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 2019 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, 2018) or the latest fiscal year end date (June 30, 2019); however, there may be minor inconsistencies between data points.

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 those who 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 374,000 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 (pages 3-4).
- 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, 2018, including future projections from the PERS actuaries (pages 21-23).
- System revenue information, including member and employer contributions and investment income, as well as earnings credited to member accounts (pages 24-31).
- The economic impact of PERS monthly benefit payments to the state of Oregon (pages 32-34).
- A list of PERS-participating employers by county, according to their mailing address (pages 37-42).

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, 2019)

PERS-participating employers
Currently 906, 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.

State Govt.: 109
Local Govt.: 501
School Districts: 296

<table>
<thead>
<tr>
<th></th>
<th>State Govt.</th>
<th>Local Govt.</th>
<th>School Districts</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier One</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>5,493</td>
<td>5,960</td>
<td>7,518</td>
<td>18,971</td>
</tr>
<tr>
<td>Inactive</td>
<td>3,355</td>
<td>3,711</td>
<td>3,999</td>
<td>11,065</td>
</tr>
<tr>
<td>Tier Two</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>8,789</td>
<td>9,946</td>
<td>13,706</td>
<td>32,441</td>
</tr>
<tr>
<td>Inactive</td>
<td>3,364</td>
<td>6,276</td>
<td>5,926</td>
<td>15,566</td>
</tr>
<tr>
<td>OPSRP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>35,417</td>
<td>37,558</td>
<td>51,940</td>
<td>124,915</td>
</tr>
<tr>
<td>Inactive</td>
<td>5,354</td>
<td>8,972</td>
<td>7,829</td>
<td>22,155</td>
</tr>
<tr>
<td>Sub-total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>49,699</td>
<td>53,464</td>
<td>73,164</td>
<td>176,327</td>
</tr>
<tr>
<td>Inactive</td>
<td>12,073</td>
<td>18,959</td>
<td>17,754</td>
<td>48,786</td>
</tr>
<tr>
<td>Retired*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>43,780</td>
<td>42,557</td>
<td>63,049</td>
<td>149,386</td>
</tr>
<tr>
<td>Inactive</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td>374,499</td>
</tr>
</tbody>
</table>

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

State Govt. — State agencies, universities, judges
Local Govt. — 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

Current retirees by membership group (as of December 31, 2018)

- Tier One
- Tier Two
- OPSRP

Includes retirees, beneficiaries, and alternate payees.
1. System Demographics (continued)

Members eligible to retire (as of June 30, 2019)

66,325 MEMBERS ELIGIBLE TO RETIRE BY AGE OR SERVICE
(29.5% of all active/inactive members)

Note: Spikes in retirements are generally related to legislative conversations about PERS.
## 2. System Benefits

### PERS benefit component comparisons (does not reflect the impact of SB 1049)

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.

