3]	$60,014.1	$62,593.6	$2,579.5	95.9%	$8,671.8	29.7%
12/31/2014 [5]	$61,395.2	$73,458.9	$12,063.7	83.6%	$9,115.8	132.3%
12/31/2015 [3]	$60,000.1	$76,196.6	$16,196.5	78.7%	$9,544.1	169.7%
12/31/2016	$61,059.0	$80,970.3	$19,911.2	75.4%	$9,872.6	201.7%
12/31/2017 [3]	$67,326.1	$84,056.1	$16,730.0	80.1%	$10,098.9	165.7%
Postemployment Healthcare Benefits - Retirement Health Insurance Account						
12/31/2008	$183.8	$494.0	$310.2	37.2%	$8,130.1	3.8%
12/31/2009	$214.1	$511.2	$297.1	41.9%	$8,512.2	3.5%
12/31/2010	$232.3	$547.1	$314.8	42.5%	$8,750.1	3.6%
12/31/2011	$239.6	$461.1	$221.5	52.0%	$8,550.5	2.6%
12/31/2012	$291.6	$471.8	$180.2	61.8%	$8,590.9	2.1%
12/31/2013	$353.5	$473.6	$120.0	74.7%	$8,671.8	1.4%
12/31/2014	$395.9	$468.4	$72.5	84.5%	$9,115.8	0.8%
12/31/2015	$419.3	$465.6	$46.3	90.0%	$9,544.1	0.5%
12/31/2016	$465.0	$463.7	($1.3)	100.3%	$9,872.6	(0.0%)
12/31/2017	$553.3	$437.6	($115.7)	126.4%	$10,098.9	(1.1%)
Postemployment Healthcare Benefits - Retiree Health Insurance Premium Account						
12/31/2008	$5.7	$21.3	$15.6	26.7%	$2,217.9	0.7%
12/31/2009	$6.4	$24.5	$18.2	25.9%	$2,371.8	0.8%
12/31/2010	$5.7	$33.9	$28.2	16.8%	$2,379.7	1.2%
12/31/2011	$4.5	$34.4	$29.9	13.2%	$2,376.9	1.3%
12/31/2012	$4.4	$60.3	$55.9	7.4%	$2,432.4	2.3%
12/31/2013	$5.2	$61.2	$55.9	8.6%	$2,531.5	2.2%
12/31/2014	$7.2	$70.5	$63.3	10.2%	$2,718.9	2.3%
12/31/2015	$11.2	$67.8	$56.6	16.5%	$2,831.8	2.0%
12/31/2016	$19.1	$67.9	$48.8	28.1%	$2,881.4	1.7%
12/31/2017	$29.8	$69.4	$39.5	43.0%	$2,984.5	1.3%

Notes:

[1] *Side account assets are included with pension assets.*

[2] *Includes UAAL for Multnomah Fire District ($166 million as of 12/31/2017).*

[3] *Reflects the transfer in assets and liabilities for new employers that joined the SLGRP effective January 1 following the valuation date.*

[4] *The 12/31/2012 valuation reflects the benefit changes enacted by the 2013 Oregon Legislature in Senate Bills 822 and 861, as well as a change in cost method to Entry Age Normal.*

[5] *The 12/31/2014 valuation reflects benefit changes from the Oregon Supreme Court's ruling in Moro v. State of Oregon, which overturned portions of Senate Bills 822 and 861.*

Data Exhibits

This valuation is based upon the membership of the System as of December 31, 2017.

System Wide Data Exhibits

Valuation Pay and Census Exhibit

The following tables illustrate the breakdown of member counts and valuation payroll for the SLGRP, School District Pool, and independent employers.

SLGRP

	General Service	Police & Fire	Total
Tier 1	$845.4	$165.8	$1,011.3
Tier 2	1,095.5	303.8	1,399.3
Tier 1/Tier 2 Valuation Payroll	1,941.0	469.6	2,410.6
OPSRP Valuation Payroll	2,961.3	525.9	3,487.2
Combined Valuation Payroll	**$4,902.3**	**$995.5**	**$5,897.8**

Amounts in millions

	December 31				
	2017				2016
	Tier 1	Tier 2	OPSRP	Total	Total
Active Members in the Pool					
General Service	10,415	14,939	52,470	77,824	77,720
Police & Fire	1,662	3,381	7,184	12,227	12,449
Total	12,077	18,320	59,654	90,051	90,169
Average Age	56.4	51.5	42.7	46.3	46.5
Average Service	25.7	17.1	6.1	11.0	11.1
Average prior year Covered Salary	$85,956	$77,456	$55,049	$63,752	62,170
Active Members outside the Pool with previous Segments in the Pool					
General Service	2,486	2,402		4,888	6,812
Police & Fire	242	327		569	641
Total	2,728	2,729		5,457	7,453
Average Age	55.1	48.8		51.9	51.4
Average Service in the Pool	3.0	2.7		2.9	2.3
Inactive Members[1]					
General Service	8,383	8,417	8,877	25,677	26,025
Police & Fire	549	725	1,052	2,326	1,940
Total	8,932	9,142	9,929	28,003	27,965
Average Age	59.0	53.4	46.8	52.8	53.4
Average Monthly Benefit	$1,941	$765	$457	$1,031	1,060
Retired Members and Beneficiaries[1]					
General Service	67,565	7,267	2,440	77,272	73,059
Police & Fire	9,669	1,052	226	10,947	10,310
Total	77,234	8,319	2,666	88,219	83,369
Average Age	71.7	67.6	66.8	71.2	71.0
Average Monthly Benefit[2]	$2,387	$1,017	$505	$2,201	$2,122
Grand Total Number of Members	**100,971**	**38,510**	**72,249**	**211,730**	**208,956**

[1] *In these exhibits, Inactives and Retirees are counted by members with service in each rate pool. As a result, individual members with service segments in more than one rate pool will be included in more than one exhibit.*

[2] *The average monthly benefit reflects an estimated adjustment for the effect of the Supreme Court decision in Moro v. State of Oregon for records that were not already adjusted in the data provided.*

School District Pool

	General Service	Police & Fire	Total
Tier 1	$569.1	$1.3	$570.5
Tier 2	871.9	1.3	873.2
Tier 1/Tier 2 Valuation Payroll	1,441.0	2.7	1,443.7
OPSRP Valuation Payroll	1,869.2	1.3	1,870.5
Combined Valuation Payroll	**$3,310.3**	**$4.0**	**$3,314.2**

Amounts in millions

	December 31				
	2017				2016
	Tier 1	Tier 2	OPSRP	Total	Total
Active Members					
General Service	8,907	14,805	46,358	70,070	69,038
Police & Fire	19	22	24	65	65
Total	8,926	14,827	46,382	70,135	69,103
Average Age	55.9	51.0	42.9	46.2	46.4
Average Service	24.8	16.6	6.2	10.8	11.0
Average prior year Covered Salary	$64,971	$59,345	$38,469	$46,255	45,979
Active Members outside the Pool with previous Segments in the Pool					
General Service	1,055	1,224		2,279	2,835
Police & Fire	4	6		10	11
Total	1,059	1,230		2,289	2,846
Average Age	56.1	49.9		52.8	53
Average Service	5.5	4.3		4.9	4.3
Inactive Members[1]					
General Service	5,311	6,664	6,260	18,235	18,313
Police & Fire	10	18	4	32	37
Total	5,321	6,682	6,264	18,267	18,350
Average Age	59.8	53.2	48.4	53.5	53.7
Average Monthly Benefit	$1,556	$565	$321	$770	787.9
Retired Members and Beneficiaries[1]					
General Service	62,633	4,681	1,116	68,430	66,261
Police & Fire	194	37	6	237	230
Total	62,827	4,718	1,122	68,667	66,491
Average Age	72.8	67.0	66.7	72.3	72.2
Average Monthly Benefit[2]	$2,347	$761	$403	$2,206	$2,169
Grand Total Number of Members	**78,133**	**27,457**	**53,768**	**159,358**	**156,790**

[1] *In these exhibits, Inactives and Retirees are counted by members with service in each rate pool. As a result, individual members with service segments in more than one rate pool will be included in more than one exhibit.*

[2] *The average monthly benefit reflects an estimated adjustment for the effect of the Supreme Court decision in Moro v. State of Oregon for records that were not already adjusted in the data provided.*

Independents

	General Service	Police & Fire	Total
Tier 1	$108.1	$54.2	$162.3
Tier 2	137.2	93.0	230.3
Tier 1/Tier 2 Valuation Payroll	245.4	147.3	392.6
OPSRP Valuation Payroll	357.0	137.3	494.3
Combined Valuation Payroll	**$602.3**	**$284.5**	**$886.9**

Amounts in millions

	December 31				
	2017				2016
	Tier 1	Tier 2	OPSRP	Total	Total
Active Members					
General Service	1,272	1,921	6,587	9,780	10,207
Police & Fire	474	890	1,672	3,036	3,004
Total	1,746	2,811	8,259	12,816	13,211
Average Age	55.1	50.2	41.5	45.3	45.7
Average Service	23.9	17.0	6.0	10.8	11.2
Average prior year Covered Salary	$95,995	$83,101	$56,211	$67,529	68,141
Active Members outside the Pool with previous Segments in the Pool					
General Service	860	1,121		1,981	2,244
Police & Fire	206	305		511	563
Total	1,066	1,426		2,492	2,807
Average Age	54.5	48.8		51.2	51.0
Average Service	4.8	3.9		4.3	3.8
Inactive Members[1]					
General Service	1,088	1,296	1,035	3,419	3,673
Police & Fire	184	186	121	491	524
Total	1,272	1,482	1,156	3,910	4,197
Average Age	57.8	53.2	48.3	53.2	53.4
Average Monthly Benefit	$1,309	$632	$425	$791	862
Retired Members and Beneficiaries[1]					
General Service	9,220	1,248	300	10,768	10,676
Police & Fire	3,185	157	27	3,369	3,162
Total	12,405	1,405	327	14,137	13,838
Average Age	70.2	67.0	66.6	69.8	69.7
Average Monthly Benefit[2]	$2,248	$838	$520	$2,068	$2,071
Grand Total Number of Members	**16,489**	**7,124**	**9,742**	**33,355**	**34,053**

[1] *In these exhibits, Inactives and Retirees are counted by members with service in each rate pool. As a result, individual members with service segments in more than one rate pool will be included in more than one exhibit.*

[2] *The average monthly benefit reflects an estimated adjustment for the effect of the Supreme Court decision in Moro v. State of Oregon for records that were not already adjusted in the data provided.*

Total

	General Service	Police & Fire	Total
Tier 1	$1,522.7	$221.4	$1,744.1
Tier 2	2,104.7	398.1	2,502.8
Tier 1/Tier 2 Valuation Payroll	3,627.4	619.5	4,246.9
OPSRP Valuation Payroll	5,187.5	664.5	5,852.0
Combined Valuation Payroll	**$8,814.8**	**$1,284.0**	**$10,098.9**

Amounts in millions

	December 31				
	2017				2016
	Tier 1	Tier 2	OPSRP	Total	Total
Active Members					
General Service	20,594	31,665	105,415	157,674	156,965
Police & Fire	2,155	4,293	8,880	15,328	15,518
Total	22,749	35,958	114,295	173,002	172,483
Average Age	56.1	51.2	42.7	46.2	46.4
Average Service	25.2	16.9	6.1	10.9	11.1
Average prior year Covered Salary	$78,492	$70,429	$48,405	$56,939	56,140
Inactive Members[1]					
General Service	14,782	16,377	16,172	47,331	48,011
Police & Fire	743	929	1,177	2,849	2,501
Total	15,525	17,306	17,349	50,180	50,512
Average Age	59.2	53.3	47.5	53.1	53.5
Average Monthly Benefit	$1,757	$677	$406	$917	945
Retired Members and Beneficiaries[1]					
General Service	139,418	13,196	3,856	156,470	149,996
Police & Fire	13,048	1,246	259	14,553	13,702
Total	152,466	14,442	4,115	171,023	163,698
Average Age	72.0	67.3	66.8	71.5	71.4
Average Monthly Benefit[2]	$2,359	$916	$478	$2,192	$2,137
Grand Total Number of Members	**190,740**	**67,706**	**135,759**	**394,205**	**386,693**

[1] In these exhibits, Inactives and Retirees are counted by members with service in each rate pool. As a result, individual members with service segments in more than one rate pool are counted more than once in this exhibit.

[2] The average monthly benefit reflects an estimated adjustment for the effect of the Supreme Court decision in Moro v. State of Oregon for records that were not already adjusted in the data provided.

Age/Service and Prior Year Covered Payroll by Tier and Job Class

Tier 1 General Service Active Members

		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
20-24		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
25-29		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
30-34		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
35-39		0	0	0	0	2	0	0	0	0	**2**
	$	0	0	0	0	92,255	0	0	0	0	**92,255**
40-44		10	4	11	34	181	8	0	0	0	**248**
	$	110,587	104,839	58,495	72,479	70,008	89,019	0	0	0	**72,647**
45-49		19	52	91	211	1,772	417	6	0	0	**2,568**
	$	97,495	59,053	55,326	70,662	79,028	77,729	60,462	0	0	**76,979**
50-54		9	60	104	246	2,166	1,978	319	6	0	**4,888**
	$	109,083	69,121	56,490	65,097	78,698	81,682	78,348	76,519	0	**78,661**
55-59		10	51	113	271	2,234	2,440	1,071	149	1	**6,340**
	$	107,084	61,783	62,765	68,977	70,542	77,781	82,641	76,696	79,865	**75,300**
60-64		3	34	71	154	1,717	1,751	704	283	39	**4,756**
	$	101,041	66,559	73,691	66,417	65,913	74,482	81,740	77,316	70,775	**72,288**
65-69		3	8	37	61	503	510	231	100	31	**1,484**
	$	106,119	56,468	75,825	69,426	66,078	77,029	88,449	95,157	84,276	**76,073**
70-74		0	1	3	6	72	87	38	17	21	**245**
	$	0	27,699	104,983	81,818	60,945	85,480	78,729	86,814	111,587	**79,466**
75+		0	0	1	3	13	18	11	4	13	**63**
	$	0	0	14,641	50,493	37,068	78,009	58,398	121,314	84,513	**67,912**
Total		**54**	**210**	**431**	**986**	**8,660**	**7,209**	**2,380**	**559**	**105**	**20,594**
	$	**104,303**	**64,432**	**62,674**	**68,140**	**73,005**	**78,100**	**82,133**	**80,937**	**84,711**	**75,664**

Tier 2 General Service Active Members

		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
20-24		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
25-29		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
30-34		1	4	47	22	0	0	0	0	0	**74**
	$	147,981	58,142	56,435	53,973	0	0	0	0	0	**57,032**
35-39		1	56	904	644	8	0	0	0	0	**1,613**
	$	17,513	47,737	68,361	66,735	70,814	0	0	0	0	**66,977**
40-44		9	175	1,536	3,717	236	0	0	0	0	**5,673**
	$	18,188	46,408	69,230	74,710	76,863	0	0	0	0	**72,353**
45-49		10	130	1,259	4,279	778	0	0	0	0	**6,456**
	$	16,850	42,100	69,061	74,556	78,751	0	0	0	0	**73,247**
50-54		4	75	1,028	3,920	662	0	0	0	0	**5,689**
	$	11,254	52,827	64,157	69,182	72,932	0	0	0	0	**68,454**
55-59		6	59	958	4,076	761	0	0	0	0	**5,860**
	$	29,010	50,133	58,657	62,176	66,156	0	0	0	0	**61,963**
60-64		7	46	675	3,151	640	0	0	0	0	**4,519**
	$	22,516	40,058	58,298	60,465	65,357	0	0	0	0	**60,568**
65-69		9	20	213	1,002	178	0	0	0	0	**1,422**
	$	25,062	49,010	60,026	59,414	63,658	0	0	0	0	**59,673**
70-74		2	12	51	195	31	0	0	0	0	**291**
	$	16,123	35,919	57,653	57,493	57,948	0	0	0	0	**56,396**
75+		2	1	19	43	3	0	0	0	0	**68**
	$	9,600	23,192	36,747	54,268	34,253	0	0	0	0	**46,719**
Total		**51**	**578**	**6,690**	**21,049**	**3,297**	**0**	**0**	**0**	**0**	**31,665**
	$	**22,576**	**46,189**	**65,121**	**67,895**	**70,870**	**0**	**0**	**0**	**0**	**67,149**

Tier 1 Police and Fire Active Members

		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
20-24		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
25-29		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
30-34		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
35-39		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
40-44		0	0	1	6	64	1	0	0	0	**72**
	$	0	0	68,859	105,616	112,137	181,625	0	0	0	**111,958**
45-49		0	1	1	21	560	137	1	0	0	**721**
	$	0	94,767	58,739	86,403	108,891	117,431	80,748	0	0	**109,730**
50-54		0	2	2	15	372	329	37	0	0	**757**
	$	0	31,948	81,853	93,737	106,268	110,862	110,266	0	0	**107,951**
55-59		1	0	3	7	130	176	65	5	0	**387**
	$	28,186	0	52,994	80,406	96,868	100,299	112,577	118,192	0	**100,527**
60-64		0	0	1	3	59	70	25	19	2	**179**
	$	0	0	117,361	88,039	85,408	89,168	95,966	112,395	72,400	**91,295**
65-69		0	0	0	1	5	15	4	1	1	**27**
	$	0	0	0	53,920	63,947	91,895	67,106	141,085	183,171	**86,843**
70-74		0	1	0	0	6	1	0	0	2	**10**
	$	0	47,654	0	0	65,010	51,695	0	0	138,993	**76,739**
75+		0	0	0	0	0	1	0	1	0	**2**
	$	0	0	0	0	0	81,192	0	66,714	0	**73,953**
Total		**1**	**4**	**8**	**53**	**1,196**	**730**	**132**	**26**	**5**	**2,155**
	$	**28,186**	**51,579**	**70,956**	**89,341**	**105,375**	**107,054**	**107,164**	**112,856**	**121,191**	**105,523**

Tier 2 Police and Fire Active Members

		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
20-24		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
25-29		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
30-34		0	0	7	1	0	0	0	0	0	**8**
	$	0	0	88,409	82,771	0	0	0	0	0	**87,704**
35-39		1	7	126	155	1	0	0	0	0	**290**
	$	42,411	63,736	96,530	99,541	92,244	0	0	0	0	**97,146**
40-44		0	5	190	950	99	0	0	0	0	**1,244**
	$	0	82,466	96,176	100,403	97,700	0	0	0	0	**99,470**
45-49		0	2	124	916	263	0	0	0	0	**1,305**
	$	0	63,546	91,184	97,794	99,083	0	0	0	0	**97,374**
50-54		0	1	64	541	169	0	0	0	0	**775**
	$	0	4,469	90,674	91,524	98,002	0	0	0	0	**92,754**
55-59		0	3	49	268	80	0	0	0	0	**400**
	$	0	73,497	83,408	85,170	79,927	0	0	0	0	**83,818**
60-64		0	0	25	140	41	0	0	0	0	**206**
	$	0	0	69,400	79,419	79,727	0	0	0	0	**78,265**
65-69		0	1	5	45	8	0	0	0	0	**59**
	$	0	29,216	60,437	76,426	79,490	0	0	0	0	**74,686**
70-74		0	0	2	4	0	0	0	0	0	**6**
	$	0	0	90,942	102,337	0	0	0	0	0	**98,538**
75+		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
Total		**1**	**19**	**592**	**3,020**	**661**	**0**	**0**	**0**	**0**	**4,293**
	$	**42,411**	**65,250**	**92,012**	**95,292**	**94,833**	**0**	**0**	**0**	**0**	**94,624**

All Tier 1/Tier 2 Active Members

		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
20-24		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
25-29		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
30-34		1	4	54	23	0	0	0	0	0	**82**
	$	147,981	58,142	60,580	55,225	0	0	0	0	0	**60,025**
35-39		2	63	1,030	799	11	0	0	0	0	**1,905**
	$	29,962	49,514	71,807	73,099	76,660	0	0	0	0	**71,596**
40-44		19	184	1,738	4,707	580	9	0	0	0	**7,237**
	$	66,819	48,658	72,108	79,919	82,173	99,308	0	0	0	**77,419**
45-49		29	185	1,475	5,427	3,373	554	7	0	0	**11,050**
	$	69,686	47,382	70,067	78,373	85,486	87,547	63,360	0	0	**79,344**
50-54		13	138	1,198	4,722	3,369	2,307	356	6	0	**12,109**
	$	78,982	59,259	64,937	71,607	81,577	85,843	81,665	76,519	0	**76,599**
55-59		17	113	1,123	4,622	3,205	2,616	1,136	154	1	**12,987**
	$	74,888	56,012	60,135	63,936	70,803	79,296	84,354	78,043	79,865	**70,296**
60-64		10	80	772	3,448	2,457	1,821	729	302	41	**9,660**
	$	46,073	51,321	60,150	61,525	66,467	75,046	82,228	79,523	70,854	**67,285**
65-69		12	29	255	1,109	694	525	235	101	32	**2,992**
	$	45,326	50,385	62,327	60,650	65,597	77,453	88,086	95,612	87,366	**68,349**
70-74		2	14	56	205	109	88	38	17	23	**552**
	$	16,123	36,170	61,377	59,080	60,316	85,096	78,729	86,814	113,970	**67,462**
75+		2	1	20	46	16	19	11	5	13	**133**
	$	9,600	23,192	35,642	54,022	36,540	78,176	58,398	110,394	84,513	**57,167**
Total		**107**	**811**	**7,721**	**25,108**	**13,814**	**7,939**	**2,512**	**585**	**110**	**58,707**
	$	**64,059**	**51,386**	**67,052**	**71,245**	**76,343**	**80,762**	**83,448**	**82,356**	**86,369**	**73,554**

Age/Service and Prior Year Covered Payroll by Rate Pool

Tier 1/Tier 2 SLGRP Active Members

		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
20-24		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
25-29		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
30-34		1	2	32	16	0	0	0	0	0	**51**
	$	147,981	67,726	68,515	61,821	0	0	0	0	0	**67,942**
35-39		1	23	414	497	9	0	0	0	0	**944**
	$	42,411	56,344	72,825	74,724	78,867	0	0	0	0	**73,449**
40-44		2	61	708	2,225	389	6	0	0	0	**3,391**
	$	43,681	61,396	74,908	82,139	84,209	96,854	0	0	0	**80,497**
45-49		3	60	653	2,840	1,756	380	6	0	0	**5,698**
	$	25,762	50,046	77,927	81,816	89,576	89,269	61,151	0	0	**83,873**
50-54		2	65	550	2,459	1,830	1,179	240	5	0	**6,330**
	$	52,343	61,227	74,229	80,259	86,328	89,490	83,095	82,916	0	**83,114**
55-59		8	55	516	2,254	1,633	1,389	607	105	0	**6,567**
	$	27,441	62,111	68,281	75,427	82,239	86,248	87,536	78,180	0	**79,841**
60-64		3	34	401	1,771	1,261	1,057	473	160	29	**5,189**
	$	30,747	56,822	70,095	72,814	79,696	86,136	88,580	83,884	77,269	**78,664**
65-69		5	13	148	623	392	333	170	65	24	**1,773**
	$	43,439	57,608	70,923	69,624	76,504	89,741	96,944	108,324	91,825	**79,209**
70-74		0	10	34	126	71	60	30	8	17	**356**
	$	0	42,337	70,508	68,906	65,733	98,585	90,410	138,389	118,477	**78,423**
75+		2	0	12	34	10	16	8	4	12	**98**
	$	9,600	0	39,588	59,499	42,133	88,724	58,447	132,127	90,034	**65,659**
Total		**27**	**323**	**3,468**	**12,845**	**7,351**	**4,420**	**1,534**	**347**	**82**	**30,397**
	$	**37,329**	**57,831**	**73,183**	**78,135**	**84,154**	**87,800**	**88,007**	**88,535**	**91,941**	**80,833**

Tier 1/Tier 2 School District Active Members

		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
20-24		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
25-29		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
30-34		0	2	15	5	0	0	0	0	0	**22**
	$	0	48,559	37,945	26,657	0	0	0	0	0	**36,344**
35-39		1	35	535	205	1	0	0	0	0	**777**
	$	17,513	43,729	68,694	62,624	53,034	0	0	0	0	**65,882**
40-44		7	117	896	2,054	119	1	0	0	0	**3,194**
	$	14,902	39,689	67,607	74,356	66,415	64,726	0	0	0	**70,764**
45-49		13	111	716	2,114	1,308	105	1	0	0	**4,368**
	$	21,264	38,149	61,153	70,952	76,563	72,960	76,619	0	0	**70,094**
50-54		3	54	573	1,853	1,252	958	85	1	0	**4,779**
	$	6,494	36,538	53,782	57,998	71,141	78,609	72,878	44,534	0	**65,054**
55-59		1	41	523	2,069	1,391	1,054	467	39	1	**5,586**
	$	10,172	25,770	49,146	49,730	55,794	68,715	78,475	75,429	79,865	**57,173**
60-64		5	33	314	1,434	1,056	655	203	122	12	**3,834**
	$	15,765	30,609	44,684	45,751	48,909	55,907	65,303	69,352	55,350	**49,915**
65-69		5	9	88	405	252	162	52	31	6	**1,010**
	$	5,335	9,246	43,325	43,572	45,743	52,480	57,376	70,492	75,356	**46,752**
70-74		2	3	16	64	31	21	7	8	3	**155**
	$	16,123	11,786	28,033	38,221	38,068	45,542	33,756	40,445	71,404	**37,889**
75+		0	1	7	9	3	3	3	1	1	**28**
	$	0	23,192	26,895	42,877	16,310	21,922	58,266	23,459	18,259	**33,163**
Total		**37**	**406**	**3,683**	**10,212**	**5,413**	**2,959**	**818**	**202**	**23**	**23,753**
	$	**15,288**	**36,176**	**58,833**	**59,943**	**62,661**	**68,132**	**72,825**	**69,205**	**62,116**	**61,459**

Tier 1/Tier 2 Independent Employers Active Members

		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
20-24		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
25-29		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
30-34		0	0	7	2	0	0	0	0	0	**9**
	$	0	0	72,810	73,879	0	0	0	0	0	**73,048**
35-39		0	5	81	97	1	0	0	0	0	**184**
	$	0	58,599	87,166	86,912	80,421	0	0	0	0	**86,219**
40-44		10	6	134	428	72	2	0	0	0	**652**
	$	107,789	94,054	87,406	95,077	97,216	123,962	0	0	0	**94,011**
45-49		13	14	106	473	309	69	0	0	0	**984**
	$	128,245	109,164	81,852	90,870	100,015	100,260	0	0	0	**94,183**
50-54		8	19	75	410	287	170	31	0	0	**1,000**
	$	112,825	117,100	82,029	81,221	96,814	101,321	94,684	0	0	**90,526**
55-59		8	17	84	299	181	173	62	10	0	**834**
	$	130,424	109,214	78,513	75,612	82,963	87,950	97,487	86,803	0	**83,030**
60-64		2	13	57	243	140	109	53	20	0	**637**
	$	144,834	89,511	75,380	72,326	79,743	82,519	90,362	106,678	0	**79,131**
65-69		2	7	19	81	50	30	13	5	2	**209**
	$	150,020	89,862	83,373	77,023	80,143	75,914	95,082	86,086	69,887	**80,588**
70-74		0	1	6	15	7	7	1	1	3	**41**
	$	0	47,654	98,554	65,547	103,905	88,132	43,110	45,156	130,998	**84,090**
75+		0	0	1	3	3	0	0	0	0	**7**
	$	0	0	49,518	25,384	38,126	0	0	0	0	**34,293**
Total		**43**	**82**	**570**	**2,051**	**1,050**	**560**	**160**	**36**	**5**	**4,557**
	$	**122,808**	**101,311**	**82,855**	**84,366**	**92,190**	**91,955**	**94,049**	**96,588**	**106,554**	**88,041**

OPSRP Active General Service Members

		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20		122	0	0	0	0	0	0	0	0	**122**
	$	6,588	0	0	0	0	0	0	0	0	**6,588**
20-24		2,355	38	0	0	0	0	0	0	0	**2,393**
	$	18,947	23,695	0	0	0	0	0	0	0	**19,022**
25-29		8,459	1,046	38	0	0	0	0	0	0	**9,543**
	$	33,366	42,679	44,619	0	0	0	0	0	0	**34,431**
30-34		9,069	4,694	1,219	0	0	0	0	0	0	**14,982**
	$	39,349	51,967	54,958	0	0	0	0	0	0	**44,572**
35-39		8,396	5,252	4,846	0	0	0	0	0	0	**18,494**
	$	41,261	56,487	61,982	0	0	0	0	0	0	**51,014**
40-44		6,734	4,466	4,181	0	0	0	0	0	0	**15,381**
	$	41,008	56,812	64,226	0	0	0	0	0	0	**51,908**
45-49		5,716	4,046	4,031	0	0	0	0	0	0	**13,793**
	$	41,169	55,425	60,964	0	0	0	0	0	0	**51,136**
50-54		3,988	3,246	3,680	0	0	0	0	0	0	**10,914**
	$	40,004	51,741	54,873	0	0	0	0	0	0	**48,508**
55-59		3,346	2,760	3,369	0	0	0	0	0	0	**9,475**
	$	38,584	51,079	52,285	0	0	0	0	0	0	**47,095**
60-64		2,217	2,061	2,486	0	0	0	0	0	0	**6,764**
	$	37,711	49,480	51,558	0	0	0	0	0	0	**46,386**
65-69		852	896	930	0	0	0	0	0	0	**2,678**
	$	32,901	44,740	51,214	0	0	0	0	0	0	**43,222**
70-74		276	198	209	0	0	0	0	0	0	**683**
	$	21,320	36,913	42,547	0	0	0	0	0	0	**32,336**
75+		69	58	66	0	0	0	0	0	0	**193**
	$	22,109	31,833	32,894	0	0	0	0	0	0	**28,719**
Total		**51,599**	**28,761**	**25,055**	**0**	**0**	**0**	**0**	**0**	**0**	**105,415**
	$	**37,793**	**52,998**	**57,804**	**0**	**0**	**0**	**0**	**0**	**0**	**46,698**

OPSRP Active Police and Fire Members

		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20		1	0	0	0	0	0	0	0	0	**1**
	$	217	0	0	0	0	0	0	0	0	**217**
20-24		276	0	0	0	0	0	0	0	0	**276**
	$	36,022	0	0	0	0	0	0	0	0	**36,022**
25-29		1,230	178	3	0	0	0	0	0	0	**1,411**
	$	53,191	77,114	73,253	0	0	0	0	0	0	**56,251**
30-34		977	744	260	0	0	0	0	0	0	**1,981**
	$	57,259	79,422	85,890	0	0	0	0	0	0	**69,340**
35-39		576	661	757	0	0	0	0	0	0	**1,994**
	$	55,685	80,602	87,160	0	0	0	0	0	0	**75,894**
40-44		340	416	540	0	0	0	0	0	0	**1,296**
	$	54,336	78,633	84,513	0	0	0	0	0	0	**74,709**
45-49		215	288	325	0	0	0	0	0	0	**828**
	$	53,721	73,913	83,528	0	0	0	0	0	0	**72,444**
50-54		162	164	165	0	0	0	0	0	0	**491**
	$	58,611	71,085	78,624	0	0	0	0	0	0	**69,503**
55-59		108	99	125	0	0	0	0	0	0	**332**
	$	53,288	74,681	72,720	0	0	0	0	0	0	**66,983**
60-64		52	61	75	0	0	0	0	0	0	**188**
	$	59,664	73,516	69,069	0	0	0	0	0	0	**67,911**
65-69		11	19	35	0	0	0	0	0	0	**65**
	$	55,314	82,389	67,183	0	0	0	0	0	0	**69,619**
70-74		0	5	7	0	0	0	0	0	0	**12**
	$	0	92,428	50,129	0	0	0	0	0	0	**67,754**
75+		3	1	1	0	0	0	0	0	0	**5**
	$	122,127	54,654	55,238	0	0	0	0	0	0	**95,254**
Total		**3,951**	**2,636**	**2,293**	**0**	**0**	**0**	**0**	**0**	**0**	**8,880**
	$	**53,843**	**78,039**	**83,434**	**0**	**0**	**0**	**0**	**0**	**0**	**68,667**

All OPSRP Active Members

		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20		123	0	0	0	0	0	0	0	0	**123**
	$	6,536	0	0	0	0	0	0	0	0	**6,536**
20-24		2,631	38	0	0	0	0	0	0	0	**2,669**
	$	20,738	23,695	0	0	0	0	0	0	0	**20,780**
25-29		9,689	1,224	41	0	0	0	0	0	0	**10,954**
	$	35,883	47,687	46,714	0	0	0	0	0	0	**37,242**
30-34		10,046	5,438	1,479	0	0	0	0	0	0	**16,963**
	$	41,091	55,723	60,396	0	0	0	0	0	0	**47,465**
35-39		8,972	5,913	5,603	0	0	0	0	0	0	**20,488**
	$	42,187	59,183	65,384	0	0	0	0	0	0	**53,436**
40-44		7,074	4,882	4,721	0	0	0	0	0	0	**16,677**
	$	41,648	58,671	66,546	0	0	0	0	0	0	**53,680**
45-49		5,931	4,334	4,356	0	0	0	0	0	0	**14,621**
	$	41,624	56,653	62,647	0	0	0	0	0	0	**52,342**
50-54		4,150	3,410	3,845	0	0	0	0	0	0	**11,405**
	$	40,731	52,671	55,892	0	0	0	0	0	0	**49,412**
55-59		3,454	2,859	3,494	0	0	0	0	0	0	**9,807**
	$	39,044	51,896	53,016	0	0	0	0	0	0	**47,769**
60-64		2,269	2,122	2,561	0	0	0	0	0	0	**6,952**
	$	38,214	50,171	52,070	0	0	0	0	0	0	**46,968**
65-69		863	915	965	0	0	0	0	0	0	**2,743**
	$	33,186	45,522	51,793	0	0	0	0	0	0	**43,847**
70-74		276	203	216	0	0	0	0	0	0	**695**
	$	21,320	38,280	42,793	0	0	0	0	0	0	**32,948**
75+		72	59	67	0	0	0	0	0	0	**198**
	$	26,276	32,219	33,228	0	0	0	0	0	0	**30,399**
Total		**55,550**	**31,397**	**27,348**	**0**	**0**	**0**	**0**	**0**	**0**	**114,295**
	$	**38,935**	**55,100**	**59,953**	**0**	**0**	**0**	**0**	**0**	**0**	**48,405**

Inactive Member Data Exhibits

For the following exhibits, inactive members are counted by lives, not by segments.

Total Tier 1/Tier 2

Inactive Members	Count	Average Deferred Monthly Benefit
<20	0	$0
20-24	0	0
25-29	0	0
30-34	80	290
35-39	804	637
40-44	2,620	1,013
45-49	3,927	1,286
50-54	4,687	1,488
55-59	6,068	1,399
60-64	4,949	1,553
65-69	2,928	1,527
70-74	1,181	1,303
75+	1,110	1,435
Total	**28,354**	**$1,375**

Retirees and Beneficiaries	Count	Average Monthly Benefit
<45	558	$1,145
45-49	376	1,749
50-54	1,226	3,165
55-59	5,605	3,081
60-64	19,618	2,970
65-69	34,148	2,884
70-74	31,279	2,790
75-79	20,887	2,568
80-84	13,189	2,241
85-89	8,109	1,901
90-94	4,392	1,442
95-99	1,292	1,083
100+	188	766
Total	**140,867**	**$2,647**

OPSRP

Inactive Members	Count	Average Deferred Monthly Benefit
<20	0	$0
20-24	15	137
25-29	296	204
30-34	1,798	349
35-39	3,335	440
40-44	2,629	478
45-49	2,363	461
50-54	2,106	437
55-59	1,884	418
60-64	1,379	425
65-69	737	243
70-74	429	111
75+	378	62
Total	**17,349**	**$406**

Retirees and Beneficiaries	Count	Average Monthly Benefit
<45	13	$1,199
45-49	12	1,396
50-54	20	1,785
55-59	248	333
60-64	819	405
65-69	1,864	511
70-74	968	479
75-79	150	401
80-84	20	441
85-89	1	338
90-94	0	0
95-99	0	0
100+	0	0
Total	**4,115**	**$478**

System-Wide Totals

Inactive Members	Count	Average Deferred Monthly Benefit
<20	0	$0
20-24	15	137
25-29	296	204
30-34	1,878	347
35-39	4,139	478
40-44	5,249	745
45-49	6,290	976
50-54	6,793	1,162
55-59	7,952	1,167
60-64	6,328	1,307
65-69	3,665	1,269
70-74	1,610	985
75+	1,488	1,087
Total	**45,703**	**$1,007**

Retirees and Beneficiaries	Count	Average Monthly Benefit
<45	571	$1,146
45-49	388	1,739
50-54	1,246	3,143
55-59	5,853	2,964
60-64	20,437	2,867
65-69	36,012	2,761
70-74	32,247	2,720
75-79	21,037	2,553
80-84	13,209	2,238
85-89	8,110	1,901
90-94	4,392	1,442
95-99	1,292	1,083
100+	188	766
Total	**144,982**	**$2,586**

Retiree Healthcare Member Data Exhibits

For the following exhibits, inactive members are counted by lives, not by pool or employer segments.

RHIA Members

	As of December 31, 2017	As of December 31, 2016
Dormant members		
Number	13,535	14,705
Average Age	54.5	54.6
Retired members under age 65 eligible for deferred RHIA benefits		
Number	24,568	24,859
Average Age	60.3	60.3
Retired members receiving RHIA benefits		
Number	46,656	47,115
Average Age	76.0	75.8

RHIPA Members

	As of December 31, 2017	As of December 31, 2016
Active Tier 1/Tier 2 employees of RHIPA employers		
Number	15,785	17,713
Average Age	53.9	53.7
Average Service	20.8	20.3
Retired members receiving RHIPA benefits		
Number	1,082	1,167
Average Age	61.6	61.7
Average Monthly Subsidy Amount	355	318

Actuarial Methods and Assumptions

Tier 1/Tier 2 (including Retiree Healthcare)

Actuarial Methods and Valuation Procedures

In July 2017 the Board adopted the following actuarial methods and valuation procedures for the December 31, 2016 and 2017 actuarial valuations of PERS Tier 1/Tier 2 benefits.

Actuarial cost method	**Entry Age Normal.** Under the Entry Age Normal (EAN) cost method, each active member's **entry age present value of projected benefits** is allocated over the member's service from the member's date of entry until their assumed date of exit, taking into consideration expected future compensation increases. Thus, the total pension to which each member is expected to become entitled at retirement is broken down into units, each associated with a year of past or projected future credited service. Typically, when this method is introduced, there will be an initial liability for benefits credited for service prior to that date, and to the extent that the liability is not covered by assets of the plan, there is an unfunded accrued liability to be funded over a stipulated period in accordance with an amortization schedule. A detailed description of the calculation follows: • An individual member's **entry age present value of projected benefits** is the sum of the present value of the benefit described under the plan at each possible separation date, determined at the member's entry age using the projected compensation and service at each separation date. • An individual member's **entry age present value of projected salaries** is the sum of the present value of the projected compensation over the member's working career associated with each possible future separation date, determined at the member's entry age. • An individual member's **present value of projected benefits** is the sum of the present value of the benefit described under the plan at each possible separation date, determined at the valuation date using the projected compensation and service at each separation date. • An individual member's **normal cost** for a certain year is the member's **entry age present value of projected benefits** divided by the member's **entry age present value of projected salaries** and multiplied by the member's projected compensation for the year following the valuation date. • An individual member's **actuarial accrued liability** is the member's **present value of projected benefits** less the sum of the present value of the member's **normal costs** for each future year, determined at the valuation date using the projected compensation and service at each future year. – The plan's **normal cost** is the sum of the individual member normal costs, and the plan's **actuarial accrued liability** is the sum of the individual member accrued liabilities.
Tier 1/Tier 2 UAL amortization	The Tier 1/Tier 2 UAL amortization period was reset to 20 years as of December 31, 2013. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll (Tier 1/ Tier 2 plus OPSRP payroll) over a closed 20 year period from the valuation in which they are first recognized.

Retiree Healthcare UAL amortization	The UAL for Retiree Health Care as of December 31, 2007 is amortized as a level percentage of projected combined valuation payroll (Tier 1/ Tier 2 plus OPSRP payroll) over a closed 10 year period. Gains and losses between subsequent odd-year valuations are amortized as a level percentage of combined valuation payroll over a closed 10 year period from the valuation in which they are first recognized.
Asset valuation method	The actuarial value of assets equals the market value of assets, excluding the Contingency and Capital Preservation Reserves, and the Rate Guarantee Reserve when it is in positive surplus status. Market values are reported to Milliman by PERS. It is our understanding that select real estate and private equity investments are reported on a three-month lag basis. This valuation report does not attempt to quantify any effects of the reporting lag.
Contribution rate stabilization method	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts rate pool, OPSRP) are confined to a collared range based on the prior contribution rate (prior to application of side accounts, pre-SLGRP liabilities, and 6 percent Independent Employer minimum). The new contribution rate will generally not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the prior contribution rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funded percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.
Allocation of Liability for Service Segments	For active Tier 1/Tier 2 members who have worked for multiple PERS employers over their career, the calculated actuarial accrued liability is allocated among the employers based on a weighted average of the Money Match methodology, which uses account balance, and the Full Formula methodology, which uses service. The allocation is 15% (0% for police & fire) based on account balance with each employer and 85% (100% for police & fire) based on service with each employer. The entire normal cost is allocated to the current employer.
Allocation of Benefits-In-Force (BIF) Reserve	The BIF reserve is allocated to each rate pool in proportion to the retiree liability attributable to the rate pool.

Economic Assumptions

The Board adopted the following economic assumptions for the December 31, 2016 and 2017 actuarial valuations. All assumptions were reviewed and adopted in conjunction with the 2016 Experience Study, published in July 2017. The assumption selection process and rationale is described in detail in that report.

Investment return	7.20% compounded annually
Pre-2014 Interest crediting	8.00% compounded annually on members' regular account balances 8.25% compounded annually on members' variable account balances
Post-2013 Interest crediting	7.20% compounded annually on members' regular account balances 7.20% compounded annually on members' variable account balances
Inflation	2.50% compounded annually
Administrative expenses	$37.5 million per year is added to the normal cost.
Payroll growth	3.50% compounded annually. This assumption represents the sum of the inflation assumption and a real wage growth assumption of 100 basis points.
Healthcare cost trend	Healthcare cost trend rates are used to estimate increases in the RHIPA Maximum Subsidy. These rates include consideration of the excise tax scheduled to be introduced in 2020 by the Affordable Care Act.

Year[1]	Rate	Year	Rate
2018	6.5%	2053 – 2058	5.3%
2019	5.9	2059 – 2063	5.2
2020	5.4	2064	5.1
2021 – 2023	5.3	2065	5.0
2024 – 2025	5.2	2066	4.9
2026 – 2027	5.3	2067 – 2068	4.8
2028	5.4	2069	4.7
2029 – 2032	6.2	2070	4.6
2033 – 2039	6.1	2071	4.5
2040	6.0	2072 – 2073	4.4
2041	5.8	2074 – 2090	4.3
2042 – 2043	5.7	2091	4.2
2044 – 2045	5.6	2092	4.3
2046 – 2048	5.5	2093+	4.2
2049 – 2052	5.4		

[1] *For valuation purposes, the health cost trend rates are assumed to be applied at the beginning of the plan year.*

Demographic Assumptions

The Board adopted the following demographic assumptions for the December 31, 2016 and 2017 actuarial valuations. All assumptions were reviewed and adopted in conjunction with the 2016 Experience Study, published in July 2017. The study relied on data from an observation period of January 1, 2013 to December 31, 2016, with the exception of the merit scale assumption, which relied on data from 2008 through 2016. Assumptions selected from the study represent an estimate of future experience based on relevant recent experience and reasonable expectations about the future.

Mortality

Healthy Retired Members

The following healthy retired mortality tables were first adopted in the December 31 valuation of the years shown.

Basic Table	RP 2014 Healthy Annuitant, Sex Distinct, Generational Projection with Unisex Social Security Data Scale	Valuation Year Adopted
School District male	White collar, set back 12 months	2016
Other General Service male*	Blended 50% blue collar / 50% white collar, set back 12 months	2016
Police & Fire male	Blended 50% blue collar / 50% white collar, set back 12 months	2016
School District female	White collar, set back 12 months	2016
Other female**	Blended 50% blue collar / 50% white collar, no set back	2016

** including male beneficiaries of members of all classes*
*** including female beneficiaries of members of all classes*

Disabled Retired Members

The following disabled retiree mortality rates were first adopted for the December 31, 2016 actuarial valuation.

Basic Table	RP 2014 Disabled Retiree, Sex Distinct, Generational Projection with Unisex Social Security Data Scale
Male	No collar adjustment or set back
Female	No collar adjustment or set back

Non-Annuitant Members

Mortality for non-annuitant members is assumed to follow the RP-2014 Employee table, sex distinct, with generational projection using a unisex Social Security data scale, and the same collar and set back adjustments for each group as described above for Healthy Retired members.

This assumption was first adopted for the December 31, 2016 actuarial valuation.

Retirement Assumptions

The retirement assumptions used in the actuarial valuation include the following:

- Retirement from active status/dormant status
- Probability a member will elect a lump sum option at retirement
- Percentage of members who elect to purchase credited service at retirement.

Rates of Retirement from Active Status

The following retirement rate assumptions were first adopted in the December 31, 2016 valuation.

	Police & Fire			General Service			School Districts			
Age	< 13 yrs	13-24 yrs	25+ yrs	< 15 yrs	15-29 yrs	30+ yrs	< 15 yrs	15-29 yrs	30+ yrs	Judges
Less than 50						15.00%			25.00%	
50	1.50%	2.00%	24.00%			15.00%			25.00%	
51	1.50%	2.00%	17.50%			15.00%			25.00%	
52	1.50%	2.00%	17.50%			15.00%			25.00%	
53	1.50%	2.00%	17.50%			15.00%			25.00%	
54	1.50%	3.50%	17.50%			15.00%			25.00%	
55	3.00%	10.00%	23.50%	1.50%	3.00%	15.00%	1.50%	4.00%	25.00%	
56	3.00%	8.00%	23.50%	1.50%	3.00%	15.00%	1.50%	4.00%	25.00%	
57	3.00%	8.00%	23.50%	1.50%	3.00%	15.00%	1.50%	4.00%	25.00%	
58	6.00%	8.00%	23.50%	1.50%	10.00%	20.00%	1.50%	12.50%	28.50%	
59	6.00%	8.00%	23.50%	3.50%	10.00%	20.00%	4.50%	12.50%	28.50%	
60	6.00%	11.00%	23.50%	6.00%	10.00%	20.00%	6.50%	12.50%	28.50%	6.00%
61	6.00%	14.00%	23.50%	6.00%	10.00%	20.00%	6.50%	12.50%	28.50%	6.00%
62	15.00%	25.00%	38.00%	13.00%	19.50%	31.00%	15.00%	25.00%	34.00%	6.00%
63	15.00%	17.00%	38.00%	11.50%	16.50%	22.00%	13.00%	19.50%	26.50%	6.00%
64	15.00%	17.00%	17.00%	12.50%	16.50%	22.00%	13.00%	19.50%	31.50%	6.00%
65	100.00%	100.00%	100.00%	19.50%	28.00%	32.00%	25.50%	33.50%	42.00%	6.00%
66				27.50%	35.00%	38.00%	23.00%	36.50%	42.00%	6.00%
67				22.50%	25.00%	26.00%	21.00%	34.50%	42.00%	10.00%
68				19.50%	25.00%	26.00%	21.00%	28.00%	28.50%	10.00%
69				19.50%	25.00%	26.00%	21.00%	28.00%	28.50%	10.00%
70				100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Retirement from Dormant Status

Dormant members are assumed to retire at Normal Retirement Age (age 58 for Tier 1, age 60 for Tier 2, age 60 for Judges, and age 55 for Police & Fire) or at the first unreduced retirement age (30 years of service, or age 50 with 25 years of service for Police & Fire).

Lump Sum Option at Retirement

Members retiring may elect to receive a full or partial lump sum at retirement. The probability that a retiring member will elect a lump sum at retirement is summarized in the table below. These rates were first adopted effective December 31, 2016.

Lump Sum Option at Retirement	
Partial Lump Sum:	3.5% for all years
Total Lump Sum:	1.5% for 2018, declining by 0.5% per year until reaching 0.0%
No Lump Sum:	95.0% in 2018, increasing by 0.5% per year until reaching 96.5%

Purchase of Credited Service at Retirement

The following percentages of members are assumed to purchase credit for the six-month waiting period at retirement. These rates were first adopted effective December 31, 2016.

Purchase of Credited Service at Retirement	
Money Match Retirements:	0%
Non-Money Match Retirements:	65%

Judge Member Plan Election

All judge members are assumed to elect to retire under the provisions of Plan B.

Disability Assumptions

There are two disability assumptions used in the valuation - duty disability and ordinary disability. Duty disability rates are separated between Police & Fire and General Service, while ordinary disability is the same for all members. The rates for duty disability for General Service were first adopted effective December 31, 2014. The rates for duty disability for Police & Fire were first adopted effective December 31, 2012. The rates for ordinary disability were first adopted effective December 31, 2016.

	Percentage of the 1985 Disability Class 1 Rates
Duty Disability Police & Fire	20%
Duty Disability General Service	0.9%
Ordinary Disability	35% with 0.18% cap

Termination Assumptions

The termination assumptions were first adopted effective December 31, 2016, except for the Police & Fire and General Service females which were adopted effective December 31, 2014.

Termination Rates

Sample termination rates are shown for each group below:

Duration from Hire Date	School District Male	School District Female	General Service Male	General Service Female	Police & Fire
0	16.63%	13.50%	17.00%	18.50%	10.00%
1	14.25%	12.50%	15.33%	17.00%	5.97%
5	6.86%	7.13%	7.74%	9.29%	3.31%
10	3.31%	3.85%	4.15%	5.24%	2.23%
15	2.30%	2.68%	2.86%	3.66%	1.50%
20	1.62%	1.95%	2.07%	2.63%	1.01%
25	1.20%	1.50%	1.49%	1.89%	0.80%
30+	1.20%	1.50%	1.40%	1.50%	0.80%

For a complete table of rates, please refer to the 2016 Experience Study report for the System, published in July 2017.

Oregon Residency Post-Retirement

For purposes of determining eligibility for SB 656/HB 3349 benefit adjustments, 85% of retirees are assumed to remain Oregon residents after retirement.

Salary Increase Assumptions

The salary increase assumptions reflected in the actuarial valuation include:

- Merit scale increases in addition to the payroll growth increase
- Unused Sick Leave adjustments
- Vacation Pay adjustments

Merit Increases

Merit increases are based on duration of service for the following groups with sample rates shown in the following table. These rates were first adopted effective December 31, 2016, except for the school district assumption, which was adopted December 31, 2014.

Duration	School District	Other General Service	Police & Fire
0	3.53%	3.38%	4.44%
1	3.20%	3.05%	3.95%
5	2.01%	1.94%	2.39%
10	0.82%	0.99%	1.23%
15	-0.07%	0.43%	0.69%
20	-0.67%	0.14%	0.52%
25	-0.91%	0.02%	0.44%
30+	-0.94%	-0.04%	0.21%

The assumed merit increase for active judge members is 0.0%.

For a complete table of rates, please refer to the 2016 Experience Study for the System, published in July 2017.

Unused Sick Leave

Members covered by the provision allowing unused sick leave to be used to increase final average salary are assumed to receive increases in their final average salary in accordance with the table below. This adjustment is not applied to disability benefits. Effective dates for the current assumption are shown in the table.

Unused Sick Leave		Valuation year adopted
Actives		
• State General Service Male	6.25%	2010
• State General Service Female	3.75%	2010
• School District Male	7.50%	2016
• School District Female	5.75%	2012
• Local General Service Male	4.75%	2012
• Local General Service Female	3.25%	2014
• State Police & Fire	4.75%	2012
• Local Police & Fire	7.25%	2016
Dormant Members	3.25%	2016

Vacation Pay

Members eligible to receive a lump sum payment of unused vacation pay are assumed to receive increases in their final average salary in accordance with the table below. This adjustment is not applied to disability benefits. These rates were adopted December 31, 2016, except the school district rates which were adopted effective December 31, 2012.

Vacation Pay	
Tier 1	
• State General Service	2.00%
• School District	0.25%
• Local General Service	2.75%
• State Police & Fire	2.50%
• Local Police & Fire	3.75%
Tier 2	0.00%

Retiree Healthcare Participation

The following percentages of eligible retiring members are assumed to elect RHIPA and RHIA coverage:

Retiree Healthcare Participation	
RHIPA	
• 8 – 9 years of service	10.0%
• 10 – 14 years of service	10.0%
• 15 – 19 years of service	18.0%
• 20 – 24 years of service	23.0%
• 25 – 29 years of service	29.0%
• 30+ years of service	38.0%
RHIA	
• Healthy Retired	35.0%
• Disabled Retired	20.0%

The RHIA disabled retired rate was first adopted December 31, 2008. The RHIA healthy retired rate and RHIPA rates for 20 to 24 years of service were adopted December 31, 2016. RHIPA Rates up through 14 years of service were first adopted effective December 31, 2012. All other RHIPA rates were first adopted effective December 31, 2014.

OPSRP

Most of the methods and assumptions adopted for the OPSRP valuation are the same as those used for Tier 1/Tier 2. The methods and assumptions that differ for OPSRP are summarized below. The Board adopted the following methods, procedures and assumptions for the December 31, 2016 and December 31, 2017 actuarial valuations.

Actuarial Methods and Valuation Procedures

OPSRP UAL amortization	The UAL as of December 31, 2007 is amortized as a level percentage of projected combined valuation payroll (Tier 1/ Tier 2 plus OPSRP payroll) over a closed period 16 year period. Gains and losses between subsequent odd-year valuations are amortized as a level percentage of combined valuation payroll over 16 years from the valuation in which they are first recognized.

Economic Assumptions

Administrative expenses	$6.5 million per year is added to the normal cost.

Demographic Assumptions

Retirement Assumptions

Rates of Retirement from Active Status

	Police & Fire			General Service			School Districts		
Age	< 13 yrs	13-24 yrs	25+ yrs	< 15 yrs	15-29 yrs	30+ yrs	< 15 yrs	15-29 yrs	30+ yrs
50	0.50%	1.50%	5.50%						
51	0.50%	1.50%	5.50%						
52	0.50%	1.50%	5.50%						
53	0.50%	1.50%	25.00%						
54	0.50%	1.50%	17.50%						
55	2.00%	5.00%	23.50%	1.00%	2.50%	5.00%	1.00%	2.50%	5.00%
56	2.00%	5.00%	23.50%	1.00%	2.50%	5.00%	1.00%	2.50%	5.00%
57	2.00%	5.00%	23.50%	1.00%	2.50%	7.50%	1.00%	2.50%	7.50%
58	4.00%	5.00%	23.50%	1.50%	3.00%	30.00%	1.50%	3.00%	30.00%
59	4.00%	5.00%	23.50%	2.00%	3.00%	25.00%	1.50%	3.00%	25.00%
60	4.00%	15.00%	23.50%	3.00%	3.75%	20.00%	2.50%	3.75%	20.00%
61	4.00%	8.50%	23.50%	3.00%	5.00%	20.00%	3.00%	5.00%	20.00%
62	10.00%	25.00%	38.00%	8.00%	12.00%	30.00%	6.00%	12.00%	30.00%
63	7.00%	17.00%	38.00%	7.00%	10.00%	20.00%	6.00%	10.00%	20.00%
64	7.00%	17.00%	17.00%	7.00%	10.00%	20.00%	6.00%	10.00%	20.00%
65	100.00%	100.00%	100.00%	13.00%	35.00%	20.00%	11.50%	35.00%	20.00%
66				15.50%	33.00%	20.00%	12.50%	33.00%	20.00%
67				15.50%	22.00%	30.00%	11.00%	22.00%	30.00%
68				13.00%	17.00%	20.00%	9.00%	17.00%	20.00%
69				13.00%	17.00%	20.00%	9.00%	17.00%	20.00%
70				100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Retirement from Dormant Status

Dormant members are assumed to retire at their Normal Retirement Age.

Changes in Actuarial Methods and Assumptions — Tier 1/Tier 2 and OPSRP

A summary of key changes implemented since the December 31, 2016 valuation are described briefly below.

Changes in Actuarial Methods and Allocation Procedures

There were no changes to actuarial methods and procedures since the December 31, 2016 valuation.

Changes in Economic Assumptions

There were no changes to economic assumptions since the December 31, 2016 valuation.

Changes in Demographic Assumptions

There were no changes to demographic assumptions since the December 31, 2016 valuation.

Summary of Plan Provisions

Summary of Plan Provisions

The following section summarizes the plan provisions considered in the actuarial valuation. A more detailed description of plan provisions is available from PERS.

Membership	All employees of public employers participating in this System who are in qualifying positions become members of the System after completing six months of service except those who are eligible for and have elected to participate in an optional retirement plan. Different benefit provisions of the plan apply based on date of hire.	
	Tier 1	Hired prior to 1996
	Tier 2	Hired after 1995 and before August 29, 2003
	OPSRP	Hired after August 28, 2003, and neither a judge nor a former Tier 1/Tier 2 member eligible to reestablish Tier 1/Tier 2 membership
	Judges	Members of the State Judiciary
Member Contributions	**Judges**	7% of salary
	All others	None
Employer Contributions	Set by the PERS Board based on actuarial calculations that follow Board rate-setting policies for employers.	

Summary of Chapter 238 Provisions — Tier 1/Tier 2 and Judges

Normal Retirement Date	**Police and Fire**	Age 55
	Judges	Age 65
	Tier 1 General Service	Age 58
	Tier 2 General Service	Age 60

Normal Retirement Allowance

For Members who are not Judges, the greatest of the Full Formula benefit, the Money Match benefit, or the Formula Plus Annuity benefit (only available to Members who made contributions before August 21, 1981). For Members with 15 or more years of creditable service, the benefit will not be less than the minimum service retirement allowance of $100 per month, as described in ORS 238.310.

Full Formula The percentage multiplier from the table below multiplied by final average salary and years of creditable service plus a prior service pension, if applicable.

Percentage Multiplier	Membership Classification
2.00%	Fire, Police and Legislators
1.67%	All other members

Money Match The Member's account balance and a matching employer amount converted to an actuarially equivalent annuity.

Formula Plus Annuity The Member's account balance converted to an actuarially equivalent cash refund annuity plus the percentage multiplier from the table below multiplied by final average salary and years of creditable service, plus a prior service pension, if applicable.

Percentage Multiplier	Membership Classification
1.35%	Fire, Police and Legislators
1.00%	All other members

Normal Retirement Allowance (continued)	**Judges**	Final average salary multiplied by the first percentage multiplier from the table below for up to 16 years of service plus the second percentage multiplier for any service in excess of 16 years, but not to exceed the maximum percentage of final average salary also shown below. Judges must elect Plan A or Plan B no later than age 60. A "Plan B" judge must serve as a pro tem judge for a total of 175 days postretirement.

Plan	Percentage Factor (up to 16 years)	Percentage Factor (after 16 years)	Maximum Percentage of Final Average Salary
A	2.8125%	1.67%	65%
B	3.75%	2.00%	75%

Final Average Salary

The greater of:

- Average salary earned during the three calendar years in which the member was paid the highest salary, even if one of those years is less than a full calendar year.
- Total salary earned over the last 36 months of employment divided by the actual months of service during that 36 month period.

Covered salary for this purpose includes the value of member contributions assumed and paid by employers, any payment due to an employer's participation in the Unused Sick Leave program, and, for Tier 1 members, lump sum payment of unused vacation time.

Creditable Service

The number of years and months an active Member is paid a salary by a participating PERS employer and PERS benefits are being funded.

Prior Service Pension

Benefits payable on account of Prior Service Credit for a member's service with a participating employer prior to the employer's participation in PERS, as described in ORS 238.442.

SB 656/HB 3349 Adjustment

All members receive an increase to their monthly retirement benefit equal to the greater of the increase under Senate Bill 656 (SB 656) or House Bill 3349 (HB 3349). The adjustment for SB 656 only applies to members who established membership prior to July 14, 1995. Senate Bill 822, enacted in 2013, limits eligibility for these adjustments to only PERS beneficiaries who pay Oregon state income tax.

SB 656 Increase

Years of Service	General Service	Police & Fire
0-9	0.0%	0.0%
10-14	1.0	1.0
15-19	1.0	1.0
20-24	2.0	2.5
25-29	3.0	4.0
30 & Over	4.0	4.0

HB 3349 Increase

$$\left(\frac{1}{1 - \text{maximum Oregon personal income tax rate (limited to 9\%)}} - 1\right) \times \frac{\text{Service prior to October 1, 1991}}{\text{All Service}}$$

Early Retirement Eligibility	**Police and Fire**	Age 50 or 30 years of service
	Judges	Age 60
	General Service	Age 55 or 30 years of service
Early Retirement Allowance	Normal retirement allowance, actuarially reduced to early retirement age. However, there is no reduction applied if a member has completed 30 years of service (25 years for police & fire members) or for judges in Plan B.	
Vesting	Contributions made in any part of five calendar years or attainment of age 50 (45 for police & fire) while working in a qualifying position.	
Termination Benefits	**Non-Vested**	Payment of member's account balance.
	Vested	Same as normal (or early) retirement allowance, but commencement is deferred to normal (or early) retirement date.
Optional Forms of Retirement Allowance	The normal form of benefit is a cash refund annuity (joint and two-thirds survivor contingent annuity for a married judge). All optional amounts are adjusted to be actuarially equivalent. **Options Available** • Life annuity • Cash refund annuity • Life annuity guaranteed 15 years • Joint and 50% or 100% survivor contingent annuity, with or without pop-up feature • Partial Lump Sum: Refund of member contribution account balance plus a pension (under any optional form) of employer-paid portion of the Full Formula or Money Match annuity. • Total Lump Sum: Refund of member contribution account plus a matching employer amount.	
Preretirement Death Benefit Eligibility	**Judges**	Six or more years of service.
	All others	Death occurring while the member is an employee of a participating employer or within 120 days of termination provided the employee does not withdraw the account balance or retire, or a result of injuries received while in the service of a participating employer.
Preretirement Death Benefit	**Judges**	The spouse shall receive a life pension equal to two-thirds of the service retirement allowance. The beneficiary of an unmarried judge shall receive the member's accumulated contributions with interest.
	All others	The member's account balance plus a matching employer amount.
Additional Police & Fire Death Benefits	Upon the death of a retired police officer or firefighter, the surviving spouse or dependent children under age 18 will receive a monthly benefit based on 25% of the cash refund retirement allowance due to police and fire service.	
Disability Benefit Eligibility	**Duty**	Disablement occurring as a direct result of a job-related injury or illness, regardless of length of service.
	Non-Duty	Disablement occurring after ten years of service (six years, if a judge), but prior to normal retirement eligibility.

Disability Benefits	The normal retirement allowance calculated based on the service credit that would have been earned if the member had continued working to age 58 (age 55 for police and fire, age 65 for judge members) payable commencing immediately. **Fire and Police Members' Alternative** In lieu of the above, firefighters and police officers who qualify for duty disability may elect to receive a benefit of 50% of final average monthly salary at the time of disablement. **Minimum Monthly Retirement Allowance** Judges .... 45% of final average monthly salary. All others .... \$100 for a member with at least 15 years of creditable service, actuarially reduced if an optional form of benefit is chosen. **Reduction of Benefits** Whenever a disabled employee's disability benefit and earned income for any month exceed the monthly salary received at the time of disablement or \$400, if greater, the disability benefit will be reduced by the excess. For Tier Two members, the disability benefit may not exceed the member's salary at the time of disablement.
Waiting Time Service Purchases	Members with at least 10 years of combined credited and/or prior service under PERS may elect to purchase service credit for the six-month "waiting time" period worked prior to establishing membership in the system. The waiting time purchase is interest-free and must be purchased in one payment prior to retirement.
Police & Fire Unit Purchases	Police & fire members may purchase 60-month annuity benefits (up to \$80 per month) that must be paid out by age 65 and cannot commence prior to the earliest retirement age. The amount purchased by the member is matched by the employer. In certain situations, such as termination of employment prior to retiring, or working beyond age 65, the employer's matching purchase is forfeited.
Automatic Postretirement Cost of Living Adjustments (COLAs)	All monthly pension and annuity benefits except unit purchases are eligible for postretirement adjustments. As a result of the Senate Bills 822 and 861 and the Oregon Supreme Court decision in *Moro v. State of Oregon*, automatic postretirement adjustments are based on a blended COLA as described below. **Automatic COLA prior to SB 822 and SB 861**: Benefits were adjusted annually to reflect the increase or decrease in the Consumer Price Index (Portland area - all items) as published by the Bureau of Labor Statistics. The maximum adjustment to be made for any year was 2% of the previous year's benefit. Any CPI change in excess of the limit was accumulated for future benefit adjustments which would otherwise be less than the limit. No benefit was decreased below its original amount. **Automatic Adjustments Provided by Senate Bills 822 and 861**: This legislation, passed in 2013, provided for that benefits would be increased annually based on a marginal rate schedule. The increase is calculated as 1.25% on the first \$60,000 of annual benefit and 0.15% on amounts above \$60,000 of annual benefit.