<table>
<thead>
<tr>
<th>Tier One Pension</th>
<th>Tier Two Pension</th>
<th>OPSRP Pension</th>
<th>IAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal retirement age</td>
<td>58 (or 30 yrs.) P&amp;F: age 55 or 50 w/25 yrs.</td>
<td>60 (or 30 yrs.) P&amp;F: age 55 or 50 w/25 yrs.</td>
<td>65 (58 w/30 yrs.) P&amp;F: age 60 or 53 w/25 yrs.</td>
</tr>
<tr>
<td>Early retirement</td>
<td>55 (50 for P&amp;F)</td>
<td>55 (50 for P&amp;F)</td>
<td>55, if vested (50 w/5 years of continuous service in a P&amp;F position immediately preceding effective retirement date)</td>
</tr>
<tr>
<td>Regular account earnings</td>
<td>Guaranteed assumed rate annually (currently 7.2%)</td>
<td>No guarantee; market returns</td>
<td>N/A; no member account</td>
</tr>
<tr>
<td>Variable account earnings</td>
<td>Market returns on 100% global equity portfolio</td>
<td>Market returns on 100% global equity portfolio</td>
<td>N/A; no member account</td>
</tr>
<tr>
<td>Retirement calculation methods</td>
<td>Money Match, Full Formula, or Formula + Annuity (if eligible)</td>
<td>Money Match or Full Formula</td>
<td>Formula</td>
</tr>
<tr>
<td>Full Formula benefit factor</td>
<td>1.67% general; 2.00% P&amp;F</td>
<td>1.67% general; 2.00% P&amp;F</td>
<td>1.50% general; 1.80% P&amp;F</td>
</tr>
<tr>
<td>Formula + Annuity benefit factor</td>
<td>1.00% general; 1.35% P&amp;F</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Oregon state income tax remedy</td>
<td>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.</td>
<td>No tax remedy provided</td>
<td>No tax remedy provided</td>
</tr>
<tr>
<td>Lump-sum vacation payout</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Included in covered salary (6%)</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Included in FAS</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Unused sick leave included in FAS</td>
<td>Yes, if employer participates in the sick leave program</td>
<td>Yes, if employer participates in the sick leave program</td>
<td>No</td>
</tr>
<tr>
<td>6% contribution included in FAS</td>
<td>Yes</td>
<td>Yes</td>
<td>If reported as salary</td>
</tr>
<tr>
<td>Vesting</td>
<td>Active member in each of 5 calendar years</td>
<td>Active member in each of 5 calendar years</td>
<td>5 calendar years w/ at least 600 hours qualifying service or normal retirement age</td>
</tr>
<tr>
<td>COLA (after retirement)</td>
<td>Up to 2% annually for service on or before October 1, 2013, and a blended COLA for subsequent service</td>
<td></td>
<td>N/A; no COLA provided</td>
</tr>
</tbody>
</table>
2. System Benefits (continued)

Monthly benefit payment amounts (as of January 1, 2019)

Based on 147,378 monthly benefit payments totaling $389.6 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: $31,719
- Median Annual Benefit: $25,178

<table>
<thead>
<tr>
<th>Monthly Benefit ($)</th>
<th>Number of Retirees</th>
<th>Percent of Benefits Paid</th>
<th>Monthly Benefit ($)</th>
<th>Number of Retirees</th>
<th>Percent of Benefits Paid</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 500</td>
<td>17,330</td>
<td>1.32%</td>
<td>3,001 - 3,500</td>
<td>9,387</td>
<td>7.82%</td>
</tr>
<tr>
<td>501 - 1,000</td>
<td>20,842</td>
<td>3.98%</td>
<td>3,501 - 4,000</td>
<td>8,297</td>
<td>7.97%</td>
</tr>
<tr>
<td>1,001 - 1,500</td>
<td>17,653</td>
<td>5.64%</td>
<td>4,001 - 4,500</td>
<td>7,211</td>
<td>7.86%</td>
</tr>
<tr>
<td>1,501 - 2,000</td>
<td>15,087</td>
<td>6.75%</td>
<td>4,501 - 5,000</td>
<td>6,317</td>
<td>7.70%</td>
</tr>
<tr>
<td>2,001 - 2,500</td>
<td>13,202</td>
<td>7.60%</td>
<td>5,001 - 5,500</td>
<td>5,410</td>
<td>7.28%</td>
</tr>
<tr>
<td>2,501 - 3,000</td>
<td>11,223</td>
<td>7.90%</td>
<td>5,501 - 6,000</td>
<td>4,200</td>
<td>6.19%</td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal</strong></td>
<td><strong>95,337</strong></td>
<td></td>
<td><strong>Subtotal</strong></td>
<td><strong>40,822</strong></td>
</tr>
<tr>
<td></td>
<td>% of total</td>
<td>64.69%</td>
<td></td>
<td>% of total</td>
<td>27.70%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Monthly Benefit ($)</th>
<th>Number of Retirees</th>
<th>Percent of Benefits Paid</th>
<th>Monthly Benefit ($)</th>
<th>Number of Retirees</th>
<th>Percent of Benefits Paid</th>
</tr>
</thead>
<tbody>
<tr>
<td>6,001 - 6,500</td>
<td>3,133</td>
<td>5.02%</td>
<td>9,001 - 10,000</td>
<td>730</td>
<td>1.77%</td>
</tr>
<tr>
<td>6,501 - 7,000</td>
<td>2,312</td>
<td>4.00%</td>
<td>10,001 - 11,000</td>
<td>354</td>
<td>0.95%</td>
</tr>
<tr>
<td>7,001 - 7,500</td>
<td>1,594</td>
<td>2.96%</td>
<td>11,001 - 12,000</td>
<td>201</td>
<td>0.59%</td>
</tr>
<tr>
<td>7,501 - 8,000</td>
<td>1,123</td>
<td>2.23%</td>
<td>12,001 - 13,000</td>
<td>118</td>
<td>0.38%</td>
</tr>
<tr>
<td>8,001 - 8,500</td>
<td>860</td>
<td>1.82%</td>
<td>13,001 - 14,000</td>
<td>66</td>
<td>0.23%</td>
</tr>
<tr>
<td>8,501 - 9,000</td>
<td>559</td>
<td>1.25%</td>
<td>14,001 and up</td>
<td>169</td>
<td>0.80%</td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal</strong></td>
<td><strong>9,581</strong></td>
<td></td>
<td><strong>Subtotal</strong></td>
<td><strong>1,638</strong></td>
</tr>
<tr>
<td></td>
<td>% of total</td>
<td>6.50%</td>
<td></td>
<td>% of total</td>
<td>1.11%</td>
</tr>
</tbody>
</table>
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 (77.8% of benefits in 2018)