	Blended COLA after *Moro* decision	The Supreme Court decision in *Moro* requires that members "will be entitled to receive during retirement a blended COLA rate that reflects the different COLA provisions applicable to benefits earned at different times." The Supreme Court did not articulate a specific methodology for determining the blended COLA. For purposes of this valuation, we have determined the blend based on creditable service earned before and after October 2013. This approach is consistent with OAR 459-005-0510 adopted by the PERS Board in September 2015.
Ad Hoc Adjustments	From time to time, as granted by the Legislature, retired members and beneficiaries have received increases in their monthly benefits.	
Variable Annuity Program	**Contributions**	Prior to January 1, 2004, a member could elect to have 25, 50 or 75 percent of his or her contributions invested in the variable account.
	Benefit	At retirement, a member may elect to receive a variable annuity with the funds accumulated in his or her variable account. Alternatively, a member may elect to have all or a portion of the funds in his or her variable account transferred back to the regular account and receive an annuity from the System as though no variable annuity program existed. The employer-provided benefit, however, is based on the earnings the member would have received in the regular account.
Interest Credit on Member Accounts	**Tier 1 Regular**	Actuarially assumed rate of return until the rate guarantee reserve has been fully funded for three consecutive years and the Board elects to credit additional interest.
	Tier 2 Regular	Amount determined by the Board based on actual investment earnings of the regular account.
	Variable	Actual earnings in variable account.
Retiree Healthcare – Medicare Supplement (RHIA)	**Retiree Eligibility**	All of the following must be met: (a) Currently receiving a retirement allowance from the System, (b) Covered for eight years before retirement, (c) Enrolled in a PERS-sponsored health plan, and (d) Enrolled in both Medicare Part A and Part B.
	Surviving Spouse or Dependent Eligibility	A surviving spouse or dependent of a deceased RHIA-eligible retiree is eligible for RHIA benefits if they are enrolled in both Medicare Part A and Part B, and *either* of the following criteria are met: (a) Currently receiving a retirement allowance from the System, or (b) The surviving spouse or dependent was covered under the eligible retiree's PERS-sponsored health insurance at the time of the retiree's death and the deceased retiree retired before May 1, 1991.

	Benefit Amount	A monthly contribution of up to $60 per retiree is applied to PERS-sponsored Medicare supplemental insurance costs.
Retiree Healthcare – Under Age 65 (RHIPA)	**Retiree Eligibility**	Retired PERS members who were state employees at the time of retirement, are enrolled in a PERS-sponsored health plan, and are not eligible for Medicare.
	Surviving Spouse or Dependent Eligibility	A surviving spouse or dependent of a deceased RHIPA-eligible retiree is eligible for RHIPA benefits if they are not yet eligible for Medicare, and *either* of the following criteria are met: (a) Currently receiving a retirement allowance from the System, or (b) The surviving spouse or dependent was covered under the eligible retiree's PERS-sponsored health plan at the time of the retiree's death and the deceased retiree retired on or after September 29, 1991.
	Benefit	A percentage (as shown in the table below) of the maximum monthly subsidy based on years of service. The maximum monthly subsidy is calculated annually as the average difference between the health insurance premiums paid by active state employees and the premium retirees would pay if they were rated separately from active state employees. The maximum monthly subsidy for 2018 is $385.35 per month.

Years of Service with State Employer	Subsidized Amount
Under 8	0%
8-9	50%
10-14	60%
15-19	70%
20-24	80%
25-29	90%
30 & Over	100%

Changes in Plan Provisions	There were no changes in the Tier 1/Tier 2 benefit provisions reflected since the December 31, 2016 actuarial valuation.

Summary of Chapter 238A Provisions — OPSRP

Normal Retirement Date	**Police & Fire**	Age 60 or age 53 with 25 years of retirement credit
	General Service	Age 65 or age 58 with 30 years of retirement credit
	School Districts	Age 65 or age 58 with 30 calendar years of active membership
Normal Retirement Allowance	A single life annuity equal to final average salary times years of retirement credit attributable to service as fire and police times 1.8% plus final average salary times all other years of retirement credit times 1.5%	
Final Average Salary	The greater of: • Average salary earned during the three calendar years in which the member was paid the highest salary, even if one of those years is less than a full calendar year. • Total salary earned over the last 36 months of employment divided by the actual months of service during that 36 month period. Covered salary for this purpose includes base pay, plus overtime up to an average amount, plus bonuses, plus member contributions paid by the employer on a salary reduction basis. Excludes payments of unused vacation or accumulated sick leave at retirement, and member contributions "assumed and paid" by the employer.	
Early Retirement Eligibility	**Police & Fire**	Age 50 and 5 years of vesting service
	General Service	Age 55 and 5 years of vesting service
Early Retirement Allowance	Normal retirement allowance, actuarially reduced to early retirement age.	
Vesting	Five years or attainment of normal retirement age.	
Vested Termination Benefit	Same as normal (or early) retirement allowance, but commencement is deferred to normal (or early) retirement date.	
Optional Forms of Retirement Benefit	The normal form of benefit is a life annuity. All optional amounts are adjusted to be actuarially equivalent. **Options Available** • Life annuity • Joint and 50% or 100% survivor contingent benefit, with or without pop-up feature • Lump sum if monthly normal retirement benefit is less than $200 or if lump sum value is less than $5,000.	
Preretirement Death Benefit Eligibility	Death of a vested member before retirement benefits begin.	
Preretirement Death Benefit	If member was eligible for early retirement, the actuarial equivalent of 50% of the early retirement benefit the participant was eligible to receive at date of death. If member was not eligible for early retirement, the actuarial equivalent of 50% of the early retirement benefit the participant would have been eligible to receive if he terminated employment on his date of death and retired at the earliest possible date.	

Disability Benefit Eligibility	**Duty**	Disablement occurring as a direct result of a job-related injury or illness, regardless of length of service.
	Non-Duty	Disablement occurring after ten years of service, but prior to normal retirement eligibility.
Disability Benefit Amounts	**Preretirement Benefit**	45% of salary during last full month of employment before disability, reduced if the total benefit exceeds 75% of salary. Benefit is payable monthly until normal retirement age.
	Retirement Benefit	Same formula as Normal Retirement Benefit, except: Final average salary is adjusted to reflect cost-of-living increases from date of disability to normal retirement age, and Retirement credits continue to accrue from date of disability to normal retirement age.
Postretirement Adjustments	All monthly pension and annuity benefits except unit purchases are eligible for postretirement adjustments. As a result of the Senate Bills 822 and 861 and the Oregon Supreme Court decision in *Moro v. State of Oregon*, automatic postretirement adjustments are based on a blended COLA as described below.	
	Automatic COLA prior to SB 822 and SB 861	Benefits were adjusted annually to reflect the increase or decrease in the Consumer Price Index (Portland area - all items) as published by the Bureau of Labor Statistics. The maximum adjustment to be made for any year was 2% of the previous year's benefit. Any CPI change in excess of the limit was accumulated for future benefit adjustments which would otherwise be less than the limit. No benefit was decreased below its original amount.
	Automatic Adjustments Provided by Senate Bills 822 and 861	This legislation, passed in 2013, provided for that benefits would be increased annually based on a marginal rate schedule. The increase is calculated as 1.25% on the first $60,000 of annual benefit and 0.15% on amounts above $60,000 of annual benefit.
Changes in Plan Provisions	There were no changes in the OPSRP benefit provisions reflected since the December 31, 2016 actuarial valuation.	

Glossary

Glossary

Actuarial Accrued Liability. The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value. The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions. Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method. Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded accrued liability.

Actuarial Gain or (Loss). A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll. Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1, Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Employer Contribution Rate. Consists of the normal cost rate and the UAL rates, plus adjustments for items such as side account rate offsets.

Fundamental Cost Equation. An expression of the long-term cost of a pension plan, which states that:

Benefits + Expenses = Contributions + Investment Earnings

Funded Status. The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost. The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll. Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

Pre-SLGRP Liability/(Surplus). The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability/(Surplus). The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value. Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Present Value of Future Normal Cost (PVFNC). The present value (as of the valuation date) of all future annual normal costs for current members expected to be allocated to future years in accordance with the actuarial cost method in use. By definition, this is equal to the difference between the total actuarial present value of benefits less the actuarial accrued liability under the actuarial cost method.

Rate Collar. A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI). Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 67 of the Governmental Accounting Standards Board (GASB 67). The accounting standard establishing financial reporting standards for defined benefit pension plans. The standard replaced GASB Statement 25 for plan fiscal years beginning after June 15, 2013.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68). The accounting standard governing a governmental employer's accounting for pensions. The standard replaced GASB Statement 27 for employer fiscal years beginning after June 15, 2014.

Statement No. 74 of the Governmental Accounting Standards Board (GASB 74). The accounting standard establishing financial reporting standards for post-employment benefits other than pensions. The standard replaced GASB Statement 43 for plan fiscal years beginning after June 15, 2016.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75). The accounting standard governing a governmental employer's accounting for post-employment benefits other than pensions. The standard replaced GASB Statement 45 for employer fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll. Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate Tier 1/Tier 2 normal cost rates.

Total Actuarial Present Value of Benefits. Sometimes referred to simply as "Present Value of Benefits" (PVB) or "Total Liability", the present value of all prospective benefits projected to be paid to current plan members. This amount is equal to the sum of the actuarial accrued liability and the present value of future normal costs, and is unaffected by the choice of actuarial cost method.

Transition Liability/(Surplus). The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool. The initial balance of liability or surplus is calculated at the time employer joins the pool. That balance is then amortized over time via employer contribution rate charges (for a liability) or rate offsets (for a surplus).

Unfunded Accrued Liability (UAL). The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial, pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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March 1, 2019

Ms. Debra Hembree
Actuarial Services Coordinator
Oregon PERS

Re: Request Number 2018-008: Financial modeling for School District Pool

Dear Debra:

As requested, this letter provides a 20-year projection of collared base rates for the School District Pool using a similar approach and format as shown on a system-wide basis under the "steady return" model in our December 2018 financial modeling. (See slide 6 of our December 7, 2018 presentation to the PERS Board.)

The projections are shown on the three attached exhibits, and depict projected School District Pool collared base contribution rates under the following parameters:

- The current biennial rate-setting structure and methodology is unchanged in the future, including the application of the rate collar.
- The Board-selected assumed rate remains at 7.2% throughout the projection period.
- Three scenarios of steady actual future asset returns are illustrated: 7.2%, 7.0%, and 6.7%.

Each of the three exhibits show variations of this projection under a different starting point for 2018 asset returns:

- **Exhibit 1**: Regular account asset return of +1.51% through October 2018, then three scenarios of actual future asset returns (7.2%, 7.0%, or 6.7% per year) thereafter are modeled
    - o Reflects published OPERF regular account return through October 2018
    - o Parallels the basis used for the December 2018 financial modeling, and is included for comparison to that presentation, which showed financial projections at a system-average level, rather than the School District Pool level shown in this analysis.
- **Exhibit 2**: Regular account asset return of +0.48% for 2018, then three scenarios of actual future asset returns (7.2%, 7.0%, or 6.7% per year) thereafter are modeled
    - o Reflects published OPERF calendar year 2018 returns
- **Exhibit 3**: Regular account asset return of -4.00% for 2018, then three scenarios of actual future asset returns (7.2%, 7.0%, or 6.7% per year) thereafter are modeled
    - o Because the private equity portion of OPERF is reported on a three-month lag, any losses on private equity from the market downturn in the fourth quarter of 2018 are not reflected in the published calendar year 2018 return of +0.48%.

> The 2018 return for the portfolio excluding private equity was approximately -4.00%, and is used to illustrate the sensitivity of this projection to a single year's actual asset return.

The projections shown here represent only a limited amount of sensitivity regarding potential actual future asset returns and contribution rates. Actual future asset returns will not be steady year-to-year, and the December financial modeling presentation should be referenced for illustrations of more realistic variable future asset returns over time and the resulting likelihood ranges of potential future changes in contribution rates.

The projected School District Pool collared base rates shown in the attached exhibits are calculated based on the potential actual future asset returns described above, with no changes to assumptions or methods (including the Board-selected 7.2% assumed rate) over the projection period, and future demographic experience matching current demographic assumptions during the projection period. **To the extent that actual future experience differs from current actuarial valuation assumptions and/or the PERS Board changes assumptions or methods, contribution rates will differ, potentially significantly, from the projections shown in this letter.**

DATA, METHODS, ASSUMPTIONS, AND PROVISIONS

Other than the exceptions and additions discussed in this letter, the data, methods, assumptions, and plan provisions used to calculate employer contribution rates are the same as those used in the OPERS December 31, 2017 Actuarial Valuation published on September 28, 2018, and in our December 2018 presentation to the PERS Board. Those reports, including discussion regarding the limitations of use of an actuarial valuation and the variability of future results, are incorporated by reference.

ACTUARIAL BASIS AND QUALIFICATIONS

Our analysis and conclusions are based on our understanding of the request and the data, methods and assumptions described above. Differences in the data, methods, assumptions and interpretations of the plan provisions may produce different results.

In preparing this letter and the valuation report on which it is based, we relied, without audit, on information (some oral and some in writing) supplied by Oregon PERS. This information includes, but is not limited to, statutory provisions, employee data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While the valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this estimate due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted the assumptions used in the December 31, 2017 valuation at its July 2017 meeting.

Actuarial computations presented in this estimate are for purposes of providing a high-level analysis of the requested policy scenarios to the System. As such, they cannot be relied upon for financial reporting or other purposes, and calculations for purposes other than this use may be significantly different from the estimates contained in this letter. Accordingly, additional determinations may be needed for other purposes.

Milliman's work is prepared solely for the use of Oregon PERS. To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product.

No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

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.

The signing actuaries are 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, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

If you have any questions or need any additional information, please let us know.

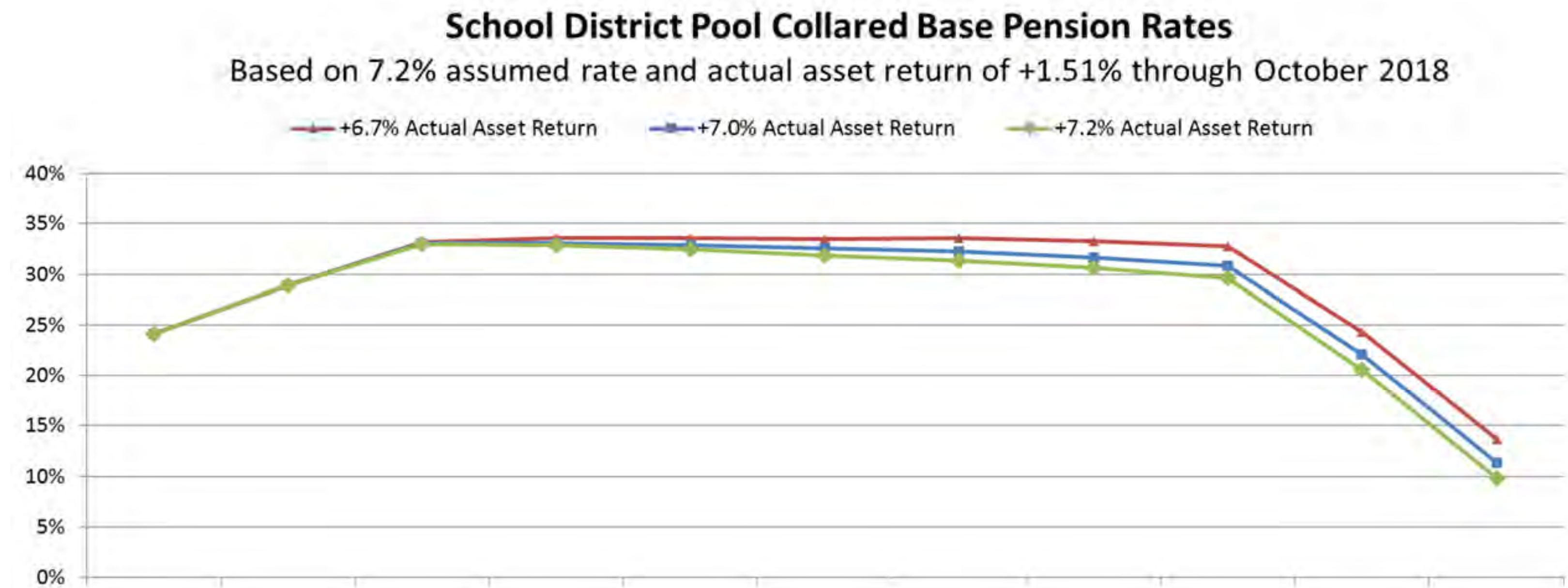
Sincerely,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

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

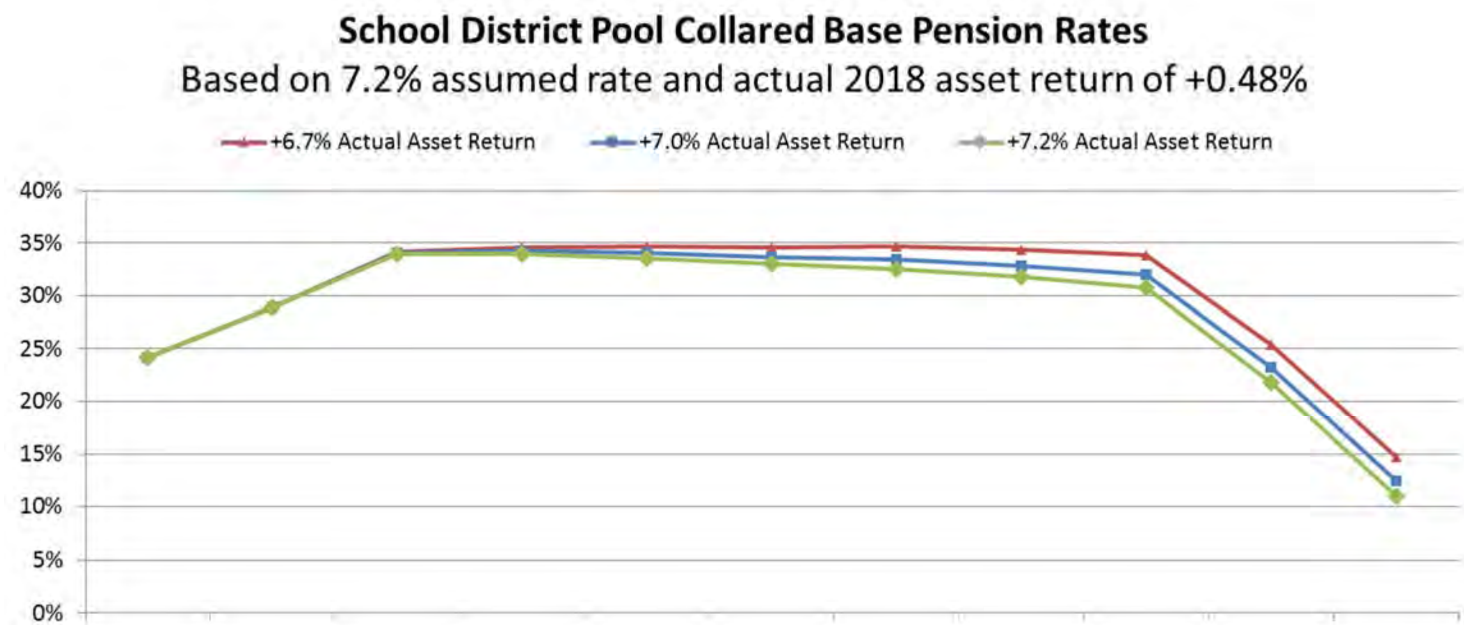
MRL:sdp

Exhibit 1: Reflects published actual asset return through October 2018 of +1.51%



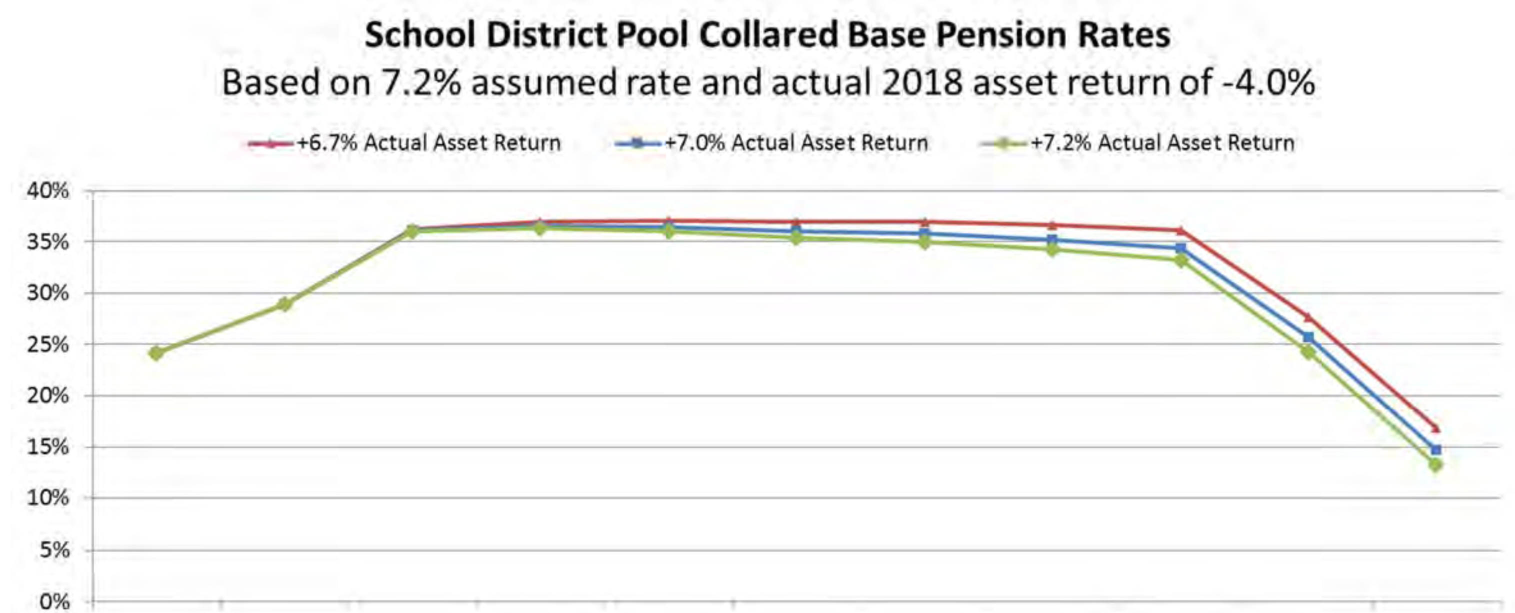
Actual annual asset return after October 2018	2017-2019	2019-2021	2021-2023	2023-2025	2025-2027	2027-2029	2029-2031	2031-2033	2033-2035	2035-2037	2037-2039
+7.2% actual return	24.15%	28.93%	32.93%	32.81%	32.41%	31.80%	31.36%	30.59%	29.57%	20.61%	9.82%
+7.0% actual return	24.15%	28.93%	33.03%	33.09%	32.89%	32.49%	32.24%	31.67%	30.86%	22.10%	11.38%
+6.7% actual return	24.15%	28.93%	33.17%	33.51%	33.60%	33.49%	33.55%	33.26%	32.74%	24.28%	13.65%

Exhibit 2: Reflects published OPERF calendar year 2018 actual asset return of +0.48%

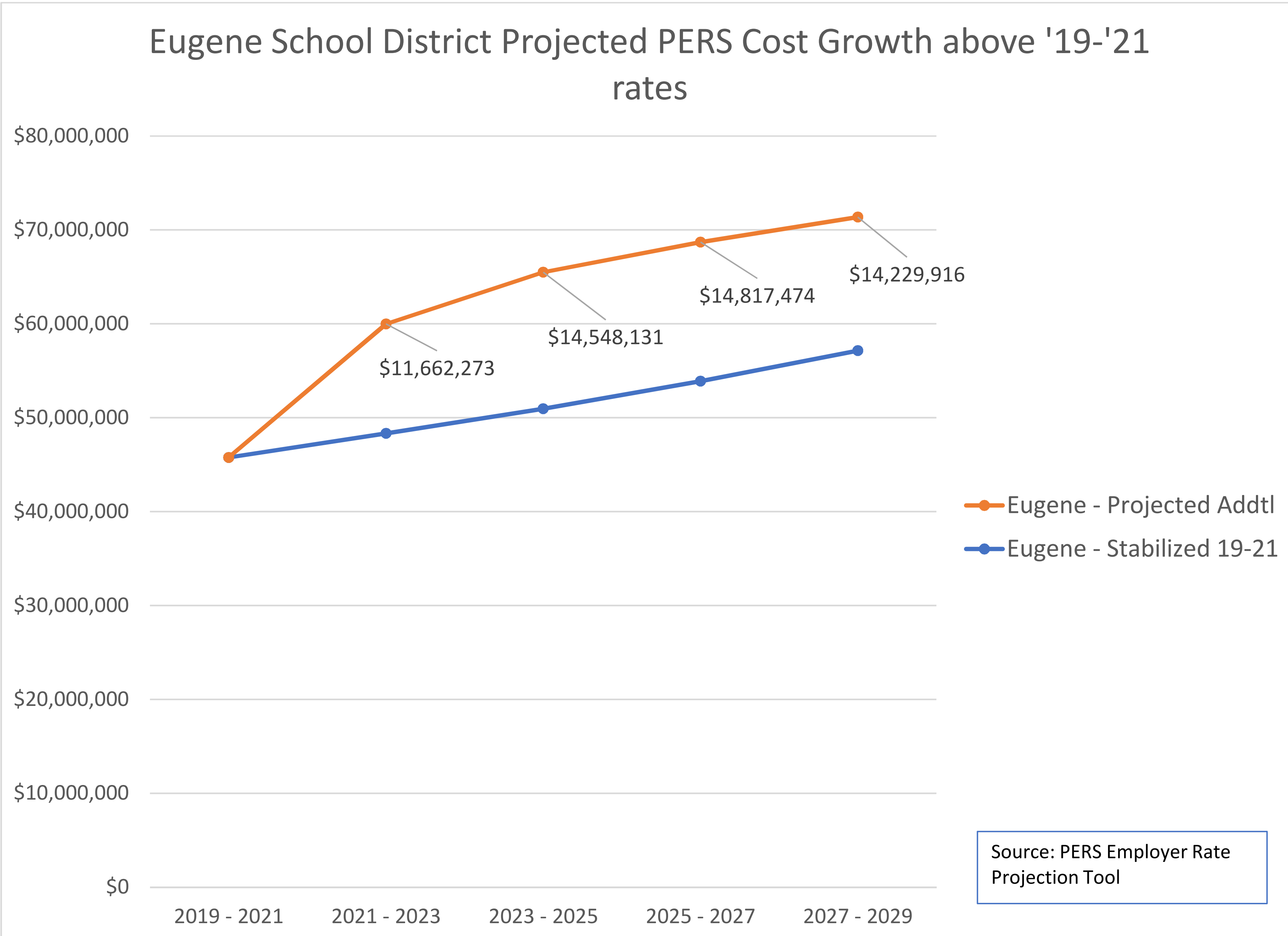


Actual annual asset return after October 2018	2017-2019	2019-2021	2021-2023	2023-2025	2025-2027	2027-2029	2029-2031	2031-2033	2033-2035	2035-2037	2037-2039
+7.2% actual return	24.15%	28.93%	33.95%	33.96%	33.58%	33.00%	32.56%	31.79%	30.78%	21.82%	10.95%
+7.0% actual return	24.15%	28.93%	34.03%	34.22%	34.03%	33.64%	33.40%	32.84%	32.03%	23.27%	12.47%
+6.7% actual return	24.15%	28.93%	34.16%	34.61%	34.71%	34.59%	34.64%	34.36%	33.83%	25.38%	14.68%

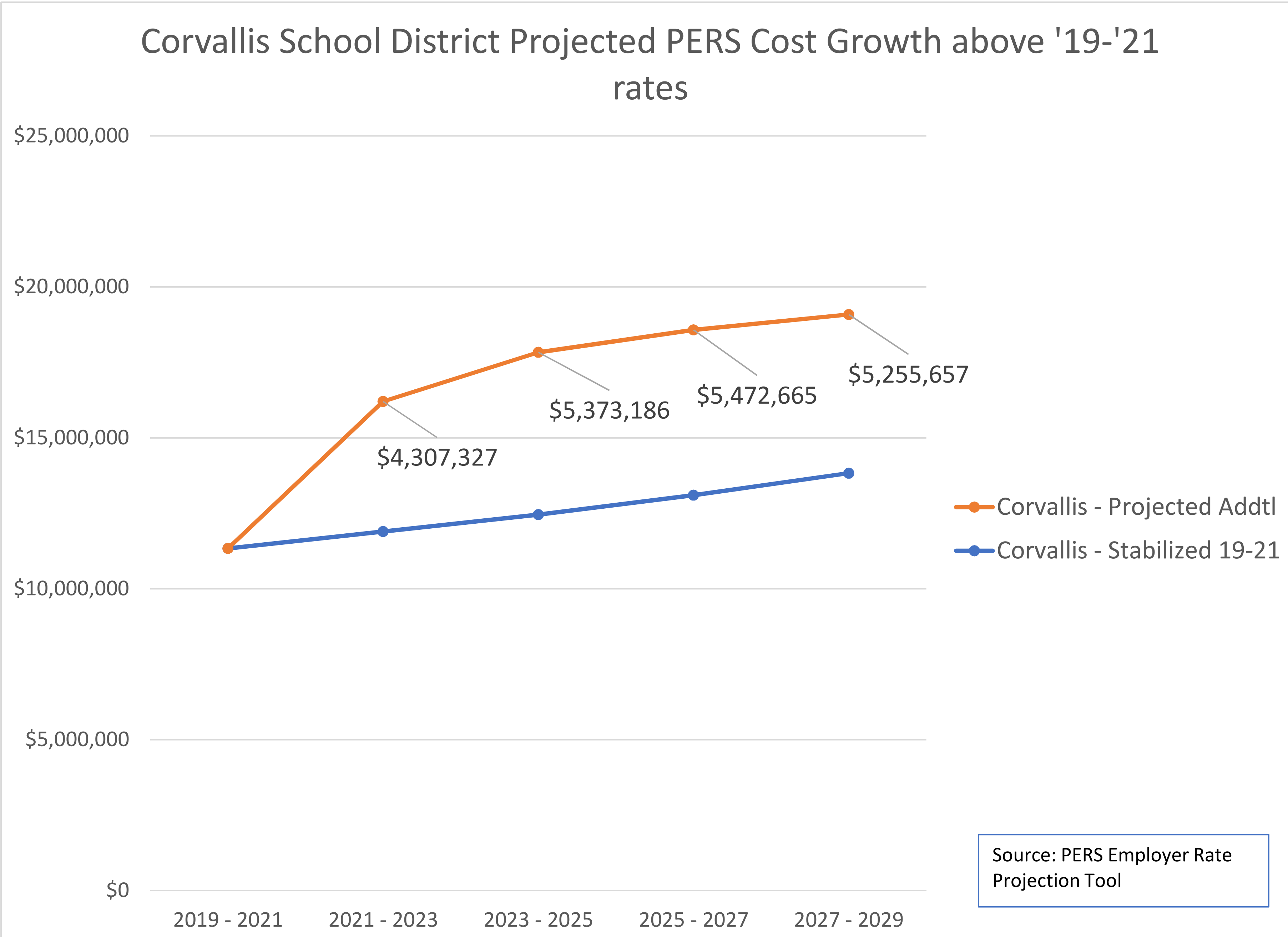
Exhibit 3: Reflects illustrative calendar year 2018 actual return of -4.0%



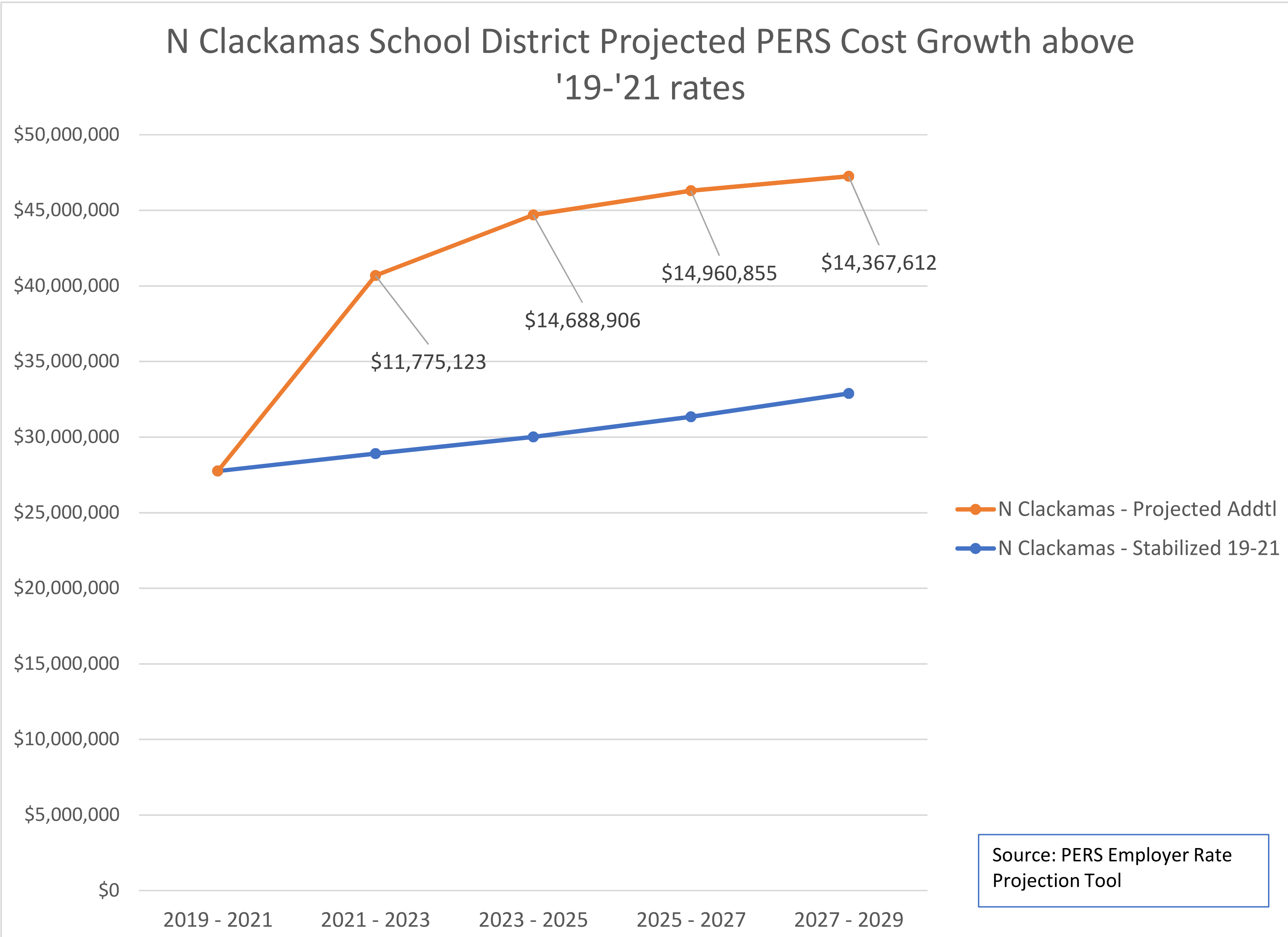
Actual annual asset return after October 2018	2017-2019	2019-2021	2021-2023	2023-2025	2025-2027	2027-2029	2029-2031	2031-2033	2033-2035	2035-2037	2037-2039
+7.2% actual return	24.15%	28.93%	36.04%	36.30%	35.97%	35.39%	34.99%	34.23%	33.22%	24.27%	13.24%
+7.0% actual return	24.15%	28.93%	36.13%	36.55%	36.40%	36.01%	35.78%	35.22%	34.41%	25.67%	14.70%
+6.7% actual return	24.15%	28.93%	36.24%	36.92%	37.04%	36.92%	36.97%	36.68%	36.15%	27.70%	16.83%

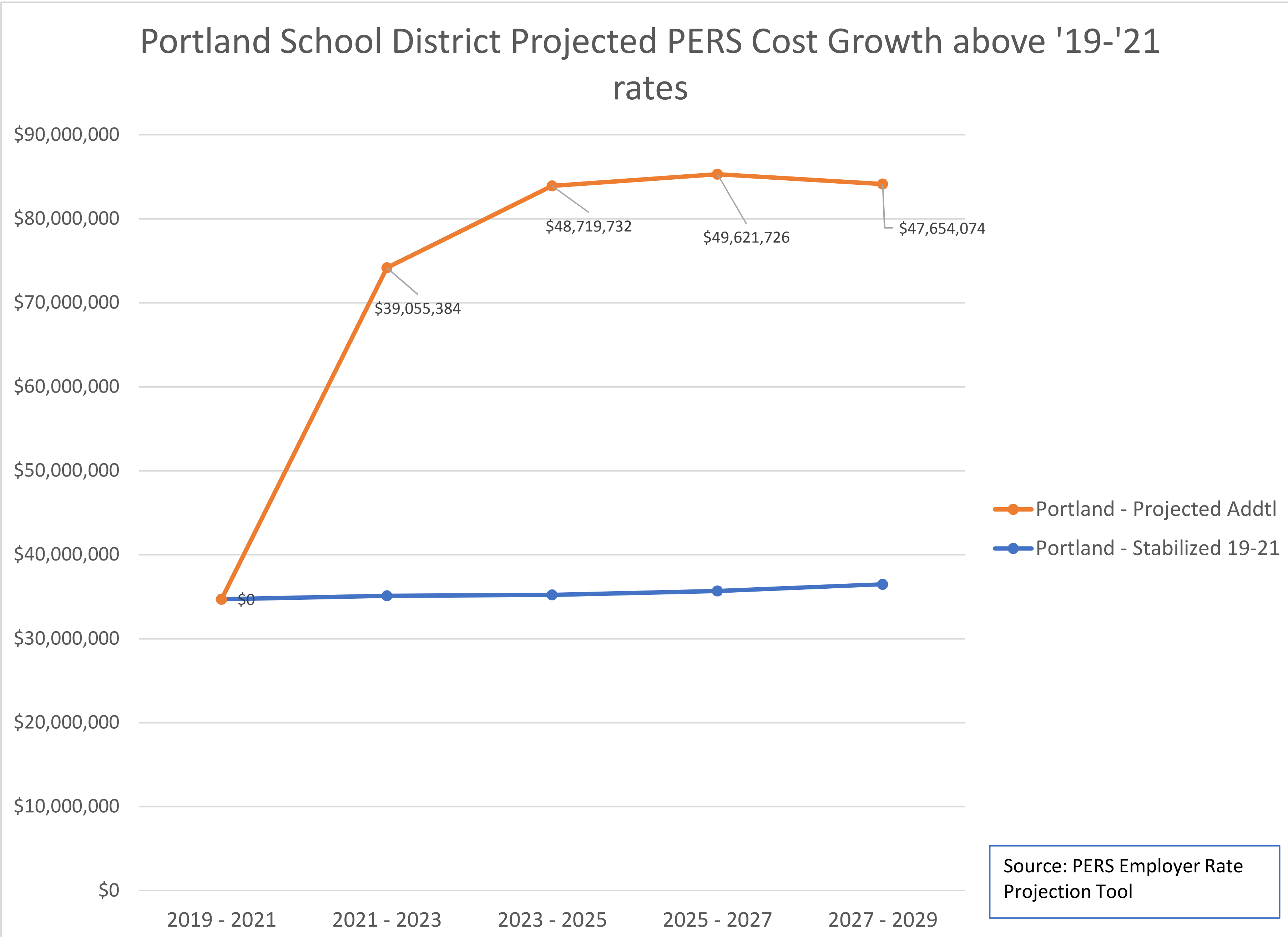


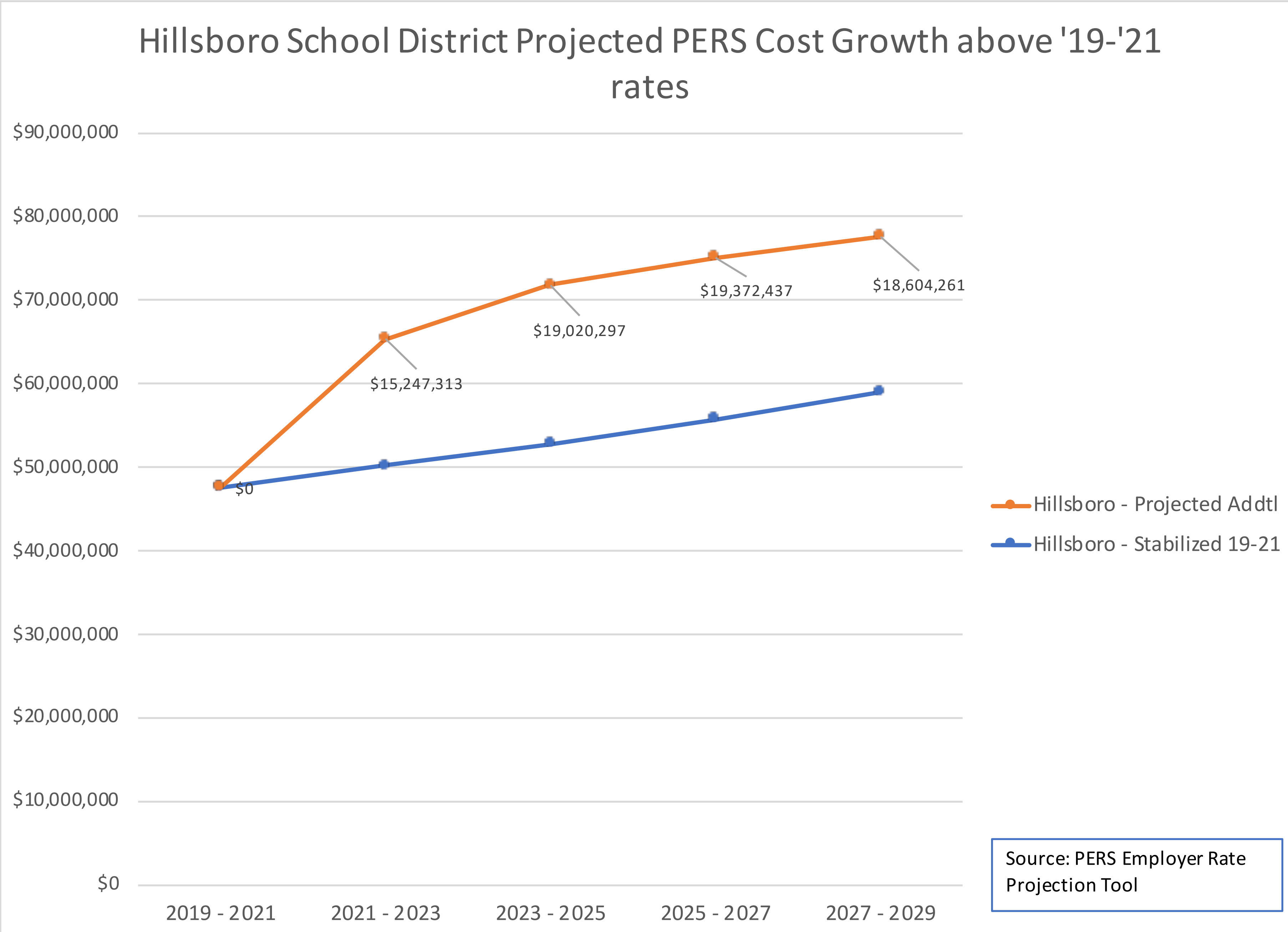
Eugene School District Projected PERS Cost Growth above '19-'21 rates
$80,000,000
$70,000,000
$60,000,000
$50,000,000
$40,000,000
$30,000,000
$20,000,000
$10,000,000
$0
$11,662,273
$14,548,131
$14,817,474
$14,229,916
2019 - 2021
2021 - 2023
2023 - 2025
2025 - 2027
2027 - 2029
Eugene - Projected Addtl
Eugene - Stabilized 19-21
Source: PERS Employer Rate Projection Tool

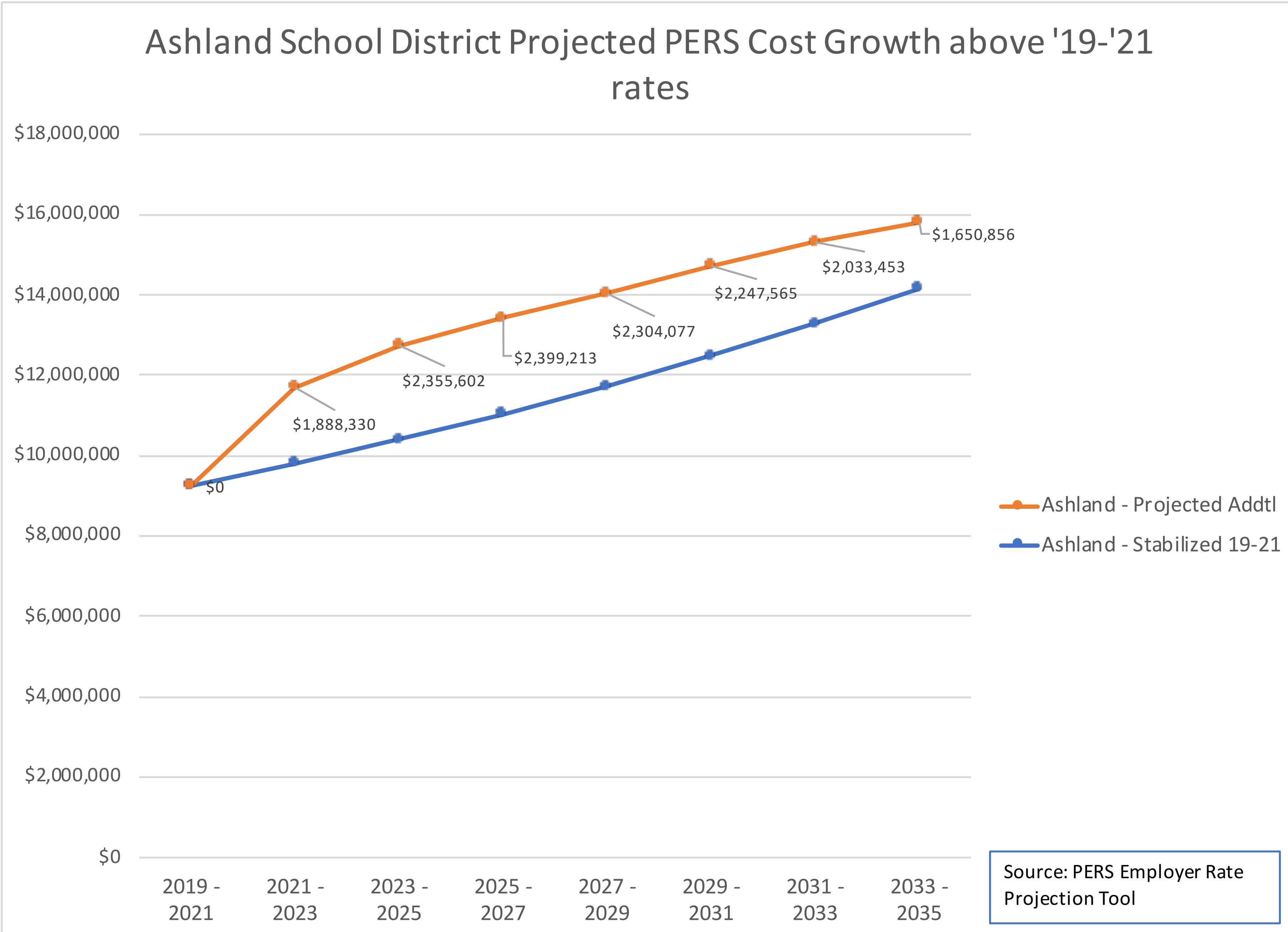


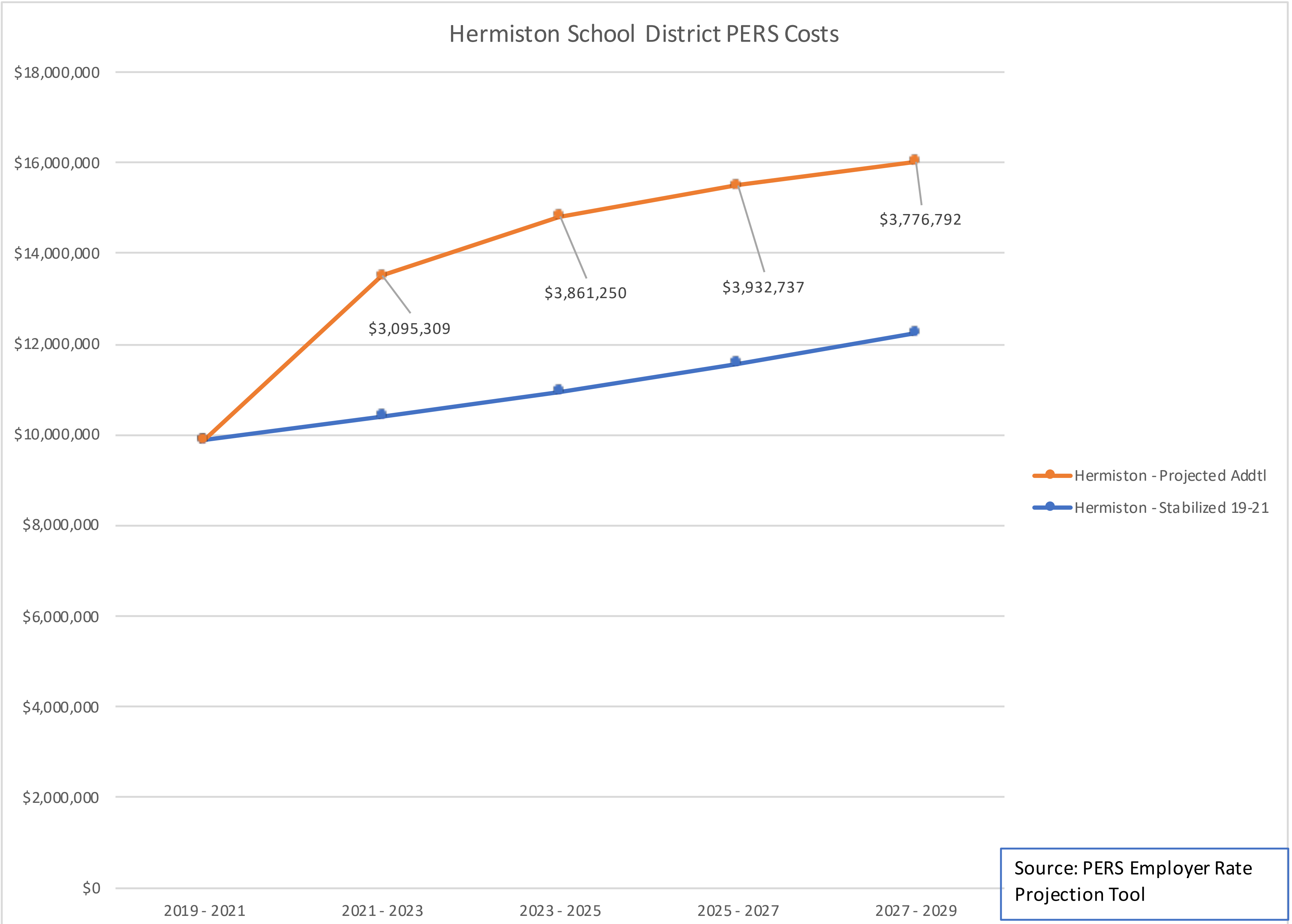
Corvallis School District Projected PERS Cost Growth above '19-'21 rates
$25,000,000
$20,000,000
$15,000,000
$10,000,000
$5,000,000
$0
2019 - 2021
2021 - 2023
2023 - 2025
2025 - 2027
2027 - 2029
$4,307,327
$5,373,186
$5,472,665
$5,255,657
Corvallis - Projected Addtl
Corvallis - Stabilized 19-21
Source: PERS Employer Rate Projection Tool

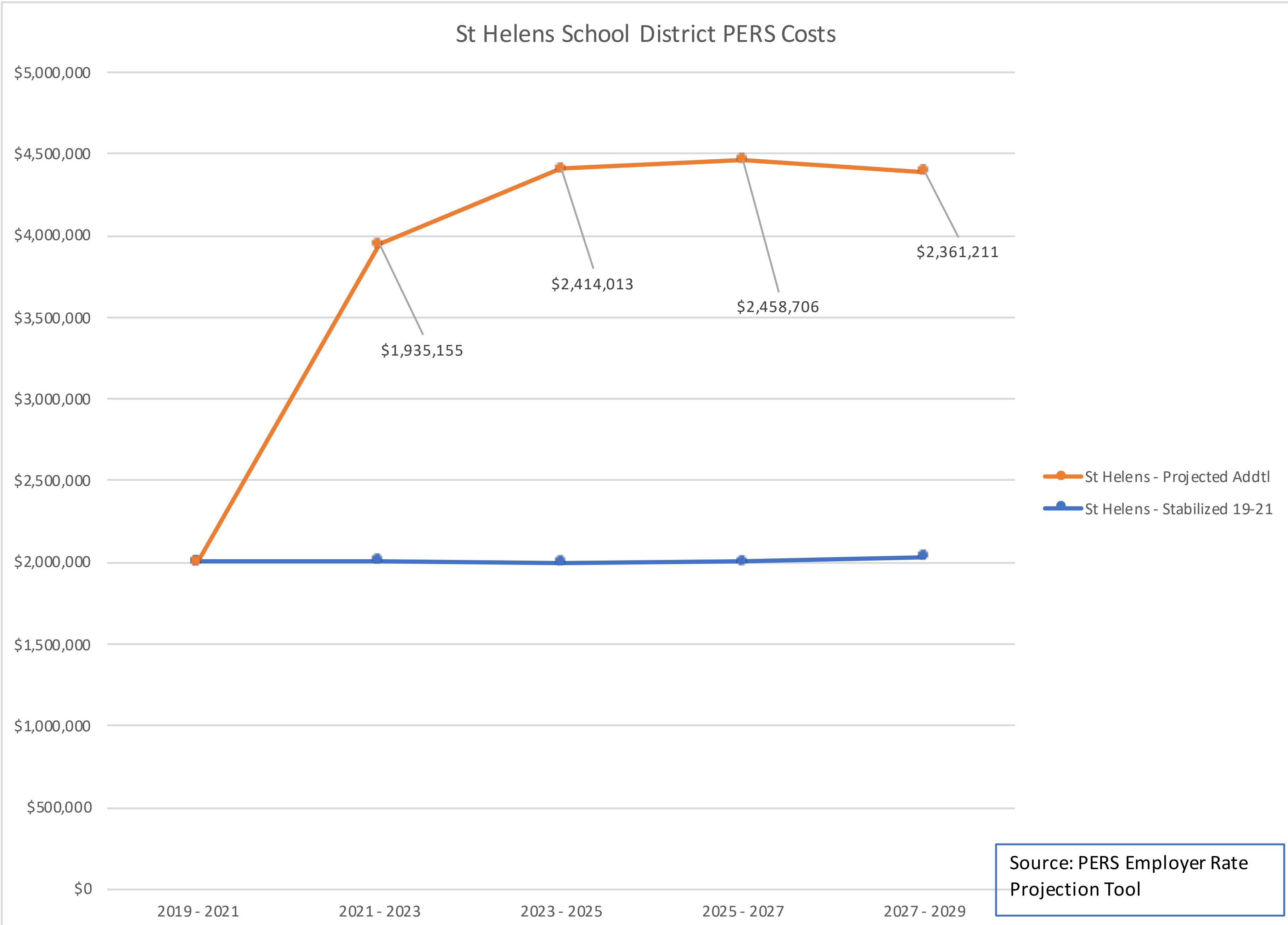

N Clackamas School District Projected PERS Cost Growth above '19-'21 rates
$50,000,000
$45,000,000
$40,000,000
$35,000,000
$30,000,000
$25,000,000
$20,000,000
$15,000,000
$10,000,000
$5,000,000
$0
$11,775,123
$14,688,906
$14,960,855
$14,367,612
2019 - 2021
2021 - 2023
2023 - 2025
2025 - 2027
2027 - 2029
N Clackamas - Projected Addtl
N Clackamas - Stabilized 19-21
Source: PERS Employer Rate Projection Tool

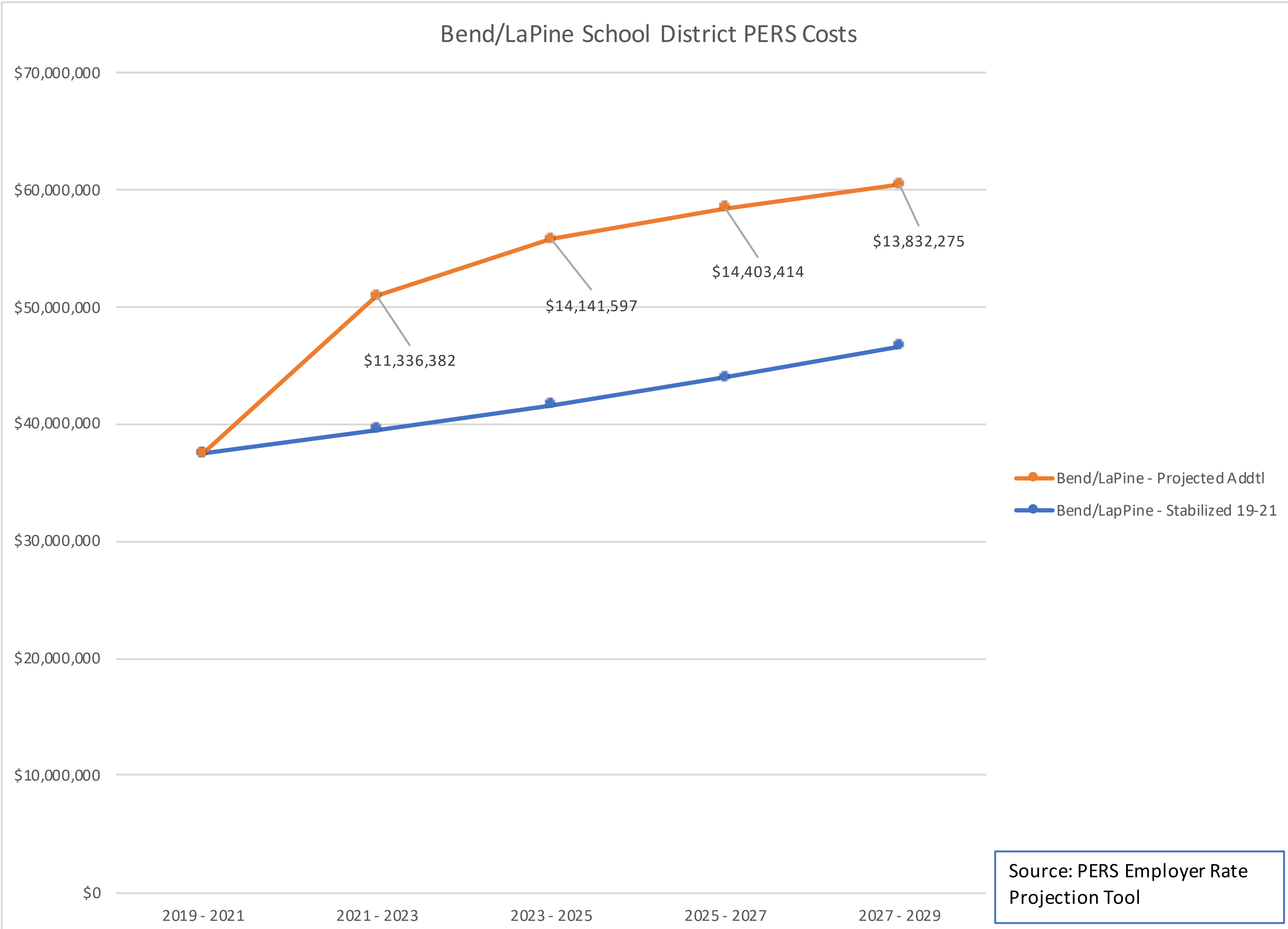

Portland School District Projected PERS Cost Growth above '19-'21 rates
$90,000,000
$80,000,000
$70,000,000
$60,000,000
$50,000,000
$40,000,000
$30,000,000
$20,000,000
$10,000,000
$0
$39,055,384
$48,719,732
$49,621,726
$47,654,074
$0
2019 - 2021
2021 - 2023
2023 - 2025
2025 - 2027
2027 - 2029
Portland - Projected Addtl
Portland - Stabilized 19-21
Source: PERS Employer Rate Projection Tool


Hillsboro School District Projected PERS Cost Growth above '19-'21 rates
$90,000,000
$80,000,000
$70,000,000
$60,000,000
$50,000,000
$40,000,000
$30,000,000
$20,000,000
$10,000,000
$0
2019 - 2021
2021 - 2023
2023 - 2025
2025 - 2027
2027 - 2029
$0
$15,247,313
$19,020,297
$19,372,437
$18,604,261
Hillsboro - Projected Addtl
Hillsboro - Stabilized 19-21
Source: PERS Employer Rate Projection Tool


Ashland School District Projected PERS Cost Growth above '19-'21 rates
$18,000,000
$16,000,000
$14,000,000
$12,000,000
$10,000,000
$8,000,000
$6,000,000
$4,000,000
$2,000,000
$0
$0
$1,888,330
$2,355,602
$2,399,213
$2,304,077
$2,247,565
$2,033,453
$1,650,856
2019 - 2021
2021 - 2023
2023 - 2025
2025 - 2027
2027 - 2029
2029 - 2031
2031 - 2033
2033 - 2035
Ashland - Projected Addtl
Ashland - Stabilized 19-21
Source: PERS Employer Rate Projection Tool


Hermiston School District PERS Costs
$18,000,000
$16,000,000
$14,000,000
$12,000,000
$10,000,000
$8,000,000
$6,000,000
$4,000,000
$2,000,000
$0
$3,095,309
$3,861,250
$3,932,737
$3,776,792
2019 - 2021
2021 - 2023
2023 - 2025
2025 - 2027
2027 - 2029
Hermiston - Projected Addtl
Hermiston - Stabilized 19-21
Source: PERS Employer Rate Projection Tool


St Helens School District PERS Costs
$5,000,000
$4,500,000
$4,000,000
$3,500,000
$3,000,000
$2,500,000
$2,000,000
$1,500,000
$1,000,000
$500,000
$0
$1,935,155
$2,414,013
$2,458,706
$2,361,211
2019 - 2021
2021 - 2023
2023 - 2025
2025 - 2027
2027 - 2029
St Helens - Projected Addtl
St Helens - Stabilized 19-21
Source: PERS Employer Rate Projection Tool


Bend/LaPine School District PERS Costs
$70,000,000
$60,000,000
$50,000,000
$40,000,000
$30,000,000
$20,000,000
$10,000,000
$0
2019 - 2021
2021 - 2023
2023 - 2025
2025 - 2027
2027 - 2029
$11,336,382
$14,141,597
$14,403,414
$13,832,275
Bend/LaPine - Projected Addtl
Bend/LapPine - Stabilized 19-21
Source: PERS Employer Rate Projection Tool