For General Service members: $1.67\% \times \text{years of service credit} \times \text{final average salary}$

For Police and Firefighter members: $2\% \times \text{years of service credit} \times \text{final average salary}$

Formula Plus Annuity Method (1.6% of benefits in 2018)
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% of final average salary by years of service credit. Legislators, police, and firefighters should multiply 1.35% 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 (20.6% of benefits in 2018)

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.
2. System Benefits (continued)

Tier One/Tier Two pension benefit payment options selected in calendar year 2018

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 or beneficiary 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.

<table>
<thead>
<tr>
<th>Option (definitions below)</th>
<th>Quantity</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1,451</td>
<td>27.55</td>
</tr>
<tr>
<td>Refund Annuity</td>
<td>329</td>
<td>6.25</td>
</tr>
<tr>
<td>15-Year Certain</td>
<td>235</td>
<td>4.46</td>
</tr>
<tr>
<td>2</td>
<td>1,083</td>
<td>20.56</td>
</tr>
<tr>
<td>2A</td>
<td>1,118</td>
<td>21.23</td>
</tr>
<tr>
<td>3</td>
<td>150</td>
<td>2.85</td>
</tr>
<tr>
<td>3A</td>
<td>255</td>
<td>4.84</td>
</tr>
<tr>
<td>Lump-Sum 1</td>
<td>53</td>
<td>1.01</td>
</tr>
<tr>
<td>Lump-Sum 2</td>
<td>42</td>
<td>0.80</td>
</tr>
<tr>
<td>Lump-Sum 2A</td>
<td>41</td>
<td>0.78</td>
</tr>
<tr>
<td>Lump-Sum 3</td>
<td>5</td>
<td>0.09</td>
</tr>
<tr>
<td>Lump-Sum 3A</td>
<td>8</td>
<td>0.15</td>
</tr>
<tr>
<td>Total Lump Sum</td>
<td>328</td>
<td>6.23</td>
</tr>
<tr>
<td>AS refund*</td>
<td>161</td>
<td>3.06</td>
</tr>
<tr>
<td>Total</td>
<td>5,259</td>
<td>100%</td>
</tr>
</tbody>
</table>

**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 1/2 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% × years of total retirement credit × final average salary |
| For Police and Firefighters: 1.8% × years of total retirement credit × final average salary |

OPSRP pension benefit payment options selected in calendar year 2018

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 or beneficiary 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.

<table>
<thead>
<tr>
<th>Option (definitions below)</th>
<th>Calendar Year 2018</th>
<th>Quantity</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Life Option</td>
<td></td>
<td>573</td>
<td>40.93</td>
</tr>
<tr>
<td>Full-Survivorship Option</td>
<td></td>
<td>303</td>
<td>21.64</td>
</tr>
<tr>
<td>Full-Survivorship Increase Option</td>
<td></td>
<td>139</td>
<td>9.93</td>
</tr>
<tr>
<td>Half-Survivorship Option</td>
<td></td>
<td>21</td>
<td>1.50</td>
</tr>
<tr>
<td>Half-Survivorship Increase Option</td>
<td></td>
<td>28</td>
<td>2.00</td>
</tr>
<tr>
<td>Cash Out Lump Sum*</td>
<td></td>
<td>336</td>
<td>24.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>1,400</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