Offset Account - Potential Funding Sources

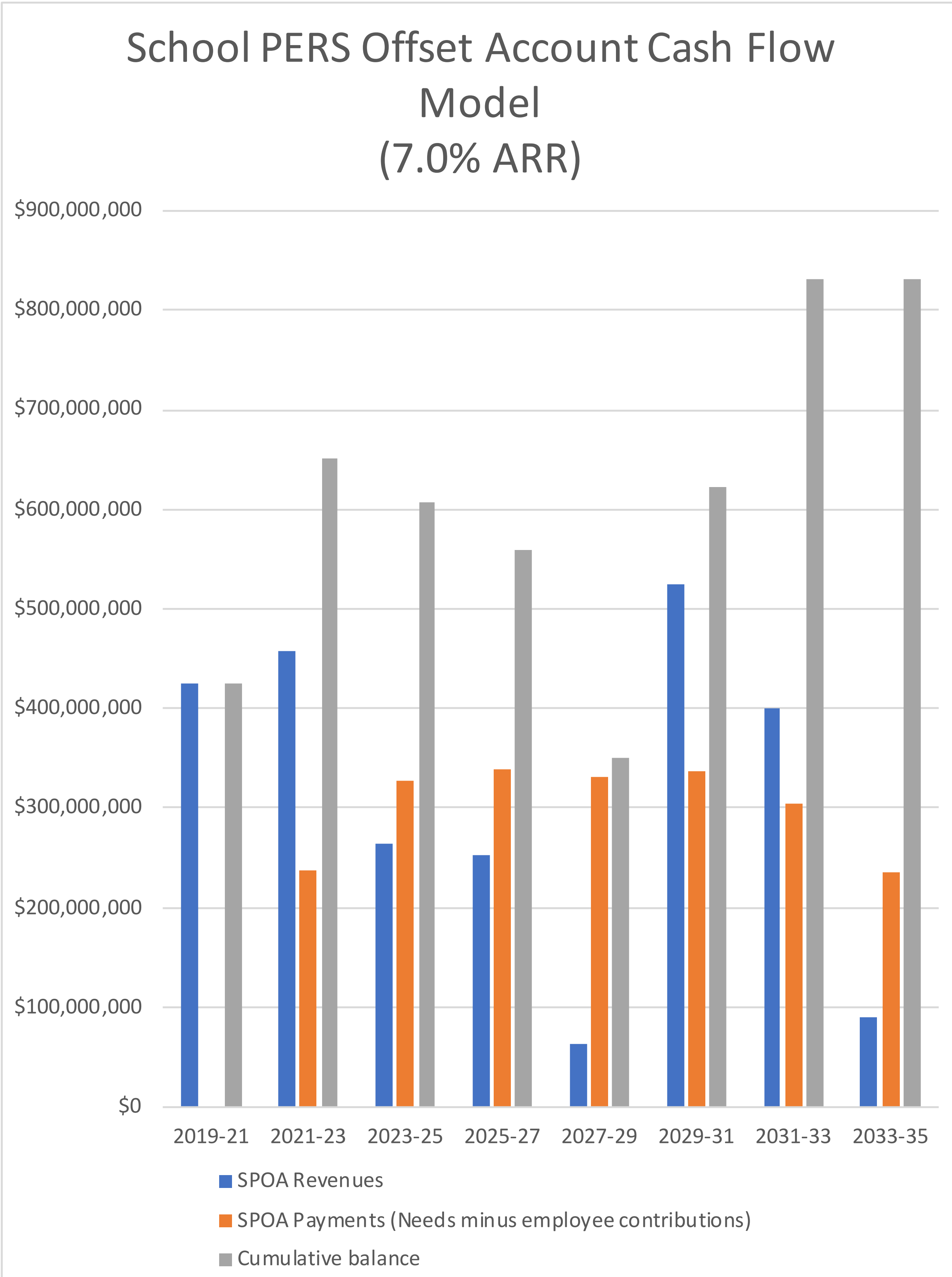
One-time funds	2019-21	2021-23	2023-25	2025-27	2027-29	2029-31	2031-33	2033-35	Total	% of Total
Repatriation	83,300,000								**83,300,000**	2.5%
Kicker/SAIF/GF/Other	300,000,000	416,700,000							**716,700,000**	21.8%
								Subtotal:	**800,000,000**	24.3%
Ongoing additions										
Unclaimed property	38,000,000	38,000,000	38,000,000	38,000,000	38,000,000	38,000,000	38,000,000	38,000,000	**304,000,000**	9.2%
Debt collection	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	**28,000,000**	0.9%
Above trend cap gains	-	-	222,877,436	203,967,749	14,598,183	451,919,545	331,057,672	40,601,981	**1,265,022,566**	38.4%
Above trend estate taxes	-	-	-	7,037,765	7,142,930	31,463,549	27,966,133	8,465,400	**82,075,777**	2.5%
								Subtotal:	**1,679,098,343**	51.0%
Total - State contributions:	424,800,000	458,200,000	264,377,436	252,505,514	63,241,113	524,883,094	400,523,805	90,567,381	**2,479,098,343**	75.3%
Employee contributions: (School Districts only; 3% Tier 1&2; 1.5% OPSRP; $20k exemption)	49,448,213	100,593,600	102,692,100	105,292,425	108,240,675	111,402,675	115,424,333	120,804,230	**813,898,250**	24.7%
									3,292,996,593	100.0%

Potential Cashflow from Offset Account (School Districts Only)

Updated with 2018 Returns (+0.48%)									
Est. SPOA Needs (7.2% ARR)		382,000,000	410,000,000	406,000,000	381,000,000	364,000,000	307,000,000	211,000,000	**2,461,000,000**
Est. SPOA Needs (7.0% ARR)		388,000,000	431,000,000	445,000,000	440,000,000	448,000,000	420,000,000	356,000,000	**2,928,000,000**

Cash flow (7.2% ARR)	2019-21	2021-23	2023-25	2025-27	2027-29	2029-31	2031-33	2033-35	
SPOA Revenues	424,800,000	458,200,000	264,377,436	252,505,514	63,241,113	524,883,094	400,523,805	90,567,381	**2,356,574,663**
SPOA Payments (Needs minus employee contributions)		231,958,188	307,307,900	300,707,575	272,759,325	252,597,325	191,575,667	90,195,770	**1,647,101,750**
Cumulative balance	424,800,000	651,041,813	608,111,349	559,909,288	350,391,076	622,676,845	831,624,982	831,996,593	

Cash flow (7.0% ARR)	2019-21	2021-23	2023-25	2025-27	2027-29	2029-31	2031-33	2033-35	
SPOA Revenues	424,800,000	458,200,000	264,377,436	252,505,514	63,241,113	524,883,094	400,523,805	90,567,381	**2,356,574,663**
SPOA Payments (Needs minus employee contributions)		237,958,188	328,307,900	339,707,575	331,759,325	336,597,325	304,575,667	235,195,770	**2,114,101,750**
Cumulative balance	424,800,000	645,041,813	581,111,349	493,909,288	225,391,076	413,676,845	509,624,982	364,996,593	


School PERS Offset Account Cash Flow Model
(7.0% ARR)
$900,000,000
$800,000,000
$700,000,000
$600,000,000
$500,000,000
$400,000,000
$300,000,000
$200,000,000
$100,000,000
$0
2019-21
2021-23
2023-25
2025-27
2027-29
2029-31
2031-33
2033-35
SPOA Revenues
SPOA Payments (Needs minus employee contributions)
Cumulative balance

School Districts PERS Rate Pool

	Total Payroll	% of Payroll Rate	Rate Increase	$ Needed
17-19	$ 6,630	24.15%		
19-21	$ 7,100	28.93%		
21-23	$ 7,606	33.95%	5.02%	$ 382
23-25	$ 8,147	33.96%	5.03%	$ 410
25-27	$ 8,728	33.58%	4.65%	$ 406
27-29	$ 9,349	33.00%	4.07%	$ 381
29-31	$ 10,015	32.56%	3.63%	$ 364
31-33	$ 10,729	31.79%	2.86%	$ 307
33-35	$ 11,493	30.78%	1.85%	$ 213
				$ 2,461

Assumed Discount Rate	7.20%

Assumptions

* Payroll base is from Milliman Report 2018-007 (Excel File Attachment)
* The PERS rate growth is from Milliman Report 2018-009

School Districts PERS Rate Pool

	Total Payroll	% of Payroll Rate	Rate Increase	$ Needed
17-19	$ 6,630	24.15%		
19-21	$ 7,100	28.93%		
21-23	$ 7,606	34.03%	5.10%	$ 388
23-25	$ 8,147	34.22%	5.29%	$ 431
25-27	$ 8,728	34.03%	5.10%	$ 445
27-29	$ 9,349	33.64%	4.71%	$ 440
29-31	$ 10,015	33.40%	4.47%	$ 448
31-33	$ 10,729	32.84%	3.91%	$ 420
33-35	$ 11,493	32.03%	3.10%	$ 356
				$ 2,928

Assumed Discount Rate	7.00%

Assumptions

* Payroll base is from Milliman Report 2018-007

* The PERS rate growth is from Milliman Report 2018-009

Cash Flow Estimates for Transfers of Proceeds from Capital Gains and Estate Taxes under LC4364

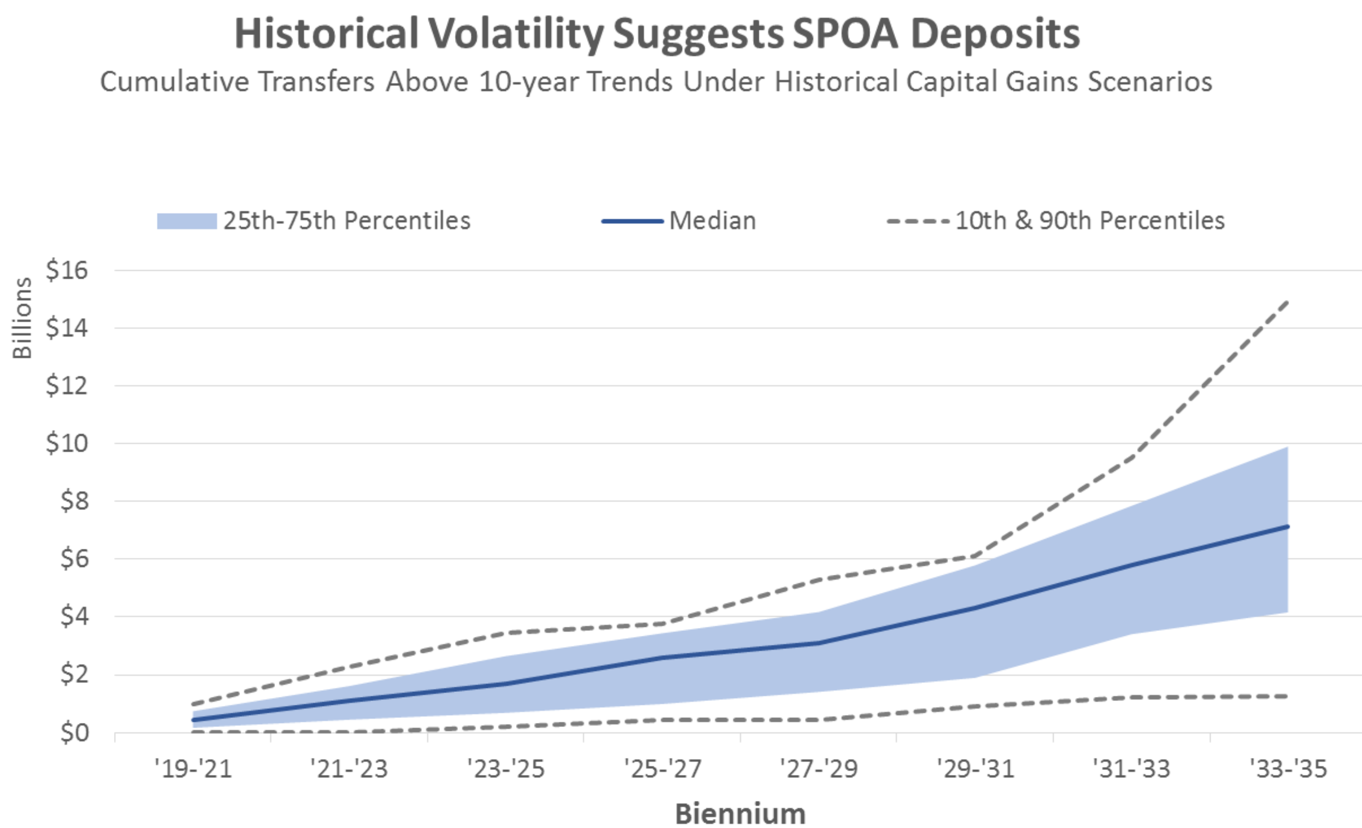
Office of Economic Analysis, April 2019

LC4364 dedicates above-trend proceeds from both estate taxes and income taxes on capital gains to a School PERS Offset Fund. The size of these potential transfers in any given biennium is highly uncertain, and has varied greatly over time. Although the timing of potential deposits is uncertain, under most conditions, they add up to a significant amount over an extended period of time.

In determining the size of these potential transfers, what matters most is the amount of volatility in the revenue streams, not the average growth rate of the revenue streams. In a stable economy, without recessions or major wealth shocks, transfers of above-trend revenues would be relatively small.

Of course, long periods of stable revenue growth in Oregon are hard to find in the historical record. Instead, boom and bust cycles are the norm. With this is mind, the following cash flow estimates are based on economic scenarios that match what we have seen across different periods in the past.

For personal income taxes on capital gains, above-trend revenues are largest in scenarios mirroring the years leading up to the technology boom in the 1990's. Above-trend revenues are smallest in scenarios matching our experience following the great recession.



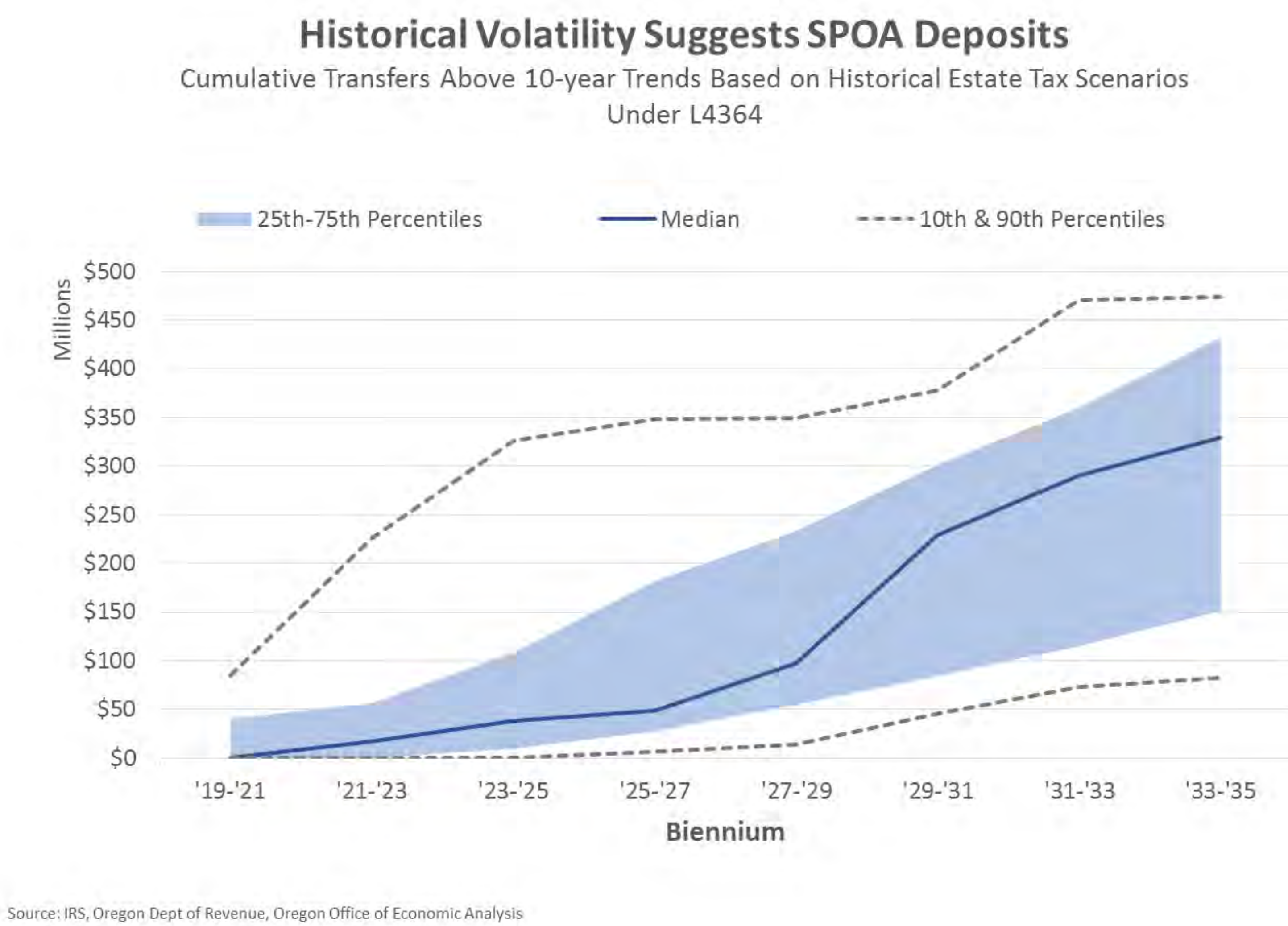
Source: IRS, Oregon Dept of Revenue, Oregon Office of Economic Analysis

Cumulative SPOA Deposits Above 10-year Trend Based on Historical Capital Gains Scenarios

	Minimum	10th Percentile	Median	90th Percentile	Maximum
2019-21	-	-	439,840,873	1,003,458,437	1,480,092,167
2021-23	-	-	1,105,270,868	2,288,878,962	3,491,714,650
2023-25	-	222,877,436	1,688,896,785	3,470,914,154	4,023,803,613
2025-27	-	426,845,185	2,579,165,895	3,764,830,177	5,802,009,783
2027-29	21,623,534	441,443,368	3,087,340,621	5,300,202,669	6,088,260,491
2029-31	363,512,887	893,362,912	4,329,436,034	6,112,383,654	8,059,128,331
2031-33	403,427,250	1,224,420,584	5,786,180,337	9,527,072,426	13,541,668,200
2033-35	470,924,622	1,265,022,565	7,138,243,492	14,916,654,678	16,611,097,278

Notes: Transfers as Defined by LC4364. 10th percentile implies that 90% of scenarios displayed larger cumulative deposits through the given biennium.

Unlike personal income taxes, estate tax collections do not track closely with contemporaneous economic activity. For estate taxes, above-trend collections were smallest during the stretch that began in the late 1990's, and largest during the stretch that began in the late 1980's.

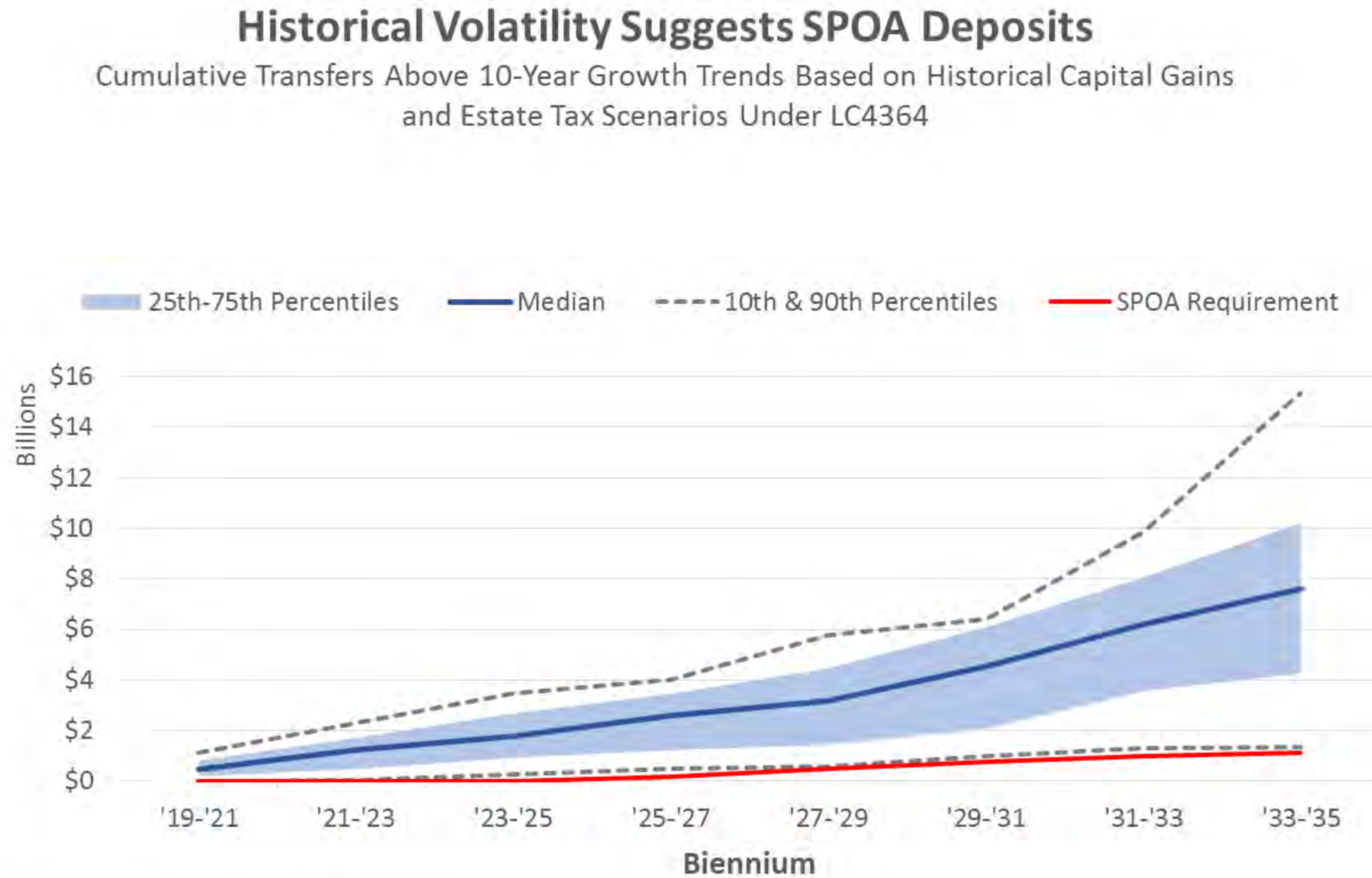


Cumulative SPOA Deposits Above 10-year Trend Based on Historical Estate Tax Scenarios

	Minimum	10th Percentile	Median	90th Percentile	Maximum
2019-21	-	-	-	84,983,904	408,267,487
2021-23	-	-	16,965,600	225,864,376	620,210,301
2023-25	-	-	38,022,540	326,156,260	620,210,301
2025-27	-	7,037,765	48,529,800	348,490,205	620,210,301
2027-29	-	14,180,695	97,462,815	349,310,955	620,210,301
2029-31	5,921,009	45,644,245	229,369,964	377,494,678	620,210,301
2031-33	5,921,009	73,610,377	290,106,657	471,021,883	620,210,301
2033-35	45,947,996	82,075,777	328,822,992	473,741,437	620,210,301

Notes: Transfers as Defined by LC4364. 10th percentile implies that 90% of scenarios displayed larger cumulative deposits through the given biennium.

Under the majority of historical scenarios, deposits would be significantly larger than the revenues needed to maintain a positive balance in the School PERS Offset Account under L4364 and accompanying legislation (which calls for large one-time deposits to seed the fund). Around nine out of ten historical scenarios provide enough revenue to maintain a positive balance. That said, under the worst-case scenario in the historical record, deposits would fall significantly short beginning in the 2025-27 biennium.



Source: IRS, Oregon Dept of Revenue, Oregon Office of Economic Analysis

Cumulative SPOA Deposits Above 10-year Trend Based on Historical Combined (Estate & Cap Gains) Scenarios*

	Minimum	10th Percentile	Median	90th Percentile	Maximum
2019-21	-	8,946,171	461,969,573	1,116,537,888	1,494,675,757
2021-23	-	25,232,520	1,222,880,455	2,317,378,293	3,519,314,650
2023-25	-	247,265,050	1,795,985,108	3,495,323,834	4,168,456,748
2025-27	28,631,952	493,563,509	2,610,826,803	4,036,677,509	5,818,594,733
2027-29	250,993,498	586,136,354	3,167,949,350	5,759,781,940	6,379,684,708
2029-31	492,265,986	967,749,668	4,530,326,336	6,408,157,042	8,428,929,807
2031-33	492,265,986	1,311,962,102	6,185,590,919	9,837,823,733	14,015,442,775
2033-35	888,367,050	1,370,758,080	7,623,004,120	15,349,937,302	16,901,203,935

Notes: Transfers as Defined by LC4364. 10th percentile implies that 90% of scenarios displayed larger cumulative deposits through the given biennium.

*** These combined amounts do not equal the sum of the first two tables. Over their history, estate and capital gains taxes have not always been above/below trend at the same times.**

Kate Brown
Governor

ATTORNEY-CLIENT COMMUNICATION

MEMORANDUM

TO: Nik Blosser, Chief of Staff

FROM: Misha Isaak, General Counsel

DATE: April 10, 2019

RE: Questions Regarding Article IX, section 14 (the Kicker Amendment)

QUESTION PRESENTED

Article IX, section 14 of the Oregon Constitution (the Kicker Amendment) requires that General Fund revenues must be returned to personal income taxpayers where revenues received by the General Fund exceed by greater than two percent the estimate of revenues expected to be received by the General Fund prepared at the beginning of the biennium. Article IX, section 14 does not define the term "General Fund." Would it be constitutional for the Legislature prospectively to remove from the General Fund two sources of revenue, the estate tax and the capital gains tax, effectively eliminating that revenue from the estimate and from revenues received by the General Fund for purposes of applying Article IX, section 14?

SHORT ANSWER

Yes, the Legislature can from time to time change what revenue is dedicated to the "General Fund" within the meaning of Article IX, section 14.

ANALYSIS

Article IX, section 14 of the Oregon Constitution requires that General Fund revenues must be returned to personal income taxpayers where revenues received by the General Fund exceed by greater than two percent the estimate of revenues expected to be received by the General Fund prepared at the beginning of the biennium. The Oregon Constitution does not say what the "General Fund" is or what revenue sources contribute to it.

The question whether the Legislature prospectively may remove from the General Fund sources of revenue — effectively eliminating that revenue from the estimate and from revenues received by the General Fund for purposes of applying Article IX, section 14 — turns upon the meaning of the term "General Fund."

Today, the General Fund is defined by ORS 293.105, and consists of revenue raised from a variety of taxes and fees imposed by statutes requiring that the revenue be paid into the General Fund. Stated differently, the General Fund consists of sources of revenue dedicated by statute to the General Fund.

The Oregon Supreme Court uses the methodology of originalism to interpret provisions of the Oregon Constitution.[1] Originalism interprets texts with reference to their meaning at the time they were adopted.

Applying the methodology of originalism, one could argue that the "General Fund" referenced in Article IX, section 14, consists of the revenue sources that contributed to the General Fund in 2000, when voters passed Measure 86 (which added Article IX, section 14 to the Oregon Constitution).[2] In my opinion, it is unlikely that the Oregon Supreme Court would adopt this interpretation.

A better approach is to interpret the "General Fund" to mean the main pool of money for the state's discretionary expenditures, the precise sources of which change over time as decided by the Legislature. This approach recognizes that voters in 2000 would have understood that the revenues dedicated to the General Fund are not fixed and indeed change over time.[3]

This interpretation is preferable for at least three reasons. First, the term "General Fund" exists in several provisions of the Oregon Constitution. Although it is conceivable that a single term could be interpreted to have different meanings in different constitutional provisions,[4] an interpretation that harmonizes the term's meaning is preferable. Stated in terms of originalism, one assumes that voters considering Measure 86 in 2000 would have been aware that the term

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[1] *See Smothers v. Gresham Transfer, Inc.*, 332 Or. 83, 91, 23 P.3d 333, 338 (2001), *overruled on other grounds by Horton v. OHSU*, 359 Or. 168, 376 P.3d 998 (2016) ("Our analysis consists of an examination of the wording of the particular constitutional provision, the historical circumstances that led to its creation, and case law surrounding it.").

[2] I have not located a written legal opinion propounding this view.

[3] With two plausible originalist meanings of the term "General Fund," how does one know which the Oregon Supreme Court would adopt? This is the problem described by now-retired Justice Jack Landau as "the problem of 'levels of generality.' " Justice Landau explains: "Any historical moment or idea can be described at a variety of different levels of generalization. The 39th Congress, for example, drafted the Fourteenth Amendment to the federal constitution in response to the southern 'black codes' that deprived blacks of certain political rights. Some scholars have argued that that evidence shows that the framers were concerned only with protecting blacks from being deprived of a narrow set of political rights. Others suggest that the evidence constitutes only an example of a larger concern with the protection of civil rights generally." Jack Landau, "The Unfinished Revolution: Interpreting the Oregon Constitution," Oregon State Bar Bulletin (Nov. 2001).

[4] For instance, the Oregon Supreme Court interprets the word "tax" to mean different things with respect to Article IV, § 18 (origination clause) and Article IX, § 3a (fuel taxes).

"General Fund" exists elsewhere in the Oregon Constitution and would have understood the term in light of its meaning in other constitutional provisions, that is, voters would have understood that the General Fund's revenue sources change over time.

Second, the Voters Pamphlet from the 2000 General Election (which is a primary source courts consider when determining the original intent of an ambiguous ballot measure[5]) describes the effect of Measure 86 as codifying in the Oregon Constitution a tax refund that already existed in statute. Between 1979, when the kicker law was first adopted, and 2000, when the constitutional amendment was adopted, revenue sources contributing to the General Fund changed. Accordingly, voters — who were informed that they were merely constitutionalizing a statutory tax refund — would have understood that the General Fund would have the same type of variability after constitutional codification than it had when it was statutory.

Third, there is no reference in the 2000 Voters Pamphlet to particular revenue sources that make up the General Fund. Although not alone dispositive, this fact at least suggests that particular streams of revenue were not significant in the minds of voters when thinking about estimates, over-estimates, and refunds with respect to the General Fund.

Accordingly, the Legislature is free to move revenue sources into and out of the General Fund as it sees fit. Under Article IX, section 14, at the beginning of the biennium, the Governor must direct an estimate to be prepared of General Fund revenues for the biennium. This estimate will capture whatever sources of revenue are deemed to make up the General Fund for that biennium.[6]

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[5] *Ecumenical Ministries of Oregon v. Oregon State Lottery Comm'n*, 318 Or. 551, 559, 871 P.2d 106 (1994).

[6] This memorandum is not intended to be a confidential communication within the meaning of ORS 40.225 and should not be construed as a subject-matter waiver.

NASRA Issue Brief:
Employee Contributions to Public Pension Plans

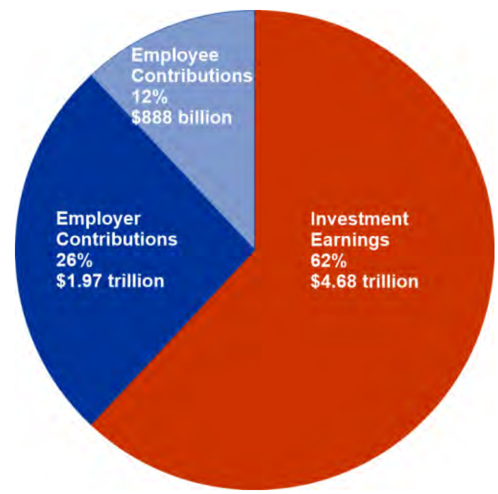
October 2018

Unlike in the private sector, nearly all employees of state and local government are required to share in the cost of their retirement benefit. Employee contributions typically are set as a percentage of salary by statute or by the retirement board. Although investment earnings and employer contributions account for a larger portion of total public pension fund revenues (see Figure 1), by providing a consistent and predictable stream of revenue to public pension funds, contributions from employees fill a vital role in financing pension benefits.[i] Reforms made in the wake of the 2008-09 market decline included higher employee contribution rates in many states. This issue brief examines employee contribution plan designs, policies and recent trends.

Mandatory Participation & Shared Financing

For the vast majority of employees of state and local government, both participation in a public pension plan and contributing toward the cost of the pension are mandatory terms of employment. Requiring employees to contribute distributes some of the risk of the plan between employers and employees. The primary types of risk in a pension plan pertain to investment, longevity, and inflation. Employees who are required to contribute toward the cost of their pension assume a portion of one or more of these risks, depending on the design of the plan.[ii]

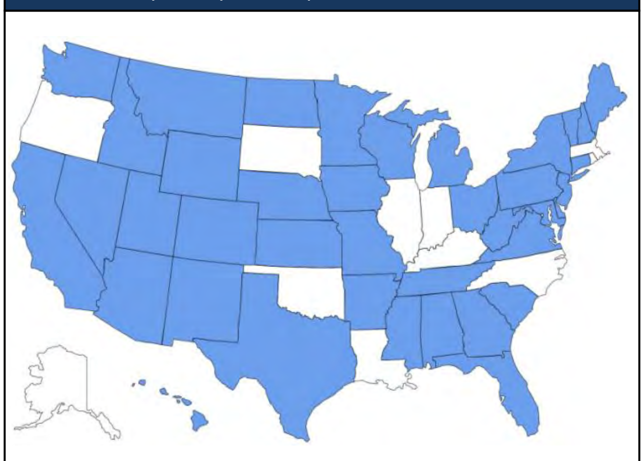
Figure 1: Public pension sources of revenue, 1988-2017



Source: Compiled by NASRA based on U.S. Census Bureau data

The prevailing model for employees to contribute to their pension plan is for state and local governments to collect contributions as a deduction from employee pay. This amount usually is established as a percentage of an employee's salary and is collected each pay period. As shown in Appendix A, employee contribution rates to pension benefits typically are between four and eight percent of pay, and are outside these levels for some plans. In some cases, required employee contributions are subject to change depending on the condition of the plan, the fund's investment performance, or other factors. In some plans, the employee contribution is actually paid by the employer in lieu of a negotiated salary increase or other fiscal offset.