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, his or her 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, his or her 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.
2. System Benefits (continued)

Summary of findings from PERS’ Tier One/Tier Two Replacement Ratio Study (RRS) for 2018

The RRS population of 94,770 retirements was drawn from 194,490 retirements from January 1990 through December 2018, and covers retired members who selected comparable monthly benefit options. The techniques used in the 2018 PERS Replacement Ratio Study are consistent with the techniques used in previous studies (see Appendix B). 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

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 1990-2018, the average monthly retirement benefit at time of retirement was $2,405 per month, or about $28,859 annually.
- For those retirees in the most recent year (2018), the average monthly retirement benefit was $2,812 per month, or about $33,743 annually.

Average public employee salaries at retirement
- For all retirees from 1990-2018, the final average salary at retirement was $53,957 annually.
- For 2018 retirees, the final average salary at retirement was $78,872 annually.

Average salary replacement ratio (see chart on following page)
- For all retirees from 1990-2018, the average annual retirement benefit equaled 52% of final average salary at the time of retirement.
- For 2018 retirees, the average annual retirement benefit equaled 42% of final average salary.
- For all retirees from 1990-2018, there were 6.2% who received annual benefits more than 100% of final average salary. The average years of service for this group was 31 years.
- For 2018 retirees, there were 1.2% who received annual benefits more than 100% of final average salary. The average years of service for this group was 36 years.

For members who retire with at least 30 years of service (see chart on following page)
- From 1990-2018, 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 2018 only, the average retirement benefit for 30-year members equaled 51% of final average salary and the average monthly benefit was $3,628 per month.
- 10.4% of retirees from 1990-2018 had 30 years of service.
- 8.8% of retirees in 2018 had 30 years of service.

1 The exclusions and other factors applied to this population are explained in Appendix B on page 43. Generally, these exclusions remove about 35% of members who retire in a given year.
## 2. System Benefits