Figure 2: States that increased employee contributions in at least one public pension plan since 2009



Some 25 to 30 percent of employees of state and local government do not participate in Social Security. In most cases, the pension benefit—and required contribution—for those outside of Social Security is greater both than the typical benefit and the required contribution for those who do participate in Social Security[iii]. Appendix A identifies whether or not most plan members participate in Social Security.

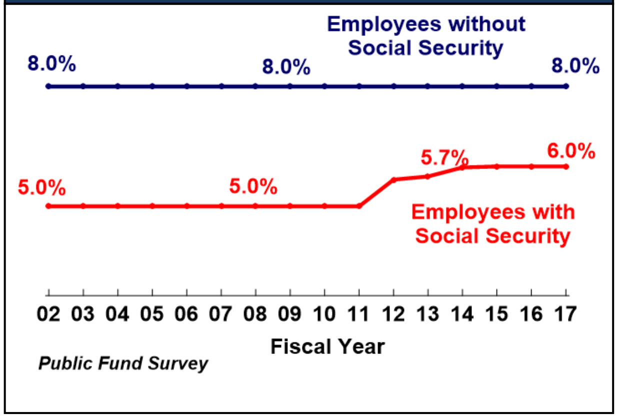
Trends in Employee Contributions

Many states in recent years made changes requiring employees to contribute more toward their retirement benefits: since 2009, more than 35 states increased required employee contribution rates (see Figure 2). As a result of these changes, the median contribution rate paid by employees has increased. Figure 3 shows that the median contribution rate has risen, to 6.0 percent of pay, for employees who also participate in Social Security, and has remained steady at 8.0 percent for those who do not participate in Social Security.

New Contributions

Contribution requirements for certain employee groups in some states, such as **Missouri** and **Florida,** which previously did not require some employees to make pension contributions, were established in recent years for newly hired employees, existing workers, or both. Employees hired in **Utah** since July 1, 2011 must contribute toward the cost of their plan if that cost exceeds 10 percent of pay (12 percent for public safety workers). Because the cost of the plan remains below those thresholds, the Utah Retirement System remains non-contributory for most plan participants.

Figure 3: Median employee contribution rate by Social Security eligibility, FY 02 to FY 17 (non-public safety)



Variable Contributions

Some states, such as **Arizona, Iowa, Kansas, Nevada, and Pennsylvania** maintain an employee contribution rate that varies depending on the pension plan's actuarial condition. Because of the effect investment returns have on a pension plan's actuarial condition, the cost of a pension plan generally will rise following periods of sub-par investment returns and fall when investment returns exceed expectations. Changes approved in recent years in **Arizona** and **California** require some workers to pay at least one-half of the normal cost of the benefit, which can result in a variable contribution rate. Similarly, recent reforms in Michigan require newly hired school teachers to pay one-half of the full cost of the plan. And, as described previously, the **Utah** plan affecting new hires since July 2011 could become variable, depending on the plan's actuarial experience.

Increased Contributions for Current Plan Participants

Most employee contribution rate increases approved in recent years affected all workers-current and future. In some states, such as **Virginia** and **Wisconsin**, new and existing employees are now required to pay the contributions that previously were made by employers in lieu of a salary increase.

Hybrid Plans

A growing number of public employees now participate in hybrid retirement plans, which combine elements of defined benefit and defined contribution plans, and that transfer some risk from the employer to the employee. In one type of hybrid plan, known as a combination defined benefit-defined contribution plan, employees in most cases are responsible for contributing all or most of the cost of the defined contribution portion of the plan.

Contribution requirements to the DB component of combination plans vary: some are funded solely by employer contributions, while others require contributions from both employees and employers. In most of these cases, employees are also required to contribute toward the cost of the defined contribution portion of their hybrid plan benefit.[iv]

Collective Bargaining

Employee contributions in some cases are set by collective bargaining, and can be changed when labor agreements are negotiated. For example, required employee contribution rates for employee groups in **California** and **Connecticut** increased in recent years as a result of labor agreements in those states.

Legal Landscape

The legality of increasing contributions for current plan participants varies. Some states prohibit an increase in contributions for existing plan participants. For example, a 2012 ruling in **Arizona** found that legislative efforts to increase contributions for existing workers violated a state constitutional protection against impairment of benefits. In other states, however, such as in **Minnesota** and **Mississippi**, higher employee contributions either did not produce a legal challenge, or withstood legal challenges (such as in **New Hampshire** and **New Mexico**).

Conclusion

Employee contributions are a key component of public pension funding policies. The vast majority of employees of state and local government are required to contribute to the cost of their pension benefit, and this number has grown in recent years as most states that previously administered non-contributory plans now require worker contributions.

Many employees also are being required to contribute more toward the cost of their retirement benefit. In some cases, this requirement applies to both current and new workers; in other cases, only to new hires.

A growing number of states are exposing employee contributions to risk – either by tying the rate directly to the plan's investment return, or by requiring hybrid or 401k-type plans as a larger component of the employee's retirement benefit.

See Also

Information is available on public pension contributions at

- Contributions @NASRA.org
- Selected Approved Changes to State and Selected Local Pensions, August 2018
- Significant Reforms to State Retirement Systems, NASRA, June 2016
- Contribution Rates and Funding Issues @NASRA.org
- Public Fund Survey Summary of Findings, NASRA

Contact

Keith Brainard, Research Director, keith@nasra.org
Alex Brown, Research Manager, alex@nasra.org
National Association of State Retirement Administrators, www.nasra.org

[i] NASRA Issue Brief: Public Pension Plan Investment Return Assumptions
http://www.nasra.org/returnassumptionsbrief
[ii] NASRA Issue Brief: Shared Risk in Public Retirement Systems
http://www.nasra.org/sharedriskbrief
[iii] Social Security@NASRA.org
[iv] NASRA Issue Brief: State Hybrid Retirement Plans
http://www.nasra.org/hybridbrief

Appendix A: Employee pension contribution rates

State	Plan	Employee Contribution Rate (Percent of Pay)	Social Security Coverage
AK	Alaska PERS	6.75% for general employees; 7.5% for police and fire	No
AK	Alaska Teachers	8.65%	No
AL	Alabama ERS	6.0% to 7.5% depending on date of hire; state police contribute 10.0%; other law enforcement officers, correctional officers, and firefighters contribute 7.0% to 8.5% depending on date of hire	Yes
AL	Alabama Teachers	6.0% to 7.5%, depending on date of hire	Yes
AR	Arkansas PERS	5.0% for those hired since 7/1/05	Yes
AR	Arkansas State Highway Employees Retirement Plan	6.0%	Yes
AR	Arkansas Teachers	Most teachers contribute 6.0%. Legislation enacted in 2013 authorizes the TRS board to set the employee contribution rate between 6.0% and 7.0%, depending on actuarial need.	Yes
AZ	Arizona Public Safety Personnel	11.65%; newly hired public safety officers since 7/1/17 may elect to participate in a DC plan with an employee contribution of 9.0%, or a reduced DB plan with a member contribution equal to one-half of the total plan contribution rate, and participation in a DC plan with an employee contribution of 3.0%. Correctional officers hired beginning 7/1/18 participate in a defined contribution plan only, to which they contribute 7.0%; officers may make a one-time election to contribute less than 7.0%, but must contribute at least 5.0%.	Yes
AZ	Arizona SRS	11.28%; 11.58% for FY 18, excluding contributions for retiree health benefit	Yes
CA	California PERF	Most state employees contribute 8.0%; state safety, firefighters, and police contribute 9% to 11%, depending on the benefits offered; school employees contribute 7.0%; most local agency miscellaneous, firefighters and police officers contribute between 7% and 9% depending on the benefits offered. Members hired since 1/1/13 contribute between 4.0% and 15.25%, depending on the employee classification and benefits offered.	Both
CA	California Teachers	For members first hired before 2013, 10.25%. For members first hired after 2012, 9.20%, increasing to 10.205% for FY 18.	No
CA	Los Angeles City Employees	11.0%	No
CA	Orange County Employees	Rates are based on the entry age of the member to the system and the plan. 6.14% to 12.8% for general employees at average age of entry; 12.75% to 17.85% for public safety employees at average age of entry.	No

Appendix A: Employee pension contribution rates

State	Plan	Employee Contribution Rate (Percent of Pay)	Social Security Coverage
CA	University of California	8%, minus $19/month, for those hired before 7/1/13; 7% for those hired between 7/1/13 and 6/30/16; 9% for those hired as of 7/1/16; 9% for safety members	Yes (except safety members)
CO	Colorado Affiliated Local	Varies by plan; most employees contribute between 5% and 10% of pay	No
CO	Colorado Fire & Police Statewide	10.5%, rising by 0.5% annually until reaching 12.0% in 2022. This increase was approved by employee members via a 2014 election.	No
CO	Colorado Municipal	Contribution rates for Municipal, School, and State plan members will increase from 8.0% on 7/1/19 to 8.75%; to 9.5% on 7/1/20, and to 10.0% on 7/1/21. The contribution rate for state troopers will increase from 10.0% on 7/1/19 to 10.75%; to 11.5% on 7/1/20, and to 12.0% on 7/1/21.	No
CO	Colorado School		
CO	Colorado State		
CT	Connecticut SERS	3.5%, rising to 4.0% beginning 7/1/19; 6.5% for public safety personnel, rising to 7.0% in FY 20. If the plan's investment returns fall below the assumed rate of 6.9%, and the employer normal cost increases, employees may be required to make an additional contribution of one-half of the amount of the normal cost increase, not to exceed 2.0%. Employees hired after 6/30/17 participate in a new hybrid plan that requires employees to contribute 5.0% and potentially more, based on the risk-sharing provision described above.	Yes
CT	Connecticut Teachers	7.0%	No
DC	DC Police & Fire	7.0% if hired before 11/1/96; 8.0% if hired on or after 11/1/96	No
DC	DC Teachers	7.0% if hired before 11/1/96; 8.0% if hired on or after 11/1/96	No
DE	Delaware State Employees	3.0% of pay above $6,000; employees hired since 1/1/12 contribute 5.0% of pay above $6,000	Yes
FL	Florida RS	3.0%	Yes
GA	Georgia ERS	1.25% to the DB plan. Workers hired since 2009 participate in a hybrid plan. The default employee contribution to the DC component of the hybrid plan for those hired from 2009 until 6/30/14 is 1.0%, and 5.0% for those hired since 7/1/14. All hybrid plan participants may increase or decrease their level of contribution to the DC plan, including to zero.	Yes
GA	Georgia Teachers	6.0%	Mostly Yes
HI	Hawaii ERS	7.8% for general employees and teachers; 12.2% for public safety officers; those hired after 6/30/12 pay 9.8% and 14.2%, respectively.	Yes

Appendix A: Employee pension contribution rates

State	Plan	Employee Contribution Rate (Percent of Pay)	Social Security Coverage
IA	Iowa PERS	5.95% for regular employees, increasing to 6.29% for FY 19; 6.56% for protection occupations, increasing to 6.81% for FY 19; 9.63% for sheriffs, increasing to 9.76% for FY 19. The IPERS board has authority to adjust rates by up to one percent in a given year.	Yes
ID	Idaho PERS	6.79%; 8.36% for public safety personnel	Yes
IL	Illinois Municipal	3.75% for general employees; 6.75% for law enforcement personnel. All members contribute an additional 0.75% for survivor's pension, for total contribution rates of 4.50% and 7.50%, respectively	Yes
IL	Illinois SERS	3.5% for those covered by Social Security, plus 0.5% for survivor's pension benefit, 7.0% for those not covered, plus 1.0% for survivor's pension benefit; public safety members contribute 8.5%	Yes
IL	Illinois Teachers	9.0%, allocated as follows: 7.5% for retirement; 0.5% for post-retirement increases; and 1% for death benefits	No
IL	Illinois Universities	8.0%; public safety personnel contribute 9.5%	No
IN	Indiana PERF	3.0%	Yes
IN	Indiana Teachers	3.0%	Yes
KS	Kansas PERS	6.0%	Yes
KY	Kentucky County	5.0%, and 8.0% for public safety workers; those hired since 9/1/08 must contribute an additional 1.0% for retiree health care	Yes
KY	Kentucky ERS	5.0%, and 8.0% for public safety workers; those hired since 9/1/08 must contribute an additional 1.0% for retiree health care	Yes
KY	Kentucky Teachers	Non-university members contribute 12.855%; University members contribute 10.4%	No
LA	Louisiana Parochial Employees	9.5% for members covered by Social Security; 3.0% for members not covered by Social Security	No, for approximately 85% of members
LA	Louisiana SERS	8.0% for regular employees hired as of 7/1/06; hazardous duty members contribute 9.5%; different contribution rates apply for other specialty plans	No
LA	Louisiana Teachers	8.0%	No
MA	Massachusetts SERS	5% - 9% of annual compensation depending on date of membership. State police contribute 12%.	No

Appendix A: Employee pension contribution rates

State	Plan	Employee Contribution Rate (Percent of Pay)	Social Security Coverage
MA	Massachusetts Teachers	5% to 11%, depending on member's date of entry; those hired after 6/30/01 and participants in Retirement Plus benefit tier pay 11.0%; average rate is 10.0%.	No
MD	Maryland PERS	7.0%	Yes
MD	Maryland Teachers	7.0%	Yes
ME	Maine Local	4.5% to 9.5%, depending on employer election; effective 7/1/19, contribution rates for employers and members of the Participating Local District (PLD) Consolidated Retirement Plan are determined by a new methodology that shares risk between employers and members of the plan. Contribution rates will be subject to change each year based on a 55%/45% employer/member split. The employer rate will be capped at 12.5% and the member rate will be capped at 9.0%.	Yes, for approximately half of participants
ME	Maine State and Teacher	7.65%; 8.65% for law enforcement officers	No
MI	Michigan Municipal	Participating employers may elect to require employee contributions of 0% to 20%	Both; varies by plan
MI	Michigan Public Schools	Employees hired from 7/1/10 until 1/31/18 choose between a hybrid plan with a graded contribution structure (3.0% of first $5,000, 3.6% of next $10,000, and 6.4% over $15,000) for the DB component and a zero to 2.0% optional contribution to the DC component (employees may contribute more, but receive only a 1:2 employer match on the first 2%), or a DC plan with a zero to 6.0% optional contribution (employees may contribute more, but are matched only 1:2 on the first 6.0%). Active DB members hired prior to 7/1/10 contribute based on their designated plan type, ranging from zero to 7.0%. New hires on or after 2/1/18 choose from either: a) a default defined contribution plan with required employee contributions of 4.0% (with matching employer contributions up to another 3.0% of optional employee contributions (for a maximum employer contribution of 7.0%; or b) a hybrid plan with required employee contributions equal to 50% of the total plan contribution rate. A contribution rate of 12.4% is shared equally by employees and employers.	Yes
MI	Michigan SERS	Employees hired since 3/1/97 are enrolled in a DC plan with an optional contribution rate of zero to 3.0%; (active DB plan members, who are those hired before 3/1/97, contribute 4.0%)	Yes
MN	Minnesota PERA	6.5%; 10.8% for police and fire; 5.83% for correctional officers. These rates will increase by 1.0% over two years beginning 1/1/19.	Yes, except police and fire
MN	Minnesota State Employees	5.75%, increasing to 6.0% effective 7/1/19; 14.9% for state patrol officers, increasing to 15.4% effective 7/1/19; 9.6% for correctional officers	Yes
MN	Minnesota Teachers	7.5%, increasing to 7.75% effective 7/1/23	Yes

Appendix A: Employee pension contribution rates

State	Plan	Employee Contribution Rate (Percent of Pay)	Social Security Coverage
MO	Missouri DOT and Highway Patrol	4.0% for those hired after 12/31/10	Yes
MO	Missouri Local	Participating employers may elect to require employee contributions of 0% or 4%; most plans do not require employees to contribute	Yes
MO	Missouri PEERS	6.86%	Yes
MO	Missouri State Employees	4.0% for those hired after 12/31/10; non-contributory for those hired previously	Yes
MO	Missouri Teachers	14.50%	No
MS	Mississippi PERS	9.0%; Highway Patrol Officers contribute 7.25%	Yes
MT	Montana PERS	7.90%	Yes
MT	Montana Teachers	8.15%,which can be increased by the board by up to 1.0% based on designated triggers	Yes
NC	North Carolina Local Government	6.0%	Yes
NC	North Carolina Teachers and State Employees	6.0%	Yes
ND	North Dakota PERS	7.0%; 5.5% for law enforcement	Yes
ND	North Dakota Teachers	11.75%	Yes
NE	Nebraska County	4.5%	Yes
NE	Nebraska Schools	9.78%	Yes
NE	Nebraska State	4.8%	Yes
NH	New Hampshire Retirement System	7.0% for general employees and teachers; 11.8% for firefighters; 11.55% for police officers.	Yes, for general employees and teachers; No for public safety
NJ	New Jersey PERS	7.35%, rising to 7.50% by 2019	Yes
NJ	New Jersey Police & Fire	10.0%	Yes
NJ	New Jersey Teachers	7.35%, rising to 7.50% by 2019	Yes

Appendix A: Employee pension contribution rates

State	Plan	Employee Contribution Rate (Percent of Pay)	Social Security Coverage
NM	New Mexico PERA	For state general members with a salary above $20,000, 8.92%; 7.42% for state general members with a salary below $20,000; rates vary for other employee groups	Yes
NM	New Mexico Teachers	7.9% for those with a salary of $20,000 or less; 10.7% for those with a salary above $20,000	Yes
NV	Nevada Police Officer and Firefighter	20.75%	No
NV	Nevada Regular Employees	14.50%	No
NY	New York State Teachers	Those hired before 1/1/10 contribute 3.0% if <10 years of service, 0% if 10+ years of service; those hired on or after 1/1/10 but before 4/1/12 contribute 3.5% throughout membership; those hired on or after 4/1/12 contribute 3.0% to 6.0% salary, throughout membership	Yes
NY	NY State & Local ERS	Those hired before 1/1/10 contribute 3.0% if <10 years of service, 0% if 10+ years of service; Those hired on or after 1/1/10 but before 4/1/12 contribute 3.5%; Those hired on or after 4/1/12 contribute 3.0% to 6.0% depending on date of hire and salary	Yes
NY	NY State & Local Police & Fire	Those hired between 7/1/09 through 1/8/10 contribute 3.0%; Those hired since 1/9/10 contribute 3%-6% based on annual salary for most participants	Yes
OH	Ohio PERS	10% for general members; public safety division members contribute 12% and law enforcement members contribute 13%	No
OH	Ohio Police & Fire	12.25%	No
OH	Ohio School Employees	10.0%	No
OH	Ohio Teachers	14.0%	No
OK	Oklahoma PERS	3.5% for state employees; 3.5% to 8.5% for employees of county and local agencies; hazardous duty members pay 8.0%. State employees hired since 1/1/15 participate only in a DC plan to which they are required to contribute a minimum of 4.5%, and may contribute more to increase the employer matching contribution.	Yes
OK	Oklahoma Teachers	7.0%	Yes
OR	Oregon PERS	Effective 1/1/04, non-contributory for the DB plan for all employees except Judges; 6.0% for individual accounts, which is the defined contribution component of the hybrid plan.	Yes (with a few exceptions as elected by the employer)

Appendix A: Employee pension contribution rates

State	Plan	Employee Contribution Rate (Percent of Pay)	Social Security Coverage
PA	Pennsylvania School Employees	Between 7.5% and 12.3%, depending on date of hire and plan selection. Rates for participants hired since 7/1/11 are subject to a limited graduating scale (within a window of 200 basis points) based on investment performance and the plan's funding level. New hires on or after 7/1/19 are required to select from one of three plan options: a) a default hybrid plan with employee contributions of 5.5% to the DB plan and 2.75% to the DC plan; an alternative hybrid plan with employee contributions of 4.5% to the DB plan and 3.0% to the DC plan; or a defined contribution plan with employee contributions of 7.5%. Hybrid plan members also are subject to “shared-risk” or “shared-gain” provision to be calculated every 3 years comparing PSERS’ actual and assumed rate of return for the past 10 years. For each percentage point in earnings realized in excess of or below the assumed rate of return, the EE contribution rate will be increased or reduced by 0.75%, not to exceed a maximum of 3.0% above or below the basic contribution rate.	Yes
PA	Pennsylvania State ERS	Between 6.25% and 9.3%, depending on date of hire and plan selection. Rates for those hired since 1/1/11 are subject to a limited graduating scale based on investment performance and the plan's funding level. New hires on or after 1/1/19 are required to select from one of three plan options: a) a default hybrid plan with employee contributions of 5.0% to the DB plan and 3.25% to the DC plan; b) an alternative hybrid plan with employee contributions of 4.0% to the DB plan and 3.5% to the DC plan; or c) a defined contribution plan with employee contributions of 7.5%. Hybrid plan members are subject to “shared-risk” or “shared-gain” provision to be calculated every 3 years comparing PSERS’ actual and assumed rate of return for the past 10 years. For each percentage point in earnings realized in excess of or below the assumed rate or return, the EE contribution rate will be increased or reduced by 0.75%, not to exceed a maximum of 3.0% above or below the basic contribution rate.	Yes (except state police officers)
PR	Puerto Rico Government Employees	10% (except members selecting the Coordination Plan contribute 5.775% up to $6,600 plus 8.275% of compensation in excess of $6,600)	Yes (except police)
PR	Puerto Rico Teachers	9.0%	No
RI	Rhode Island ERS	State employees and teachers contribute 3.75% to the DB plan plus 5% to the DC plan; teachers who do not participate in Social Security contribute 7% to the DC plan (approximately one-half of teachers do not participate in Social Security)	Yes, but no for many teachers
RI	Rhode Island Municipal	1.0 to 2.0% for general employees; 7.0% to 10.0% for public safety personnel; 5% for general employees to the DC plan; 7% for public safety personnel (non-SS) to the DC plan	Mostly Yes

Appendix A: Employee pension contribution rates

State	Plan	Employee Contribution Rate (Percent of Pay)	Social Security Coverage
SC	South Carolina Police	9.75%	Yes
SC	South Carolina RS	9.0%	Yes
SD	South Dakota PERS	6.0%; public safety personnel contribute 8.0%	Yes
TN	TN Political Subdivisions	Participating employers may elect to require employee contributions of 0% or 5%; Local government employees of employers that have selected the hybrid plan hired since 7/1/14 contribute 5% to the DB plan and 2% to the DC plan; participants may opt out of DC plan contributions.	Yes
TN	TN State and Teachers	Non-contributory for most state and higher education employees; 5% for teachers. Employees hired since 7/1/14 participate in a hybrid plan with mandatory contribution rates of 5% to the DB plan and 2% to the DC plan; participants may opt out of DC plan contributions.	Yes
TX	Texas County & District	Employers set the employee contribution rate in a range from 4.0% to 7.0%	Both; varies by plan
TX	Texas ERS	9.5%	Yes
TX	Texas LECOS	LECOS is a supplementary plan to the Texas ERS, for law enforcement and custodial officers; participants contribute 0.5% plus the ERS contribution.	Yes
TX	Texas Municipal	5%, 6%, or 7%, depending on ER election	Both; varies by plan
TX	Texas Teachers	7.7%	No, for 80% of TRS members
UT	Utah Noncontributory	Non-contributory for employees hired before 7/1/11; employees hired after that date may elect to participate in a hybrid plan or a DC plan. Employee contributions in the hybrid plan are required when the costs of the DB portion of the plan exceed 10% (12% for public safety). Currently there are no employee contributions required. DC plan contributions are optional.	Yes
VA	City of Richmond Retirement System	1.0% for general employees, and 1.5% for sworn public safety officers hired since 7/1/07	Yes
VA	Virginia Retirement System	5.0% for participants other than judges who were first appointed prior to 7/1/10; employees hired since 1/1/14 participate in a hybrid plan with mandatory contributions of 4% to the DB plan and 1% to the DC plan.	Yes
VT	Vermont State Employees	5.0%	Yes

Appendix A: Employee pension contribution rates

State	Plan	Employee Contribution Rate (Percent of Pay)	Social Security Coverage
VT	Vermont Teachers	5.0%	Yes
WA	Washington LEOFF Plan 1	0%	Yes
WA	Washington LEOFF Plan 2	8.75%	Yes
WA	Washington PERS 1	6.0%	Yes
WA	Washington PERS 2/3	7.41% for Plan 2 members; Plan 3 members contribute only to their defined contribution plan at between 5% and 15%	Yes
WA	Washington School Employees Plan 2/3	7.27% for Plan 2 members; Plan 3 members contribute only to their defined contribution plan at between 5% and 15%	Yes
WA	Washington Teachers Plan 1	6.0%	Yes
WA	Washington Teachers Plan 2/3	7.06% for Plan 2 members; Plan 3 members contribute only to their defined contribution plan at between 5% and 15%	Yes
WA	Washington Public Safety Employees Plan	7.07%	Yes
WI	Wisconsin Retirement System	6.7%, decreasing to 6.55% for 2019	Yes
WV	West Virginia PERS	4.5% for those hired before 7/1/15; 6.0% for those hired on or after 7/1/15	Yes
WV	West Virginia Teachers	4.5% for those hired before 7/1/15; 6.0% for those hired on or after 7/1/15	Yes
WY	Wyoming Public Employees	8.25%, rising incrementally to 9.25% by FY 22; law enforcement personnel contribute 8.6%	Yes

Oregon

Kate Brown, Governor

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PERS Policy Paper – Defined Contribution Plans

Background

There are two main types of retirement plans: "Defined Benefit" (DB), which generally provides a lifetime benefit consisting of a monthly pension payment that is derived from the plan member's length of employment, salary, etc.; and "Defined Contribution" (DC), which provides an account balance in an individual account that receives contributions from the employer and/or the member and any earnings generated by the investment of those contributions. Both types of plans are regulated under state and federal laws, and have distinct features and characteristics which are explored more fully below.

The PERS programs, Tier One, Tier Two, and OPSRP, are a hybrid of both plan types. Members are paid a monthly pension for life upon retirement (funded mostly from employer contributions and investment returns) and they receive the accumulated account balance in the Individual Account Program (IAP), which is funded over the member's career by contributing 6% of the member's salary (either by the member or by their employer on their behalf) which then receives annual earnings or losses until the member retires or withdraws the account.

The National Association of State Retirement Administrators maintains a web page that curates studies and other resources that other states have considered in deciding which plan type will best meet their stakeholders' objectives. This paper attempts to address some policy issues that would arise if Oregon were to consider abandoning its hybrid plan and move entirely to a DC plan, either for new employees only or for the future public service of all current PERS members after the new plan is adopted.

Policy Issue – Cost Comparison

Would a DC Plan cost less than PERS' currently projected employer rates for the DB Plan?

Not appreciably. Here's why:

- PERS employer contribution rates have two components: Normal Cost and Unfunded Actuarial Liability (UAL). The Normal Cost is the "price" for additional benefits earned each year for current employees; the UAL rate amortizes, or pays off over time, the deficit between accrued benefits and the assets available to pay them. (For PERS, that deficit was $22.3 billion as of the December 31, 2017 system valuation, the most recent available). Moving to a DC plan would not save employers much money because:

    1. Normal Cost for general OPSRP members is 8.49% of payroll (projected July 1, 2019 rates based on the 2016 system valuation). If a DC plan was adopted that provided for an employer contribution of 8%, for example, the only savings would be the .49% of payroll (more would be saved if the employer contribution was lower, or if Tier One/Two and OPSRP Police and Fire members were also put into the DC plan for future service, as they have a higher Normal Cost).
    2. The UAL rate of 14.21% of payroll (also projected for July 1, 2019 based on the 2016 system valuation) would still need to be paid, even if a DC-only plan were implemented, because that rate represents the costs for benefits already accrued (the $22.3 billion UAL mentioned above). Shifting current PERS members to a DC plan for future service will not reduce that cost at all, because PERS employers are obligated to pay for the benefits accrued by their employees in prior years. The cost of these benefits does not go away simply by switching to a new type of retirement plan.

- Per dollar of benefit paid, DB Plans are 48% more cost efficient than DC Plans, according to a national study. Generally, these cost savings occur because:

    1. DB plan investments cost less and perform better, because professionals can manage the plan for lower costs and with a longer investment horizon than an individual DC plan member.

2. Longevity and other actuarial risks are spread over the plan's entire population, so an individual member doesn't need to protect against those risks on their own.

Policy Issue – Effectiveness of DC or DB Plans

Would a DC Plan be better than a DB Plan for PERS employers and members?

Because of their design, DB plans and DC plans present different characteristics that may work better for some employers and members, but not for others. Here are some issues to consider:

- *Investment Risk Exposure* – The current PERS plan allocates investment risk between employers and members. Employers bear all the investment risk for the pension component (i.e., if investments don't return enough to fund the defined benefit, employers have to contribute more). Members in the Individual Account Program (IAP) bear the investment risk for that component of their benefit package as their contribution of 6% of salary accumulates market earnings and losses. As the PERS plan is designed today, if investments do not perform as assumed, the employer's cost for their portion of the benefit will rise and members will not receive as much as they might have expected from the IAP. A DC plan puts all of that investment risk on the member, and takes all of it away from the employer. The employer has no risk of their costs changing with investment fluctuations as their contribution to the plan is defined (fixed by the plan's terms); members bear all the investment risk since those returns will directly affect their account balance.
- *Portability and Longevity* – PERS pension benefits are not "portable" if the member leaves public employment for the private sector. While the member may withdraw their IAP balance, they do not receive any benefit from the employer contributions to their pension unless they are vested, leave their account with PERS and retire when eligible. In a DC plan, the member could roll their entire accumulated account to a new employer's plan (if they offer one) or to an outside financial service provider. On the other hand, a DB plan becomes more valuable the longer that the member remains in public service. For positions where experience is valued, a DB plan would provide a greater incentive to stay with an employer than a DC plan would.
- *Administrative Considerations* – If a new DC plan is implemented, consider that many features of the current PERS plan will need to be assessed, such as: 1) whether the complicated eligibility criteria (expected to work 600 hours for one or more PERS employers in a calendar year) should be changed; 2) whether members will have choice in their investments and who manages those choices; 3) cash flow implications of member and employer contributions no longer flowing into the PERS Fund (which is currently cash-flow negative without those new moneys coming in); and 4) how to address special PERS provisions like disability benefits and police & fire classifications.

The Economic Policy Institute published a comprehensive paper in March 2015 to address the question of whether switching government employees to a DC Plan would save taxpayers money. Their conclusions were that such conversions fail on three important points:

1. **They do not help states save money**. Traditional defined-benefit pensions are more efficient than DC plans and most hybrid plans due to economies of scale, risk pooling, and other factors. Moreover, changing plan type introduces transition costs. Thus, states that switched to DC and hybrid plans did not save money except to the extent that they simply cut benefits or required workers to contribute more toward their retirement.
2. **They create more workforce management problems than they solve**. For example, many such plans provide the biggest benefits to job leavers, promoting high turnover in public-sector jobs which require a high level of skill and experience.
3. **They increase retirement insecurity**. Individual account-type plans, frequently discussed in states around the country, threaten the retirement security of young and old alike. While a well-designed hybrid plan could theoretically help younger workers without undermining the retirement security of midcareer and older workers, none of the plans offered in the current political climate have done so.

Projection of Employee Contribution Effective 1/1/2020

Based on 12/31/2017 valuation and assumed 3.5% growth in system payroll

See letter dated March 15, 2019 for additional detail on assumptions, methods, and caveats

Percent contributed	**1%**
Affected group	**System-wide**

Summary by Year

Employee Contribution Amount

Year	Tier 1	Tier 2	OPSRP	Total
2019	-	-	-	-
2020	14,600,000	23,800,000	69,800,000	108,200,000
2021	13,100,000	23,100,000	75,800,000	112,000,000
2022	11,600,000	22,400,000	81,900,000	115,900,000
2023	10,100,000	21,700,000	88,100,000	119,900,000
2024	8,700,000	20,900,000	94,600,000	124,200,000
2025	7,400,000	20,000,000	101,100,000	128,500,000
2026	6,100,000	19,000,000	107,800,000	132,900,000
2027	4,900,000	18,000,000	114,700,000	137,600,000
2028	3,900,000	16,700,000	121,800,000	142,400,000
2029	3,100,000	15,300,000	129,000,000	147,400,000
2030	2,400,000	13,700,000	136,500,000	152,600,000
2031	1,900,000	12,000,000	144,100,000	158,000,000

Projected Payroll

Year	Tier 1	Tier 2	OPSRP	Total
2019	1,602,700,000	2,441,900,000	6,407,700,000	10,452,300,000
2020	1,459,800,000	2,376,200,000	6,982,200,000	10,818,200,000
2021	1,313,000,000	2,308,900,000	7,575,000,000	11,196,900,000
2022	1,160,400,000	2,241,900,000	8,186,400,000	11,588,700,000
2023	1,013,100,000	2,168,100,000	8,813,100,000	11,994,300,000
2024	871,600,000	2,086,900,000	9,455,600,000	12,414,100,000
2025	739,400,000	1,998,100,000	10,111,100,000	12,848,600,000
2026	614,400,000	1,900,300,000	10,783,700,000	13,298,400,000
2027	494,000,000	1,795,200,000	11,474,500,000	13,763,700,000
2028	393,100,000	1,671,300,000	12,181,000,000	14,245,400,000
2029	310,300,000	1,528,800,000	12,904,900,000	14,744,000,000
2030	243,200,000	1,366,900,000	13,650,000,000	15,260,100,000
2031	191,200,000	1,197,000,000	14,406,000,000	15,794,200,000

Summary by Biennium

Employee Contribution Amount

Biennium	Tier 1	Tier 2	OPSRP	Total
2019-2021	21,200,000	35,300,000	107,700,000	164,200,000
2021-2023	23,200,000	44,800,000	163,800,000	231,800,000
2023-2025	17,500,000	41,700,000	189,200,000	248,400,000
2025-2027	12,300,000	38,000,000	215,800,000	266,100,000
2027-2029	8,000,000	33,300,000	243,700,000	285,000,000
2029-2031	4,900,000	27,300,000	273,100,000	305,300,000

Projected Payroll

Biennium	Tier 1	Tier 2	OPSRP	Total
2019-2021	2,917,700,000	4,751,600,000	13,973,500,000	21,642,800,000
2021-2023	2,323,400,000	4,480,400,000	16,380,500,000	23,184,300,000
2023-2025	1,747,900,000	4,170,000,000	18,917,700,000	24,835,600,000
2025-2027	1,231,100,000	3,796,900,000	21,576,500,000	26,604,500,000
2027-2029	795,300,000	3,333,300,000	24,370,800,000	28,499,400,000
2029-2031	494,000,000	2,729,800,000	27,305,400,000	30,529,200,000

Projection of Employee Contribution Effective 1/1/2020

Based on 12/31/2017 valuation and assumed 3.5% growth in system payroll

See letter dated March 15, 2019 for additional detail on assumptions, methods, and caveats

Percent contributed	**1%**
Affected group	**School District only**

Summary by Year

Employee Contribution Amount

Year	Tier 1	Tier 2	OPSRP	Total
2019	-	-	-	-
2020	4,700,000	8,300,000	22,500,000	35,500,000
2021	4,300,000	8,000,000	24,500,000	36,800,000
2022	3,800,000	7,800,000	26,500,000	38,100,000
2023	3,300,000	7,500,000	28,600,000	39,400,000
2024	2,800,000	7,300,000	30,700,000	40,800,000
2025	2,300,000	7,000,000	32,800,000	42,100,000
2026	1,900,000	6,800,000	35,000,000	43,700,000
2027	1,500,000	6,500,000	37,200,000	45,200,000
2028	1,100,000	6,100,000	39,500,000	46,700,000
2029	800,000	5,700,000	41,900,000	48,400,000
2030	600,000	5,200,000	44,300,000	50,100,000
2031	400,000	4,500,000	46,900,000	51,800,000

Projected Payroll

Year	Tier 1	Tier 2	OPSRP	Total
2019	522,200,000	851,400,000	2,056,700,000	3,430,300,000
2020	474,600,000	827,000,000	2,248,600,000	3,550,200,000
2021	425,600,000	802,100,000	2,446,900,000	3,674,600,000
2022	376,800,000	776,800,000	2,649,700,000	3,803,300,000
2023	328,500,000	751,900,000	2,855,900,000	3,936,300,000
2024	280,300,000	726,600,000	3,067,100,000	4,074,000,000
2025	234,800,000	701,300,000	3,280,500,000	4,216,600,000
2026	190,700,000	675,700,000	3,497,900,000	4,364,300,000
2027	146,800,000	649,000,000	3,721,200,000	4,517,000,000
2028	110,300,000	614,300,000	3,950,500,000	4,675,100,000
2029	81,500,000	570,000,000	4,187,200,000	4,838,700,000
2030	59,200,000	515,400,000	4,433,400,000	5,008,000,000
2031	42,300,000	453,100,000	4,687,900,000	5,183,300,000

Summary by Biennium

Employee Contribution Amount

Biennium	Tier 1	Tier 2	OPSRP	Total
2019-2021	6,900,000	12,300,000	34,700,000	53,900,000
2021-2023	7,500,000	15,500,000	53,000,000	76,000,000
2023-2025	5,600,000	14,500,000	61,400,000	81,500,000
2025-2027	3,800,000	13,500,000	70,000,000	87,300,000
2027-2029	2,200,000	12,200,000	79,000,000	93,400,000
2029-2031	1,200,000	10,300,000	88,700,000	100,200,000

Projected Payroll

Biennium	Tier 1	Tier 2	OPSRP	Total
2019-2021	948,500,000	1,653,700,000	4,500,500,000	7,102,700,000
2021-2023	753,800,000	1,553,700,000	5,301,100,000	7,608,600,000
2023-2025	561,900,000	1,453,200,000	6,135,400,000	8,150,500,000
2025-2027	381,400,000	1,350,800,000	6,998,800,000	8,731,000,000
2027-2029	224,400,000	1,223,800,000	7,904,700,000	9,352,900,000
2029-2031	121,100,000	1,027,000,000	8,871,000,000	10,019,100,000

Projection of Employee Contribution Effective 1/1/2020

Based on 12/31/2017 valuation and assumed 3.5% growth in system payroll

See letter dated March 15, 2019 for additional detail on assumptions, methods, and caveats

Percent contributed	**2%**
Affected group	**System-wide**

Summary by Year

Employee Contribution Amount

Year	Tier 1	Tier 2	OPSRP	Total
2019	-	-	-	-
2020	29,200,000	47,500,000	139,600,000	216,300,000
2021	26,300,000	46,200,000	151,500,000	224,000,000
2022	23,200,000	44,800,000	163,700,000	231,700,000
2023	20,300,000	43,400,000	176,300,000	240,000,000
2024	17,400,000	41,700,000	189,100,000	248,200,000
2025	14,800,000	40,000,000	202,200,000	257,000,000
2026	12,300,000	38,000,000	215,700,000	266,000,000
2027	9,900,000	35,900,000	229,500,000	275,300,000
2028	7,900,000	33,400,000	243,600,000	284,900,000
2029	6,200,000	30,600,000	258,100,000	294,900,000
2030	4,900,000	27,300,000	273,000,000	305,200,000
2031	3,800,000	23,900,000	288,100,000	315,800,000

Projected Payroll

Year	Tier 1	Tier 2	OPSRP	Total
2019	1,602,700,000	2,441,900,000	6,407,700,000	10,452,300,000
2020	1,459,800,000	2,376,200,000	6,982,200,000	10,818,200,000
2021	1,313,000,000	2,308,900,000	7,575,000,000	11,196,900,000
2022	1,160,400,000	2,241,900,000	8,186,400,000	11,588,700,000
2023	1,013,100,000	2,168,100,000	8,813,100,000	11,994,300,000
2024	871,600,000	2,086,900,000	9,455,600,000	12,414,100,000
2025	739,400,000	1,998,100,000	10,111,100,000	12,848,600,000
2026	614,400,000	1,900,300,000	10,783,700,000	13,298,400,000
2027	494,000,000	1,795,200,000	11,474,500,000	13,763,700,000
2028	393,100,000	1,671,300,000	12,181,000,000	14,245,400,000
2029	310,300,000	1,528,800,000	12,904,900,000	14,744,000,000
2030	243,200,000	1,366,900,000	13,650,000,000	15,260,100,000
2031	191,200,000	1,197,000,000	14,406,000,000	15,794,200,000

Summary by Biennium

Employee Contribution Amount

Biennium	Tier 1	Tier 2	OPSRP	Total
2019-2021	42,300,000	70,600,000	215,400,000	328,300,000
2021-2023	46,500,000	89,600,000	327,600,000	463,700,000
2023-2025	35,000,000	83,400,000	378,400,000	496,800,000
2025-2027	24,600,000	75,900,000	431,500,000	532,000,000
2027-2029	15,900,000	66,700,000	487,400,000	570,000,000
2029-2031	9,900,000	54,600,000	546,100,000	610,600,000

Projected Payroll

Biennium	Tier 1	Tier 2	OPSRP	Total
2019-2021	2,917,700,000	4,751,600,000	13,973,500,000	21,642,800,000
2021-2023	2,323,400,000	4,480,400,000	16,380,500,000	23,184,300,000
2023-2025	1,747,900,000	4,170,000,000	18,917,700,000	24,835,600,000
2025-2027	1,231,100,000	3,796,900,000	21,576,500,000	26,604,500,000
2027-2029	795,300,000	3,333,300,000	24,370,800,000	28,499,400,000
2029-2031	494,000,000	2,729,800,000	27,305,400,000	30,529,200,000

Projection of Employee Contribution Effective 1/1/2020

Based on 12/31/2017 valuation and assumed 3.5% growth in system payroll

See letter dated March 15, 2019 for additional detail on assumptions, methods, and caveats

Percent contributed	**2%**
Affected group	**School District only**

Summary by Year

Employee Contribution Amount

Year	Tier 1	Tier 2	OPSRP	Total
2019	-	-	-	-
2020	9,500,000	16,500,000	45,000,000	71,000,000
2021	8,500,000	16,000,000	48,900,000	73,400,000
2022	7,500,000	15,500,000	53,000,000	76,000,000
2023	6,600,000	15,000,000	57,100,000	78,700,000
2024	5,600,000	14,500,000	61,300,000	81,400,000
2025	4,700,000	14,000,000	65,600,000	84,300,000
2026	3,800,000	13,500,000	70,000,000	87,300,000
2027	2,900,000	13,000,000	74,400,000	90,300,000
2028	2,200,000	12,300,000	79,000,000	93,500,000
2029	1,600,000	11,400,000	83,700,000	96,700,000
2030	1,200,000	10,300,000	88,700,000	100,200,000
2031	800,000	9,100,000	93,800,000	103,700,000

Projected Payroll

Year	Tier 1	Tier 2	OPSRP	Total
2019	522,200,000	851,400,000	2,056,700,000	3,430,300,000
2020	474,600,000	827,000,000	2,248,600,000	3,550,200,000
2021	425,600,000	802,100,000	2,446,900,000	3,674,600,000
2022	376,800,000	776,800,000	2,649,700,000	3,803,300,000
2023	328,500,000	751,900,000	2,855,900,000	3,936,300,000
2024	280,300,000	726,600,000	3,067,100,000	4,074,000,000
2025	234,800,000	701,300,000	3,280,500,000	4,216,600,000
2026	190,700,000	675,700,000	3,497,900,000	4,364,300,000
2027	146,800,000	649,000,000	3,721,200,000	4,517,000,000
2028	110,300,000	614,300,000	3,950,500,000	4,675,100,000
2029	81,500,000	570,000,000	4,187,200,000	4,838,700,000
2030	59,200,000	515,400,000	4,433,400,000	5,008,000,000
2031	42,300,000	453,100,000	4,687,900,000	5,183,300,000

Summary by Biennium

Employee Contribution Amount

Biennium	Tier 1	Tier 2	OPSRP	Total
2019-2021	13,700,000	24,600,000	69,400,000	107,700,000
2021-2023	15,100,000	31,100,000	106,000,000	152,200,000
2023-2025	11,200,000	29,100,000	122,700,000	163,000,000
2025-2027	7,600,000	27,000,000	140,000,000	174,600,000
2027-2029	4,500,000	24,500,000	158,100,000	187,100,000
2029-2031	2,400,000	20,500,000	177,400,000	200,300,000

Projected Payroll

Biennium	Tier 1	Tier 2	OPSRP	Total
2019-2021	948,500,000	1,653,700,000	4,500,500,000	7,102,700,000
2021-2023	753,800,000	1,553,700,000	5,301,100,000	7,608,600,000
2023-2025	561,900,000	1,453,200,000	6,135,400,000	8,150,500,000
2025-2027	381,400,000	1,350,800,000	6,998,800,000	8,731,000,000
2027-2029	224,400,000	1,223,800,000	7,904,700,000	9,352,900,000
2029-2031	121,100,000	1,027,000,000	8,871,000,000	10,019,100,000

Projection of Employee Contribution Effective 1/1/2020

Based on 12/31/2017 valuation and assumed 3.5% growth in system payroll

See letter dated March 15, 2019 for additional detail on assumptions, methods, and caveats

Percent contributed	**3%**
Affected group	**System-wide**

Summary by Year

Employee Contribution Amount

Year	Tier 1	Tier 2	OPSRP	Total
2019	-	-	-	-
2020	43,800,000	71,300,000	209,500,000	324,600,000
2021	39,400,000	69,300,000	227,300,000	336,000,000
2022	34,800,000	67,300,000	245,600,000	347,700,000
2023	30,400,000	65,000,000	264,400,000	359,800,000
2024	26,100,000	62,600,000	283,700,000	372,400,000
2025	22,200,000	59,900,000	303,300,000	385,400,000
2026	18,400,000	57,000,000	323,500,000	398,900,000
2027	14,800,000	53,900,000	344,200,000	412,900,000
2028	11,800,000	50,100,000	365,400,000	427,300,000
2029	9,300,000	45,900,000	387,100,000	442,300,000
2030	7,300,000	41,000,000	409,500,000	457,800,000
2031	5,700,000	35,900,000	432,200,000	473,800,000

Projected Payroll

Year	Tier 1	Tier 2	OPSRP	Total
2019	1,602,700,000	2,441,900,000	6,407,700,000	10,452,300,000
2020	1,459,800,000	2,376,200,000	6,982,200,000	10,818,200,000
2021	1,313,000,000	2,308,900,000	7,575,000,000	11,196,900,000
2022	1,160,400,000	2,241,900,000	8,186,400,000	11,588,700,000
2023	1,013,100,000	2,168,100,000	8,813,100,000	11,994,300,000
2024	871,600,000	2,086,900,000	9,455,600,000	12,414,100,000
2025	739,400,000	1,998,100,000	10,111,100,000	12,848,600,000
2026	614,400,000	1,900,300,000	10,783,700,000	13,298,400,000
2027	494,000,000	1,795,200,000	11,474,500,000	13,763,700,000
2028	393,100,000	1,671,300,000	12,181,000,000	14,245,400,000
2029	310,300,000	1,528,800,000	12,904,900,000	14,744,000,000
2030	243,200,000	1,366,900,000	13,650,000,000	15,260,100,000
2031	191,200,000	1,197,000,000	14,406,000,000	15,794,200,000

Summary by Biennium

Employee Contribution Amount

Biennium	Tier 1	Tier 2	OPSRP	Total
2019-2021	63,500,000	105,900,000	323,100,000	492,500,000
2021-2023	69,700,000	134,400,000	491,400,000	695,500,000
2023-2025	52,400,000	125,100,000	567,500,000	745,000,000
2025-2027	36,900,000	113,900,000	647,300,000	798,100,000
2027-2029	23,900,000	100,000,000	731,100,000	855,000,000
2029-2031	14,800,000	81,900,000	819,200,000	915,900,000

Projected Payroll

Biennium	Tier 1	Tier 2	OPSRP	Total
2019-2021	2,917,700,000	4,751,600,000	13,973,500,000	21,642,800,000
2021-2023	2,323,400,000	4,480,400,000	16,380,500,000	23,184,300,000
2023-2025	1,747,900,000	4,170,000,000	18,917,700,000	24,835,600,000
2025-2027	1,231,100,000	3,796,900,000	21,576,500,000	26,604,500,000
2027-2029	795,300,000	3,333,300,000	24,370,800,000	28,499,400,000
2029-2031	494,000,000	2,729,800,000	27,305,400,000	30,529,200,000

Projection of Employee Contribution Effective 1/1/2020

Based on 12/31/2017 valuation and assumed 3.5% growth in system payroll

See letter dated March 15, 2019 for additional detail on assumptions, methods, and caveats

Percent contributed	**3%**
Affected group	**School District only**

Summary by Year

Employee Contribution Amount

Year	Tier 1	Tier 2	OPSRP	Total
2019	-	-	-	-
2020	14,200,000	24,800,000	67,500,000	106,500,000
2021	12,800,000	24,100,000	73,400,000	110,300,000
2022	11,300,000	23,300,000	79,500,000	114,100,000
2023	9,900,000	22,600,000	85,700,000	118,200,000
2024	8,400,000	21,800,000	92,000,000	122,200,000
2025	7,000,000	21,000,000	98,400,000	126,400,000
2026	5,700,000	20,300,000	104,900,000	130,900,000
2027	4,400,000	19,500,000	111,600,000	135,500,000
2028	3,300,000	18,400,000	118,500,000	140,200,000
2029	2,400,000	17,100,000	125,600,000	145,100,000
2030	1,800,000	15,500,000	133,000,000	150,300,000
2031	1,300,000	13,600,000	140,600,000	155,500,000

Projected Payroll

Year	Tier 1	Tier 2	OPSRP	Total
2019	522,200,000	851,400,000	2,056,700,000	3,430,300,000
2020	474,600,000	827,000,000	2,248,600,000	3,550,200,000
2021	425,600,000	802,100,000	2,446,900,000	3,674,600,000
2022	376,800,000	776,800,000	2,649,700,000	3,803,300,000
2023	328,500,000	751,900,000	2,855,900,000	3,936,300,000
2024	280,300,000	726,600,000	3,067,100,000	4,074,000,000
2025	234,800,000	701,300,000	3,280,500,000	4,216,600,000
2026	190,700,000	675,700,000	3,497,900,000	4,364,300,000
2027	146,800,000	649,000,000	3,721,200,000	4,517,000,000
2028	110,300,000	614,300,000	3,950,500,000	4,675,100,000
2029	81,500,000	570,000,000	4,187,200,000	4,838,700,000
2030	59,200,000	515,400,000	4,433,400,000	5,008,000,000
2031	42,300,000	453,100,000	4,687,900,000	5,183,300,000

Summary by Biennium

Employee Contribution Amount

Biennium	Tier 1	Tier 2	OPSRP	Total
2019-2021	20,600,000	36,800,000	104,200,000	161,600,000
2021-2023	22,600,000	46,600,000	159,000,000	228,200,000
2023-2025	16,900,000	43,600,000	184,100,000	244,600,000
2025-2027	11,400,000	40,500,000	210,000,000	261,900,000
2027-2029	6,700,000	36,700,000	237,100,000	280,500,000
2029-2031	3,600,000	30,800,000	266,100,000	300,500,000

Projected Payroll

Biennium	Tier 1	Tier 2	OPSRP	Total
2019-2021	948,500,000	1,653,700,000	4,500,500,000	7,102,700,000
2021-2023	753,800,000	1,553,700,000	5,301,100,000	7,608,600,000
2023-2025	561,900,000	1,453,200,000	6,135,400,000	8,150,500,000
2025-2027	381,400,000	1,350,800,000	6,998,800,000	8,731,000,000
2027-2029	224,400,000	1,223,800,000	7,904,700,000	9,352,900,000
2029-2031	121,100,000	1,027,000,000	8,871,000,000	10,019,100,000

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MEMORANDUM

THIS DOCUMENT IS A CONFIDENTIAL COMMUNICATION FROM ATTORNEY TO CLIENT. NEITHER THE DOCUMENT NOR ITS CONTENTS SHOULD BE ROUTINELY CIRCULATED BEYOND THE IMMEDIATE ADDRESSEES UNLESS COUNSEL IS FIRST CONSULTED. THIS DOCUMENT SHOULD NOT BE ATTACHED TO OR MADE A PART OF AN AGENDA FOR ANY PUBLIC MEETING, NOR SHOULD IT BE DISCUSSED BY ANY PUBLIC BODY IN OPEN SESSION WITHOUT FIRST CONSULTING WITH COUNSEL.

DATE: April 10, 2019

TO: Nik Blosser, Chief of Staff
Office of Governor Kate Brown

FROM: Fred Boss
Deputy Attorney General FMB

SUBJECT: SAIF Queries
DOJ File No.: 121010-GG1154-17

This memo addresses three questions regarding the status of SAIF Corporation (SAIF), its relationship to the State of Oregon (State) and the Industrial Accident Fund (IAF).

I. QUESTIONS & SHORT ANSWERS.

1. Is it possible for the State to have SAIF run in a different manner than it currently is? Could SAIF be made into a state agency?

Answer: Yes. The Legislature may change the nature of SAIF through legislative action, including making it a state agency.

2. May the State access a current or future "surplus" of the IAF?

Answer: Yes, the legislature may appropriate surplus funds in the IAF except for any funds in the IAF that remain in the IAF from before ORS 656.634(2) was amended in 1982. Funds from prior to the 1982 amendment are entirely dedicated to the purposes of SAIF. But per the current version of that statute, the State of Oregon has an interest in any surplus, and the Legislature may direct how that surplus is to be used. However, it is possible that SAIF insureds could litigate any calculation of a surplus under ORS 656.634(2).

3. Can the State sell SAIF?

Answer: As with any other change to SAIF, a sale would have to be statutorily authorized by the legislature. Trust-encumbered funds within the existing IAF, however, would have to remain dedicated to their currently-dedicated purposes. Ensuring that the obligation passes with the funds could be somewhat difficult as a practical matter, and the nature of the encumbrances could make it difficult to incorporate into an existing business. And there are legal risks to consider. First, an insured party who benefits from the trust could allege that whatever mechanism is used to carry the obligation forward was legally inadequate. Second, it is possible that a court might conclude that having a contract with the state is, in itself, a benefit of the existing statutory contract that would be impermissibly impaired by transferring the obligation to a private party. The first of these risks could be mitigated by seeking indemnity from a purchaser. And we are not aware of any cases indicating that either the state or the federal contracts clause prohibits the state from transferring its obligations to private entities as part of a sales transaction.

II. BACKGROUND AND NATURE OF SAIF

SAIF has a long and complex history. Oregon's appellate courts have written a number of opinions dealing with the history and purpose of SAIF. In 2005, the Oregon Court of Appeals helpfully distilled those cases in *Johnson v. SAIF*, 202 Or App 264 (2005). We have included that discussion in Appendices B (general discussion of SAIF history and case law) and C (specific discussion of *Eckles v. State of Oregon*, 306 Or 380 (1988)).

SAIF is an "independent public corporation" that remains part of the state. While SAIF operates in many respects like a private entity (for instance, SAIF is not subject to the state personnel relations law or the public contracting code), in other respects it operates like a state agency (for instance, SAIF is represented by the Oregon Department of Justice). For the purposes of these questions, the most important piece of SAIF to understand is the IAF. For one thing, the IAF holds the "surplus" that can be "legislatively directed" to other state purposes. For another, the dedicated nature of funds within IAF will have implications with respect to any sale of SAIF.

Before we get to that discussion, however, we note that the restrictions applicable to existing IAF moneys do not alter the fundamental fact that SAIF is a legislative creation that is subject to change by the legislature. The principles we discuss below significantly restrict the state's ability to make *retrospective* changes that affect the terms of agreements between SAIF and its insured parties that were in existence prior to whatever change the legislature may make. But the Oregon Supreme Court has clearly explained that those principles do not prevent changes that apply prospectively. *Eckles*, 306 Or at 399. We consequently answer the first question in the affirmative. But it is important to understand that changes cannot permissibly impair the terms of existing contracts between SAIF and its insureds. Changes would need to be carefully structured with that limitation in mind.

III. THE IAF

A. General Background

The IAF is, in part, a trust fund. The State of Oregon has statutorily recognized that status. ORS 656.634(1). The state has also disclaimed any interest in amounts in the IAF "deemed actuarially necessary according to recognized insurance principles, and necessary in addition thereto to assure continued fiscal soundness of the State Accident Insurance Fund Corporation both for current operations and for future capital needs." ORS 656.634(2).

Employer premiums flow into the IAF, and SAIF's payments and expenses flow out of it. ORS 656.632-656.640. SAIF is required to maintain some of the IAF as a "reserve" so that it can meet unexpected demands. ORS 656.635. SAIF is also required to maintain reserves for permanent disability or death claims. ORS 656.636. It may also set aside such other reserves as SAIF itself deems necessary. ORS 656.640. A surplus exists within the IAF when the amount of money in the fund exceeds the amount " actuarially necessary according to recognized insurance principles" and "necessary * * * to assure continued fiscal soundness" of SAIF. ORS 656.634(2). To the extent the surplus is not legislatively appropriated for other purposes, SAIF may use it to pay dividends to policy-holding employers. ORS 656.526(2). But such a surplus is first subject to the legislature's power of appropriation. The Oregon Supreme Court has stated that this provision authorizing the legislature to appropriate surplus funds is permissible as applied to moneys placed in the IAF after the relevant statutes were amended in 1982. *Eckles*, 306 Or at 399. As a consequence, we answer the second question in the affirmative as well. But, as we discuss in more detail below, any moneys in the IAF that predate the 1982 amendments are not subject to the same degree of legislative control.

B. Surplus Issues

The state has generally reserved to itself the right to legislatively direct the use of any surplus in the IAF. But two issues should be kept in mind. First, the calculation of a surplus could be litigated if policyholders disagree with the assessment of what amount is actuarially necessary or what amount is necessary to continue the fiscal soundness of SAIF. So long as the calculations are made in good faith and consistent with recognized insurance principles, there is no reason to think such a suit would be successful, but it is nevertheless a possibility.

Second, as alluded to above, funds in the IAF that predate the 1982 amendment of ORS 636.634 are entirely dedicated to the purposes of ORS chapter 656. That is because the Oregon Supreme Court concluded that the amendment of the statute to authorize the legislature to appropriate surplus funds, as applied to moneys insurers paid to SAIF while the prior version of the statute remained in effect, was a violation of the contracts clause of the Oregon Constitution:

> Section four of the Transfer Act impairs the obligation of the contract formerly stated in ORS 656.634 because section four would eliminate that obligation with respect to surplus IAF funds. The state could use surplus IAF funds for any purpose that it chose, without contractual liability to employers insured by SAIF.

> Section four, then, violates Article I, section 21, of the Oregon Constitution insofar as it affects employers with SAIF insurance contracts entered into before the enactment of the Transfer Act.

Eckles, 306 Or at 399. But the court approved the change on a prospective basis:

> As to subsequent contracts, including renewals of contracts then in existence, section four is valid because ORS 656.634 as amended by section four would define, not impair, the state's contractual obligations to employers by reason of those contracts.

Id. Thus, *Eckles* establishes that pre-amendment funds remain dedicated to the purposes of ORS chapter 656 even if surplus to SAIF's needs. But the case also establishes that the nature of the contract between SAIF and insured employers can be changed on a prospective basis – and that the 1982 amendment was effective to lift the trust obligation as to any surplus resulting from moneys received after the amendment.

C. Trust Obligations of the IAF

The Oregon State Treasurer holds the IAF and the Oregon Investment Council manages its investments. ORS 656.632(1); ORS 293.701. But, as we now discuss further, the state's ability to control the disposition of the IAF is limited by the agreement between the state and the insurers whose premiums account for the bulk of the fund:

> We need not pursue the extended arguments of the state and plaintiff over whether the IAF is a "trust fund," as it is described by the legislature, or a "statutorily dedicated fund," as the State insists that it is. There can be little doubt that the purpose of ORS 656.634 was to assure employers who insured with SIAC, and subsequently with SAIF, that the State would not do precisely what it did do in the Transfer Act. Moreover, the reason that the State made this assurance was to induce skeptical employers to participate in a state insurance system that was, and still is, voluntary in the sense that private employers need not obtain workers' compensation insurance from SAIF. We conclude that ORS 656.634 expressed a contractual promise of the state to employers who insured with SAIF that the State would not transfer IAF funds to the General Fund.

Eckles, 306 Or at 393. The extent to which pre-amendment funds remain in the IAF today is a factual question beyond the scope of this memorandum. At some point those funds will inevitably have been expended, meaning that the pre-amendment trust obligation no longer applies to any money in the IAF.

Of course, even if there are currently no pre-amendment funds in the IAF, the current statutory contract still dedicates the IAF to chapter 656 purposes, limiting the state's interest to an interest in "surplus" funds that SAIF does not require for actuarial purposes or to "assure [SAIF's] continued fiscal soundness. ORS 656.634(2). The reasoning of *Eckles* means that any legislative action redirecting non-surplus funds for purposes other than those specified in the current statutes would violate the contract between the state and SAIF's insureds. That relationship could be changed prospectively, but not with respect to the current balance of the IAF.

As a consequence, any sale of SAIF and the IAF[1] would need to ensure that moneys currently in the IAF remain dedicated in trust to the same extent that they are presently dedicated. For moneys that have been in the IAF since before the 1982 amendment, that means that the terms of the sale would need to ensure that those funds would, in their entirety, continue to be held in trust for purposes consistent with chapter 656 until fully spent. For the remainder of the current IAF balance, any sales agreement would need to establish a continuing trust obligation with respect to amounts "deemed actuarially necessary according to recognized insurance principles, and necessary in addition thereto to assure continued fiscal soundness" of the enterprise. Amounts that would be deemed surplus under the current statutory scheme – which *Eckles* indicated the legislature would be free to appropriate to purposes of its choosing – should not need to be encumbered in the same way, since they are not currently encumbered.

The trust obligations of the IAF mean that selling the asset would require navigating both pragmatic difficulties and legal risks. On the pragmatic side, it may be difficult to craft a sales agreement that adequately preserves the existing trust obligations. And the nature of those obligations – particularly the encumbrance on funds "necessary * * * to assure continued fiscal soundness of the State Accident Insurance Fund Corporation both for current operations and for future capital needs agreement" could make it difficult for a potential purchaser to fold SAIF's operations into a going business. *Eckles* indicates that the requirement should be limited to SAIF's existing contracts prior to the hypothetical sale. But segregating that business from the other business conducted by a hypothetical purchaser might be an unattractive proposition. Ultimately, it should be possible to address the first of these two issues through careful drafting. The extent to which the latter issue might impede sale is ultimately a question for the market.

We have also identified two legal risks. First, no matter how carefully the state crafts language to ensure that moneys in the IAF remain burdened by their current trust obligations, SAIF insured may argue that the state failed to effectively do so and thereby breached its contract. Because a breach of contract is generally remedied by an award of monetary damages, this risk can be mitigated by requiring a purchaser to indemnify the state.

Second, even if a court accepted that the terms of an agreement adequately carry the trust obligation forward, the court might nevertheless interpret either the state or the federal constitution's contracts clause to prohibit the sale. This would mean that, in addition to the terms of the contract, the identity of the state as a contracting party is a material term of the statutory contract that cannot be change. We are not aware of any cases suggesting this result. And such a decision would treat the state differently than private entities despite the fact that neither contracts clause suggests that they apply differently to contracts where the state is a party. We do not ultimately believe that this argument should prevail. Nevertheless, the entire structure of chapter 656 obviously contemplates a quasi-governmental entity. And court decisions with

[1] We have difficulty envisioning a scenario in which SAIF could be sold without also selling the IAF.

respect to legislative attempts to change statutory contracts have not been particularly favorable to the state.

IV. CONCLUSION

We conclude that the legislature may prospectively change the nature of SAIF, including by making it into a state agency or by authorizing its sale. And the legislature may appropriate any surplus in the IAF to whatever purposes it chooses, though a determination of surplus could be litigated by SAIF's insured. Also, changes to SAIF cannot deprive its insureds of the benefit of their existing contracts. This limitation is particularly significant with respect to the IAF. The relevant statute creates a trust that reserves for purposes of chapter 656 any amounts in that fund that are "deemed actuarially necessary according to recognized insurance principles, and necessary in addition thereto to assure continued fiscal soundness of the State Accident Insurance Fund Corporation both for current operations and for future capital needs." ORS 656.634(2). And any moneys in the fund that predate the 1982 amendments to that statute – even if they could be characterized as surplus – are similarly restricted. Any sale would need to ensure that these trust funds remain restricted to the purposes of the trust. This could be difficult to accomplish effectively, but should not be impossible. Although there will inevitably be some legal risk that the state's efforts in this regard are deemed insufficient, that risk can be mitigated by requiring a purchaser to indemnify the state for any resulting liability. There is also some risk that a court could determine that the state's participation in the contract is a term of the agreement that effectively precludes a sale.

APPENDIX A: ADDITIONAL REFERENCE MATERIALS

1. The Department of Consumer and Business Services created a question and answer memorandum describing the sale of SAIF proposed by Ballot Measure 38 in 2004: http://www.cbs.state.or.us/wc_questions.pdf

2. In 2003, the Cascade Policy Institute provided a lengthy explanation of why it thought SAIF should be eliminated: http://cascadepolicy.org/pdf/fiscal/I_123.pdf

3. In 2004, Dexter Johnson (then Deputy Legislative Counsel) provided Kate Brown (then a State Senator) with a memorandum regarding the application of federal taxes to SAIF. The memorandum discusses the extent to which surplus funds of the IAF are subject to transfer: https://www.saif.com/_files/Feb15report/LC-TaxOpinion_Exhibits_021505.pdf.