### Summary of findings from PERS’ Tier One/Tier Two RRS for 2018

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

<table>
<thead>
<tr>
<th>Calendar Year</th>
<th># of Retirees in Study*</th>
<th>Average Replacement Ratio Based on FAS</th>
<th># of Retirees in Study*</th>
<th>Average Replacement Ratio Based on FAS</th>
<th>% of Retirees Receiving &gt;100% of FAS</th>
<th># of Retirees in Study*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>146</td>
<td>61%</td>
<td>1,866</td>
<td>44%</td>
<td>.0%</td>
<td>236</td>
</tr>
<tr>
<td>1991</td>
<td>217</td>
<td>61%</td>
<td>2,377</td>
<td>45%</td>
<td>.1%</td>
<td>261</td>
</tr>
<tr>
<td>1992</td>
<td>205</td>
<td>67%</td>
<td>2,432</td>
<td>48%</td>
<td>.5%</td>
<td>289</td>
</tr>
<tr>
<td>1993</td>
<td>289</td>
<td>66%</td>
<td>2,744</td>
<td>48%</td>
<td>.5%</td>
<td>319</td>
</tr>
<tr>
<td>1994</td>
<td>302</td>
<td>67%</td>
<td>3,298</td>
<td>49%</td>
<td>.3%</td>
<td>452</td>
</tr>
<tr>
<td>1995</td>
<td>304</td>
<td>66%</td>
<td>2,827</td>
<td>47%</td>
<td>1.0%</td>
<td>307</td>
</tr>
<tr>
<td>1996</td>
<td>281</td>
<td>70%</td>
<td>2,477</td>
<td>49%</td>
<td>1.4%</td>
<td>223</td>
</tr>
<tr>
<td>1997</td>
<td>295</td>
<td>83%</td>
<td>3,107</td>
<td>57%</td>
<td>7.5%</td>
<td>284</td>
</tr>
<tr>
<td>1998</td>
<td>465</td>
<td>89%</td>
<td>4,567</td>
<td>65%</td>
<td>12.0%</td>
<td>472</td>
</tr>
<tr>
<td>1999</td>
<td>548</td>
<td>93%</td>
<td>4,644</td>
<td>65%</td>
<td>14.0%</td>
<td>452</td>
</tr>
<tr>
<td>2000</td>
<td>273</td>
<td>100%</td>
<td>2,112</td>
<td>63%</td>
<td>15.8%</td>
<td>148</td>
</tr>
<tr>
<td>2001</td>
<td>391</td>
<td>99%</td>
<td>3,146</td>
<td>66%</td>
<td>16.5%</td>
<td>304</td>
</tr>
<tr>
<td>2002</td>
<td>670</td>
<td>96%</td>
<td>4,605</td>
<td>68%</td>
<td>17.4%</td>
<td>583</td>
</tr>
<tr>
<td>2003</td>
<td>942</td>
<td>93%</td>
<td>7,631</td>
<td>66%</td>
<td>14.4%</td>
<td>937</td>
</tr>
<tr>
<td>2004</td>
<td>471</td>
<td>84%</td>
<td>3,259</td>
<td>55%</td>
<td>5.5%</td>
<td>155</td>
</tr>
<tr>
<td>2005</td>
<td>393</td>
<td>84%</td>
<td>2,548</td>
<td>51%</td>
<td>4.4%</td>
<td>155</td>
</tr>
<tr>
<td>2006</td>
<td>347</td>
<td>83%</td>
<td>2,952</td>
<td>50%</td>
<td>4.3%</td>
<td>254</td>
</tr>
<tr>
<td>2007</td>
<td>372</td>
<td>84%</td>
<td>3,226</td>
<td>51%</td>
<td>4.9%</td>
<td>337</td>
</tr>
<tr>
<td>2008</td>
<td>417</td>
<td>80%</td>
<td>3,480</td>
<td>52%</td>
<td>5.0%</td>
<td>445</td>
</tr>
<tr>
<td>2009</td>
<td>432</td>
<td>77%</td>
<td>3,881</td>
<td>53%</td>
<td>6.2%</td>
<td>586</td>
</tr>
<tr>
<td>2010</td>
<td>414</td>
<td>75%</td>
<td>3,516</td>
<td>48%</td>
<td>4.3%</td>
<td>440</td>
</tr>
<tr>
<td>2011</td>
<td>464</td>
<td>74%</td>
<td>4,484</td>
<td>50%</td>
<td>5.3%</td>
<td>937</td>
</tr>
<tr>
<td>2012</td>
<td>272</td>
<td>70%</td>
<td>4,098</td>
<td>46%</td>
<td>4.3%</td>
<td>585</td>
</tr>
<tr>
<td>2013</td>
<td>389</td>
<td>69%</td>
<td>5,800</td>
<td>50%</td>
<td>5.6%</td>
<td>1,108</td>
</tr>
<tr>
<td>2014</td>
<td>262</td>
<td>66%</td>
<td>4,000</td>
<td>44%</td>
<td>2.8%</td>
<td>441</td>
</tr>
<tr>
<td>2015</td>
<td>430</td>
<td>57%</td>
<td>4,830</td>
<td>44%</td>
<td>2.6%</td>
<td>772</td>
</tr>
<tr>
<td>2016</td>
<td>324</td>
<td>52%</td>
<td>3,955</td>
<td>42%</td>
<td>2.0%</td>
<td>606</td>
</tr>
<tr>
<td>2017</td>
<td>423</td>
<td>53%</td>
<td>5,319</td>
<td>44%</td>
<td>1.5%</td>
<td>1089</td>
</tr>
<tr>
<td>2018</td>
<td>320</td>
<td>51%</td>
<td>3,642</td>
<td>42%</td>
<td>1.2%</td>
<td>549</td>
</tr>
<tr>
<td><strong>Total/Avg</strong></td>
<td><strong>11,058</strong></td>
<td><strong>78%</strong></td>
<td><strong>106,823</strong></td>
<td><strong>52%</strong></td>
<td><strong>6.2%</strong></td>
<td><strong>13,726</strong></td>
</tr>
</tbody>
</table>

* 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)
2. System Benefits (continued)

Individual Account Program (IAP) (does not reflect the impact of SB 1049)