APPENDIX B: *Johnson* Review of SAIF History and Caselaw (footnotes omitted)

Before workers' compensation legislation was enacted in 1913, state government had a limited role with respect to workplace safety and employer liability. In brief, under the 1910 Employers Liability Law, employers were subject to unlimited liability for certain negligent workplace injuries and deaths, subject to limited defenses. Lord's Oregon Laws, title XXXVII, ch. IV, § 5057a, p. xxxvi (Additions and Corrections) (1910). Employers were able to spread their risks only through the purchase of private casualty insurance.

In 1913, the legislature enacted the first of what ultimately would be many workers' compensation reforms. Or. Laws 1913, ch. 112. The 1913 legislation fundamentally altered the relationship between workers, their employers, and the state. The new statutory regime consisted of a no-fault system under which employers would be subject to limited liability for work-related injuries. The new system was voluntary; employers that engaged in certain "hazardous occupations" were given the option of participating in the system, as were workers engaged in such occupations. *Id.* At §§ 10-18.

The 1913 legislation established an "Industrial Accident Fund" (IAF) out of which workers received benefits for their work-related injuries. The IAF was initially capitalized with a $50,000 General Fund appropriation. *Id.* At § 20. Thereafter, employers who chose to participate in the new system paid a payroll assessment into the fund. The legislation established a three-person commission, the "State Industrial Accident Commission" (SIAC), to collect the assessments from participating employers, adjudicate claims, and pay benefits out of the IAF. *Id.* At §§ 2-9. The commissioners were appointed by the Governor and could be removed by the Governor for "inefficiency, neglect of duty or malfeasance in office." *Id.* At §§ 2-3. Decisions of the SIAC were reviewable by the circuit courts, and appeals therefrom were to the Supreme Court. *Id.* At § 32.

The issue of the constitutional status of the new SIAC first arose in a 1924 case, *Butterfield v. State Indus. Acc. Com.,* 111 Or. 149, 223 P. 941, *on reh'g,* 111 Or. 149, 226 P. 216 (1924). In that case, the claimant was the wife of a worker who had died as the result of an on-the-job injury. The SIAC disallowed her claim for benefits, and she appealed to the circuit court, as the new legislation permitted. The SIAC, however, did not appear in that appeal and the circuit court reversed the SIAC's decision. At that point, the Attorney General attempted to appeal the reversal in the name of the State of Oregon. The claimant moved to dismiss the appeal on the ground that the SIAC had not taken any appeal. The Attorney General responded that the SIAC was an "arm of the state," and, as a result, the state was the real party in interest. From that premise, the Attorney General argued further that, because the state is immune from suit, so also was the SIAC. *Id.* At 152-53, 223 P. 941.

The Supreme Court rejected the argument that, as an "arm of the state," the SIAC was immune from suit. The court pointed to the portions of the reform legislation that expressly provided for judicial review of the SIAC's decisions. The court further noted that, although the IAF was held by the State Treasurer, payments from it could be drawn only upon vouchers transmitted by the SIAC. *Id.* At 153, 223 P. 941. On rehearing, the Attorney General insisted that the state's interest in the IAF necessarily meant that the SIAC, which administered that state fund, is an arm of the state and is immune from suit. The court disagreed, commenting broadly that "immunity does not obtain when an agency of the state is a party." *Id.* At 160, 223 P. 941.

In the following years, the workers' compensation statutes were amended in various ways not pertinent to this case. In the late 1920s, however, a dispute arose about whether the state had any continuing proprietary interest in the IAF. The legislature responded 75*75 by expressly disclaiming — in legalese that, fortunately, has fallen out of vogue — any interest in the fund:

> "The state of Oregon hereby does declare that the industrial accident fund created by the workmen's compensation act of Oregon, being chapter 112, General Laws of Oregon 1913, as amended by various sessions of the legislature thereafter, be and the same is a trust fund for the uses and purposes declared in said act and no other, and that the contributions to the said fund heretofore made by the state of Oregon have become an integral part of said fund * * *, and the state of Oregon hereby does declare that it has no proprietary interest in said fund or in the contributions thereto heretofore made by said state, and hereby does disclaim any right to reclaim said contributions or any part thereof for its own use, and hereby does waive any such right of reclamation, if any it ever had, in or to any of said fund."

Or. Laws 1929, ch. 172.

There followed some years after that a second challenge to the constitutional status of the SIAC, in *Bennett v. State Ind. Acc. Com.,* 203 Or. 275, 279 P.2d 655, *on reh'g,* 203 Or. 275, 279 P.2d 655, 203 Or. 275, 279 P.2d 886 (1955). In that case, the question was whether a lawyer who was also a member of the legislature could represent a party who was suing the SIAC. The Attorney General had complained that the lawyer who represented a claimant against the SIAC ran afoul of Article XV, section 7, of the Oregon Constitution, which prohibits any members of the legislative assembly from being engaged as counsel "in the prosecution of any claim against this state." The Attorney General argued that, because the SIAC was the state, the lawyer-member's client's claim was a "claim against the state." *Bennett,* 203 Or. At 277, 279 P.2d 655.

The Supreme Court began by noting that, under *Butterfield,* an action challenging a decision by the SIAC was not a suit against the state. The Attorney General apparently had suggested that, in light of the state's interest in the IAF at the time, *Butterfield* was incorrect in rejecting the argument that the SIAC was immune from suit. The court replied that, even if that were so, "the state's relationship to the fund has [been] radically altered" by the enactment of the legislature's express disclaimer of any interest in it:

> "If there is any reason for doubting the soundness of the statement in the *Butterfield* case that, in the then existing state of the law with respect to the interest of the State of Oregon in the State Industrial Accident Fund, an action against the commission was not an action against the state, that reason has been completely removed by the state's renunciation of any interest in the fund through

> the enactment of the law just referred to. It must be entirely clear today that no claim or judgment against the State Industrial Accident Commission can be paid out of any moneys belonging to the State of Oregon or affect an interest of value in a material sense to the state as a distinct entity. An action against the commission is in effect a proceeding to have a certain portion of a trust fund administrated by the commission but in which the state has no interest, appropriated to the satisfaction of an injured employee's claim for compensation under the provisions of the Workmen's Compensation Law. ORS 656.002 et seq. It is not an action against the state."

Bennett, 203 Or. At 280-81, 279 P.2d 655.

The voluntary system created in 1913 continued until 1965. At that point, the state legislature had determined that, although the workers' compensation system had grown to include employees of a number of the state's largest employers, too many workers remained without coverage. Consequently, the legislature significantly overhauled the workers' compensation system and created an essentially mandatory system. Or. Laws 1965, ch. 285. Employers were given the option of either contributing to the IAF or qualifying as a "direct responsibility employer," that is, 76*76 demonstrating financial ability to provide coverage by either posting a bond or obtaining insurance from a private insurer. *Id.* At §§ 5, 74, 75. This became known as the "three-way" system.

The administration of the system — formerly the work of the SIAC — was divided between two newly created state agencies. First, the legislature allocated to the "Workmen's Compensation Board" the responsibility of adjudicating workers' claims. *Id.* At § 54. Second, the legislature created the "State Compensation Department" — shortly thereafter renamed the "State Accident Insurance Fund" — for the purpose of "transacting workmen's compensation insurance business." *Id.* At § 55.

As the newly created entities began implementing the 1965 legislation, a fresh dispute arose about the management and ownership of the IAF. In *Sprague v. Straub,* 252 Or. 507, 451 P.2d 49 (1969), the court addressed the question whether money in the IAF could be invested in common stock without violating Article XI, section 6, of the Oregon Constitution, which provides that "[t]he state shall not subscribe to, or be interested in the stock of any company, association, or corporation." Citing *Butterfield* and *Bennett,* the court readily concluded that the constitutional prohibition did not apply to the IAF, because the state had no interest in the fund. *Sprague,* 252 Or. At 519-21, 451 P.2d 49. The prohibition, the court commented, "appl[ies] only to funds owned by the state." *Id.* At 524, 451 P.2d 49.

Meanwhile, it did not take long for the new State Accident Insurance Fund to begin to complain about the difficulty of competing with private insurance carriers. In 1973, SAIF proposed a bill the effect of which, according to an Executive Department summary, would be to "divorce the State Accident Insurance Fund from state government controls." The 1973 bill died in committee. But the idea of making SAIF "independent" from state government did not.

In 1979, SAIF proposed Senate Bill (SB) 255, another effort to separate the state's workers' compensation insurance business from its regulatory role. This time, the proposal met with success and, as enacted, that legislation forms the statutory framework for the current workers' compensation system. SB 255 began by transforming the State Accident Insurance Fund into the "State Accident Insurance Fund Corporation" as "an independent public corporation." Or. Laws 1979, ch. 829, § 2. The new 77*77 independent public corporation was charged with the responsibility of "transacting workers' compensation insurance business formerly transacted by the State Industrial Accident Commission." *Id.* At § 5(1). The legislation authorized the new corporation to "insure a contributing employer against any liability such employer may have on account of bodily injury to his worker arising out of and in the course of employment, as fully as any private insurance carrier." *Id.* The new law authorized the corporation to "acquire, lease, rent, own and manage real property," as well as "construct, equip and furnish buildings or other structures as are necessary to accommodate its needs." *Id.* At § 5(5). It also authorized the corporation to "contract with any state agency" to accomplish any of its functions that it deems appropriate. *Id.* At § 4. The corporation is expressly made subject to local property taxation. *Id.* At § 5(6).

The new independent corporation was to be governed by a board of directors appointed by the Governor and subject to confirmation by the Senate. *Id.* At § 2. The corporation was expressly exempted from a variety of statutes that apply to state agencies. *Id.* At § 4. Specifically, the new corporation was exempted from the State Personnel Relations Law, ORS chapter 240; public contracts and purchasing statutes, ORS chapter 279; state printing statutes, ORS chapter 282; interagency services statutes, ORS chapter 283; state financial administration statutes, ORS chapter 291; and statutes governing the administration of public funds, ORS chapter 293. And, interestingly, the new legislation authorized Legislative Counsel "to substitute, for words designating the State Accident Insurance Fund as an agency, words designating the State Accident Insurance Fund *Corporation.*" Or. Laws 1979, ch. 829, § 8 (emphasis added).

SAIF's manager explained the purpose of SB 255 in the following terms:

> "Senate Bill 255 is designed to lower the cost of workers' compensation in Oregon by improving the ability of the state's largest carrier — the State Accident Insurance 78*78 Fund — to respond to the needs of its policyholders and their workers.
> "This legislation recognizes that SAIF is not a state agency in the true sense, but a self-supporting, non-profit insurance fund operating within Oregon's competitive three-way workers' compensation system. SAIF was created by the Legislature to provide the best workers' compensation protection at the lowest possible cost. Senate Bill 255 will further assist SAIF in meeting that obligation.
> "This bill would establish SAIF as a public corporation under the direction of a five-member Board of Directors. The members of that Board would come from the ranks of SAIF policyholders or the employe[e]s of those policyholders. They would be appointed by the Governor and subject to confirmation by the Senate.

> "Under the direction of this five-member Board, the State Accident Insurance Fund Corporation would continue to operate in a self-supporting, non-profit manner.
> "Its employees would continue to be `public' employe[e]s, although not `state' employe[e]s as defined under the State Merit System Law.
> "SAIF would continue to compete directly with private insurance carriers for a share of the market, but would be responsible for obtaining all support services presently provided it as a state agency.
> "SAIF's operations would continue to be audited by the Secretary of State, as well as the Oregon Insurance Commissioner. In addition, an annual report of operations would be filed with the legislative assembly and the Governor. Finally, as a creature of statute, it would continue to be under the ultimate control of the legislature.
> "The major change would come with SAIF's ability to more quickly respond to the needs of injured workers and their employers in such critical cost control areas as industrial hygiene, safety consultation and claims management. To use those premiums paid by its policyholders more effectively as a means of lowering their overall compensation costs.
> "In short — to be less bureaucratic and more responsive."

Testimony, House Labor Committee, SB 255, June 6, 1979, Ex. A (statement of Charles Gill).

A representative of the Governor, Jim Russell, offered a similar explanation as to the purpose of the bill, that is, "to break SAIF out from various constraints that exist and let it be competitive." Minutes, House Labor Committee, SB 255, June 11, 1979, 3 (statement of Jim Russell). He said that the bill was intended "to recognize that SAIF is unique from most other agencies in the state and should be able to compete in the marketplace." *Id.*

At the same time, some members of the legislature expressed doubts about SAIF's new corporate status. Then-Senator Kulongoski, for example, complained that it appeared that, under SB 255, SAIF would essentially become a private insurance carrier in the guise of a public entity. Minutes, Senate Committee on Labor, Consumer and Business Affairs, SB 255, Feb. 2, 1979, 6. Others questioned whether the bill would eliminate government oversight of SAIF's operations. *Id.* One of the bill's proponents responded — somewhat vaguely — with assurances either that the market itself would replace legislative control, *see, e.g.,* Minutes, Senate Committee on Labor, Consumer and Business Affairs, SB 255, Feb. 2, 1979, 6 (statement of Charles Gill), or that the bill merely streamlined SAIF's operations, but did not alter its basic structure, *see, e.g.,* Minutes, Senate Committee on Labor, Consumer and Business Affairs, SB 255, Feb. 2, 1979, 7-8 (statement of Charles Gill).

The ambiguous nature of the new SAIF Corporation was bound to have significant legal consequences. And it did not take long for those consequences to surface. In 1982, the legislature faced a significant budget shortfall occasioned by a recession-produced drop in state revenues. During a third special session, the legislature determined that the Industrial Accident Fund contained a "surplus" of over $168 million. The legislature directed the state Department of Justice to draft legislation to "transfer" $81 million of that surplus from the IAF to the state's general fund for the purpose of balancing the state budget. A significant hurdle to that charge, of course, was the fact that the legislature back in 1929 had disclaimed any interest in the IAF.

In the end, the department drafted, and the legislature enacted, legislation that authorized the legislature to dispose of a "surplus" in the IAF as it deems appropriate and simultaneously directed the state treasurer to deposit $81 million from the IAF into the general fund. That legislation became known as the "Transfer Act." The authorization portion of the act was phrased as a qualification to the state's disclaimer of interest in the IAF, so that the statute, as amended, declares that the state has no interest in the IAF, subject to the state's authority:

> "to direct legislatively the disposition of any surplus in excess of reserves and surplus deemed actuarially necessary according to recognized insurance principles, and necessary in addition thereto to assure continued fiscal soundness of the State Accident Insurance Fund Corporation both for current operations and for future capital needs[.]"

The transfer portion of the Transfer Act provided:

> "(1) Notwithstanding any other statute, the State Accident Insurance Fund Corporation shall reduce its excess surplus in the Industrial Accident Fund by the amount of $81 million in the manner provided in this Act.
> "(2) Notwithstanding ORS 293.115(2), or any other provision of law, the State Treasurer shall transfer $81 million from the Industrial Accident Fund into the General Fund on June 30, 1983. Any liquidation of investments necessary to accomplish this transfer shall be done in an orderly manner and at the most advantageous terms obtainable."

Not surprisingly, that legislative action precipitated litigation. In one of several cases that resulted, *Frohnmayer v. SAIF,* 294 Or. 570, 660 P.2d 1061 (1983), SAIF itself authorized counsel other than the Attorney General to file suit to challenge the validity of the Transfer Act. The Attorney General responded by, among other things, filing a declaratory judgment action raising the question whether SAIF was authorized to retain outside counsel and institute legal proceedings without his approval. According to the Attorney General, under ORS 180.220, the state Department of Justice — headed by the Attorney General — has the exclusive control of state litigation and no "state officer, board, commission, or the head of a department or institution of the state" is permitted to retain counsel other than counsel provided by the Department of Justice. SAIF responded that it is not subject to the provisions of that statute because, among other things, as a public corporation, it is not among the state officers, boards, and commissions that are subject to the limitations of that statute. *Frohnmayer,* 294 Or. At 573, 575, 660 P.2d 1061.

The Supreme Court rejected SAIF's contention. The court reviewed the 1979 law by which SAIF was transformed into an "independent public corporation," remarking that it was not clear precisely what the legislature intended by that legislation. *Id.* At 579, 660 P.2d 1061 ("The legislative history is extremely vague as to why an `independent public corporation' was created."). What was clear, the court held, was that, in that 1979 law, the legislature expressly exempted SAIF from a number of statutes that apply to state agencies, and ORS 180.220 was not among them. *Id.* The court acknowledged that ORS 180.220 referred to state "officers," "boards," and heads of "departments" or "institutions of the state," without including in the list any "public independent corporations." The court nonetheless concluded that the statutory terms "were not intended to be by way of limitation, but by way of description, to generally describe the activities of the entity `the State of Oregon.'" *Id.* At 577, 80*80 660 P.2d 1061. Although the court never actually closed the argument loop by stating explicitly that SAIF, even as an "independent public corporation," remained a part of "the State of Oregon," that necessarily was the implication of the court's decision.

APPENDIX C: ***Johnson*** **Discussion of** ***Eckles*** (footnotes omitted)

In *Eckles v. State of Oregon,* 306 Or. 380, 760 P.2d 846 (1988), the validity of the Transfer Act itself was in issue. The plaintiff, an employer insured by SAIF, argued that the Transfer Act was unlawful on a variety of grounds, including that the act violated the equal privileges or immunities provision of Article I, section 20, of the Oregon Constitution, and that it amounted to an unlawful impairment of contract, in violation of Article I, section 21.

The plaintiff's Article I, section 20, argument was that SAIF's insured's were being treated differently from employers that obtained insurance from private carriers. The court gave the argument short shrift. SAIF, the court explained, "as a state entity, is not a 'citizen' to which Section 20 could apply, and, in any event, the putative classes of insured's exist only by virtue of the workers' compensation statutes and are thus not cognizable." *Eckles,* 306 Or. at 387, 760 P.2d 846.

The plaintiff's Article I, section 21, argument was that the legislature's 1929 disclaimer of any interest in the IAF, codified at ORS 656.634, in effect, was part of his contract of insurance with SAIF. As a result, he argued, the Transfer Act, which expressly abrogated that disclaimer, unconstitutionally impaired his contract with SAIF. *Id.* at 388, 760 P.2d 846. The Supreme Court agreed with that argument, but only in part. First, the court noted that, "[i]f the Transfer Act impaired a contractual obligation stated in ORS 656.634, the Act impaired an obligation of the state rather than an obligation of SAIF." *Id.* at 389, 760 P.2d 846. In other words, as relating to the IAF, plaintiff's contract was with the State of Oregon, not with SAIF. That said, the court went on to hold that the portion of the Transfer Act declaring the legislature's authority to transfer any IAF surplus amounted to an unconstitutional impairment of contract "as it affects employers with SAIF insurance contracts entered into before the enactment of the Transfer Act." *Id.* at 399, 760 P.2d 846. As to all others, however, the statute merely redefined the nature of the state's contractual obligation. *Id.* As for the portion of the Transfer Act actually transferring money out of the IAF, however, the court concluded that the legislature had not acted in violation of the constitution. It had merely breached its contract and, in consequence, would be liable for damages for that breach. *Id.* at 401, 760 P.2d 846.

Meanwhile, litigation also ensued concerning the lawfulness of the 1979 legislation that created the new "independent public corporation." In *State ex rel. Eckles v. Woolley,* 302 Or. 37, 726 P.2d 918 (1986) (*Woolley*), the plaintiff argued that, in creating an "independent public corporation," the legislature had run afoul of the constitutional limitation of Article XI, section 2, that "[c]orporations may be formed under general laws, but shall not be created by the Legislative Assembly by special laws." According to the plaintiff, the legislature itself called SAIF a "corporation," and the courts "should take the legislature at its word." *Id.* at 45, 726 P.2d 918. The respondents, SAIF's directors, argued that SAIF was not the sort of corporation to which Article XI, section 2, applied. *Id.* at 45-46, 726 P.2d 918.

The court agreed with SAIF's directors. Justice Linde, writing for the court, began by noting that arguments based on the particular label that courts may have employed when referring to public, "quasi-public," and other entities are not usually helpful. What matters, the justice cautioned, is the particular context in which the labels are used: "[C]haracterizations in judicial opinions responding to such arguments made in one context are inconclusive on substantially different 81*81 issues arising in the context of different laws." *Id.* at 45, 726 P.2d 918.

Quoting an earlier opinion, *Cook v. Port of Portland,* 20 Or. 580, 583, 27 P. 263 (1891), the court then explained that the prohibition that is stated in Article XI, section 2, is not implicated when the legislature creates a corporation for a public purpose, and the corporation is "an instrument of the government with certain delegated powers, subject to the control of the legislature." *Woolley,* 302 Or. at 47, 726 P.2d 918 (internal quotation marks omitted). Turning to SAIF, the court summarily concluded that, although a "corporation," SAIF is the public variety to which the prohibition in Article XI, section 2, does not apply. *Id.* at 48-49, 726 P.2d 918."

2018 Oregon Workers' Compensation Premium Rate Ranking Summary

October 2018

AUTHORS

- Chris Day
- Jay Dotter

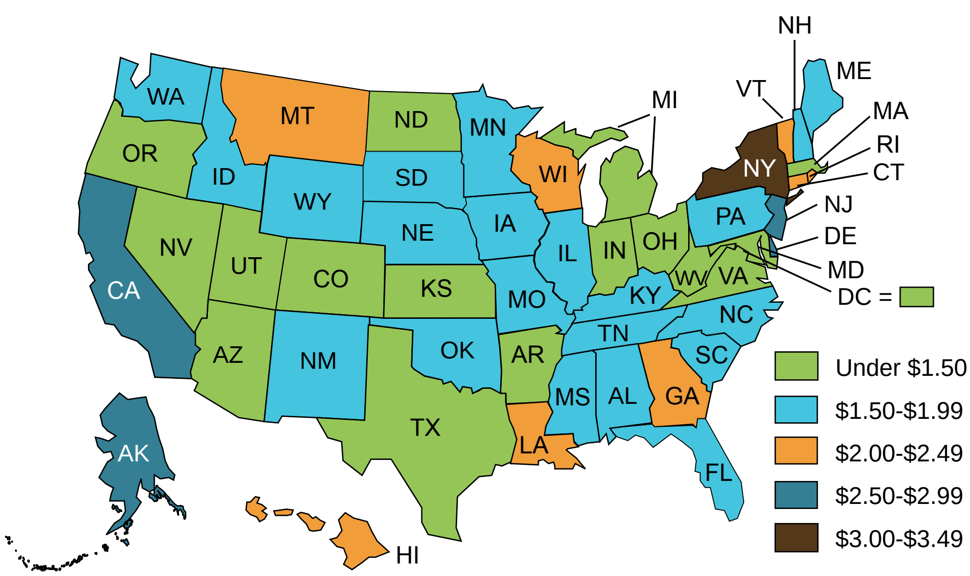
Table 1. Oregon'

Occupation	Ranking
	47
Salespersons - outside	49
College: professional employees and clerical	40
Physician and clerical	39
Restaurant	43
Hospital: professional employees	41
Store: retail	47
Automobile service/repair center and drivers	34
Trucking: all employees and drivers	37
Retirement living centers: health care employees	40

Oregon employers pay, on average, the sixth lowest workers' compensation premium rates in the nation. In 2016, Oregon rates were the seventh lowest. Oregon's rates are 32 percent below those of the median state in the study.

Premium rate indices are calculated based on data from 51 jurisdictions, for rates in effect as of Jan. 1, 2018. The 2018 median value is $1.70, which is a drop of 7.6 percent from the $1.84 median of the 2016 study. This is the largest drop in the study median since 2012. Oregon's premium rate index is $1.15 per $100 of payroll, or 68 percent of the national median. National premium rate indices range from a low of $0.82 in North Dakota, to a high of $3.08 in New York. There were 17 states that had an index rate that was within plus or minus 10 percent of this benchmark value. In the upper part of the rate distribution, 14 states had index rates higher than 110 percent of the median, while 20 states were below 90 percent of the median.

Figure 1. 2018 Workers' compensation premium index rates



The study is based on methods that put states' workers' compensation rates on a comparable basis, using a constant set of risk classifications for each state. This study used classification codes from the National Council on Compensation Insurance (NCCI). Of approximately 430 active classes in Oregon, 50 were selected based on relative importance as measured by share of losses in Oregon. To control for differences in industry distributions, each state's rates were weighted by 2012-2014 Oregon payroll to obtain an average manual rate for that state. Listed in Table 1 are Oregon's rankings in the top 10 of the 50 classifications used.

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Table 2. Workers' compensation premium rate ranking

2018 Ranking	2016 Ranking	State	Index Rate	Percent of study median		Percent of 2016 study median
1	3	New York	3.08	181%	October 1, 2017	154%
2	1	California	2.87	169%	January 1, 2018	176%
3	2	New Jersey	2.84	167%	January 1, 2018	158%
4	5	Alaska	2.51	148%	January 1, 2018	149%
5	6	Delaware	2.50	147%	December 1, 2017	126%
6	27	Georgia	2.27	134%	March 1, 2017	98%
7	5	Connecticut	2.20	129%	January 1, 2018	149%
8	9	Rhode Island	2.19	129%	August 1, 2017	119%
9	14	Vermont	2.09	123%	April 1, 2017	110%
10	10	Louisiana	2.05	121%	January 1, 2018	115%
11	12	Wisconsin	2.02	119%	October 1, 2017	112%
13	17	Hawaii	2.01	118%	January 1, 2018	107%
13	11	Montana	2.01	118%	July 1, 2017	114%
14	18	South Carolina	1.95	115%	September 1, 2016	105%
16	15	Washington	1.87	110%	January 1, 2018	107%
16	23	Wyoming	1.87	110%	January 1, 2018	101%
17	26	Pennsylvania	1.85	109%	April 1, 2017	100%
19	22	North Carolina	1.84	108%	April 1, 2017	103%
19	14	Maine	1.84	108%	April 1, 2017	110%
21	28	Idaho	1.81	106%	January 1, 2018	97%
21	33	Florida	1.81	106%	January 1, 2018	90%
22	8	Illinois	1.80	106%	January 1, 2018	121%
23	32	South Dakota	1.73	102%	July 1, 2017	91%
24	8	Oklahoma	1.71	101%	January 1, 2018	121%
26	17	New Hampshire	1.70	100%	January 1, 2018	106%
26	32	Nebraska	1.70	100%	February 1, 2017	91%
27	20	Missouri	1.68	99%	January 1, 2018	104%
28	22	Minnesota	1.67	98%	January 1, 2018	104%
29	25	Alabama	1.65	97%	March 1, 2017	100%
30	24	Iowa	1.64	96%	January 1, 2018	101%
31	29	Mississippi	1.54	91%	March 1, 2017	92%
32	30	Tennessee	1.52	89%	March 1, 2017	91%
33	36	Kentucky	1.51	89%	October 1, 2017	82%
34	20	New Mexico	1.50	88%	January 1, 2018	104%
35	35	Colorado	1.43	84%	January 1, 2018	84%
36	40	Ohio	1.40	82%	July 1, 2017	79%
37	34	Michigan	1.38	81%	January 1, 2017	85%
38	44	Massachusetts	1.37	81%	July 1, 2016	70%
39	38	Maryland	1.33	78%	January 1, 2018	82%
40	38	Arizona	1.30	76%	January 1, 2018	82%
41	47	Virginia	1.28	75%	April 1, 2017	67%
42	42	District of Columbia	1.25	74%	November 1, 2017	74%
43	40	Texas	1.21	71%	July 1, 2017	79%
44	43	Nevada	1.18	69%	March 1, 2017	71%
46	41	Kansas	1.15	68%	January 1, 2018	77%
46	**45**	**OREGON**	**1.15**	**68%**	**January 1, 2018**	**69%**
47	46	Utah	1.06	62%	December 1, 2017	69%
48	48	West Virginia	1.01	59%	November 1, 2017	66%
49	49	Arkansas	0.90	53%	July 1, 2017	57%
50	50	Indiana	0.87	51%	January 1, 2018	57%
51	51	North Dakota	0.82	48%	July 1, 2017	48%

Notes: Starting with the 2008 study, when two or more states' Index Rate values are the same, they are assigned the same ranking. The index rates reflect adjustments for the characteristics of each individual state's residual market. Rates vary by classification and insurer in each state. Actual cost to an employer can be adjusted by the employer's experience rating, premium discount, retrospective rating, and dividends. **Previous reports and summaries**.

Employers can reduce their workers' compensation rates through accident prevention, safety training, and by helping injured workers return to work quickly.

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2017 Dividends as a Percent of Premium by State

State	Direct Premiums Written	Direct Premiums Earned	Dividends	Dividend % of DPW	
Oregon	705,594,852	707,917,906	161,515,384	22.89%	
Montana	287,584,053	289,371,469	40,276,376	14.01%	
Texas	2,343,929,734	2,391,402,082	291,946,677	12.46%	
Louisiana	793,982,427	797,086,143	84,532,593	10.65%	
Maine	228,128,813	227,945,474	20,229,580	8.87%	
Wisconsin	1,959,199,929	1,974,717,773	171,641,163	8.76%	
Colorado	1,076,638,293	1,062,226,795	53,659,093	4.98%	
New York	5,948,721,917	5,856,543,613	264,442,860	4.45%	
Utah	443,654,408	442,839,475	16,526,213	3.73%	
Idaho	417,102,590	411,903,133	15,498,789	3.72%	
New Jersey	2,367,210,419	2,356,825,254	74,553,657	3.15%	
Florida	3,183,301,275	3,013,281,506	88,425,633	2.78%	
Iowa	747,160,843	764,263,841	20,394,013	2.73%	
Nebraska	375,429,864	375,743,252	6,331,818	1.69%	
Hawaii	279,953,927	280,887,402	4,464,217	1.59%	
Michigan	1,092,547,088	1,102,091,757	17,278,860	1.58%	
South Dakota	176,409,315	175,519,652	2,137,876	1.21%	
Kansas	413,066,049	419,367,191	4,317,448	1.05%	
Missouri	920,594,434	922,617,503	9,215,428	1.00%	
New Hampshire	241,579,834	248,037,872	2,165,618	0.90%	
Pennsylvania	2,612,748,433	2,623,740,920	22,023,050	0.84%	
District of Columbia	171,693,094	170,780,679	1,346,881	0.78%	
Vermont	189,989,692	191,457,506	1,402,494	0.74%	
Connecticut	818,458,543	823,416,960	5,497,487	0.67%	
Delaware	216,302,304	210,967,118	1,410,877	0.65%	
Minnesota	969,885,308	984,034,306	6,047,915	0.62%	
Ohio	16,983,275	16,688,702	101,345	0.60%	
Maryland	963,264,386	971,149,428	5,731,177	0.59%	
Alaska	251,109,670	251,409,889	1,432,576	0.57%	
Arizona	843,348,760	850,243,922	4,286,127	0.51%	
Illinois	2,565,459,295	2,623,796,899	11,755,292	0.46%	
Virginia	1,045,814,454	1,040,524,938	4,323,086	0.41%	
North Carolina	1,448,416,031	1,459,961,159	5,646,549	0.39%	
Massachusetts	1,255,833,372	1,240,935,314	4,321,658	0.34%	
Georgia	1,597,369,814	1,563,697,019	4,752,595	0.30%	
West Virginia	258,091,080	269,632,042	673,089	0.26%	
Alabama	348,981,830	350,986,158	890,866	0.26%	
Oklahoma	642,661,275	641,413,423	1,586,197	0.25%	
California	12,765,741,989	12,740,500,605	27,426,849	0.21%	
South Carolina	807,610,909	789,334,555	1,714,499	0.21%	
Mississippi	352,776,055	353,984,123	705,886	0.20%	
Tennessee	866,772,359	869,058,817	1,673,771	0.19%	
Arkansas	253,996,487	251,642,307	484,417	0.19%	
New Mexico	259,545,324	259,379,618	494,647	0.19%	
Indiana	821,896,514	827,248,050	1,473,707	0.18%	
Kentucky	502,723,636	502,273,815	738,246	0.15%	
North Dakota	4,635,089	4,503,704	5,959	0.13%	
Nevada	363,069,233	361,177,273	406,933	0.11%	
Rhode Island	220,354,989	221,124,998	227,949	0.10%	
Washington	20,393,089	23,970,248	-70,555	-0.35%	
Wyoming	5,372,201	5,046,861	-24,539	-0.46%	
	57,463,088,554	57,314,670,449	1,468,040,326	2.55%	Average