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

<table>
<thead>
<tr>
<th>Year (as of 12/31)</th>
<th>Total IAP Account Balance After Earnings Crediting ($M)</th>
<th># of Accounts</th>
<th>Average IAP Account Balance ($)</th>
<th># of Payees</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>423.4</td>
<td>162,119</td>
<td>2,611</td>
<td>2</td>
</tr>
<tr>
<td>2005</td>
<td>928.9</td>
<td>181,055</td>
<td>5,130</td>
<td>4,131</td>
</tr>
<tr>
<td>2006</td>
<td>1,396.8</td>
<td>197,491</td>
<td>7,072</td>
<td>6,557</td>
</tr>
<tr>
<td>2007</td>
<td>2,120.5</td>
<td>210,133</td>
<td>10,091</td>
<td>6,705</td>
</tr>
<tr>
<td>2008</td>
<td>1,851.2</td>
<td>218,192</td>
<td>8,484</td>
<td>8,624</td>
</tr>
<tr>
<td>2009</td>
<td>2,742.8</td>
<td>231,256</td>
<td>11,847</td>
<td>7,727</td>
</tr>
<tr>
<td>2010</td>
<td>3,536.9</td>
<td>236,265</td>
<td>14,970</td>
<td>8,695</td>
</tr>
<tr>
<td>2011</td>
<td>3,939.7</td>
<td>238,062</td>
<td>16,549</td>
<td>11,479</td>
</tr>
<tr>
<td>2012</td>
<td>4,855.1</td>
<td>240,637</td>
<td>20,176</td>
<td>14,728</td>
</tr>
<tr>
<td>2013</td>
<td>5,127.3</td>
<td>242,516</td>
<td>21,142</td>
<td>14,994</td>
</tr>
<tr>
<td>2014</td>
<td>6,001.1</td>
<td>245,768</td>
<td>24,821</td>
<td>15,118</td>
</tr>
<tr>
<td>2015</td>
<td>6,906.1</td>
<td>255,896</td>
<td>26,988</td>
<td>15,644</td>
</tr>
<tr>
<td>2016</td>
<td>7,634.7</td>
<td>262,096</td>
<td>29,129</td>
<td>16,213</td>
</tr>
<tr>
<td>2017</td>
<td>8,960.4</td>
<td>269,812</td>
<td>33,210</td>
<td>16,866</td>
</tr>
<tr>
<td>2018</td>
<td>9,015.2</td>
<td>276,739</td>
<td>32,577</td>
<td>17,597</td>
</tr>
</tbody>
</table>

IAP Target-Date Fund values (as of June 30, 2019)

Starting January 1, 2018, all PERS members became invested in age-based Target-Date Funds in an effort by the Oregon Investment Council to reduce investment risk and volatility as members age. Through 2019, all retired members receiving installment payments were invested in the Retirement Allocation Fund.

<table>
<thead>
<tr>
<th>Target-Date Fund</th>
<th>Number of Accounts</th>
<th>Total Account Balance ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retirement Allocation Fund Born in 1952 or before</td>
<td>20,622</td>
<td>$644,666,258</td>
</tr>
<tr>
<td>2020</td>
<td>20,723</td>
<td>$880,032,357</td>
</tr>
<tr>
<td>2025</td>
<td>30,762</td>
<td>$1,406,465,434</td>
</tr>
<tr>
<td>2030</td>
<td>33,151</td>
<td>$1,568,491,064</td>
</tr>
<tr>
<td>2035</td>
<td>37,413</td>
<td>$1,643,788,251</td>
</tr>
<tr>
<td>2040</td>
<td>37,301</td>
<td>$1,343,663,956</td>
</tr>
<tr>
<td>2045</td>
<td>38,129</td>
<td>$937,035,348</td>
</tr>
<tr>
<td>2050</td>
<td>32,730</td>
<td>$460,014,254</td>
</tr>
<tr>
<td>2055</td>
<td>22,895</td>
<td>$150,947,733</td>
</tr>
<tr>
<td>2060</td>
<td>10,201</td>
<td>$24,927,664</td>
</tr>
</tbody>
</table>
2. System Benefits (continued)

Retired Tier One, Tier Two, and OPSRP members with hours reported working in a PERS-covered position in 2018 by employer group
(Does not reflect the impact of SB 1049)

After a Tier One or Tier Two member begins receiving a PERS retirement benefit, he or she may choose to return to work for a PERS-participating 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 payments. 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). Note: Starting in 2020, Senate Bill 1049 simplifies the rules for Work After Retirement.

<table>
<thead>
<tr>
<th>Hours</th>
<th>State</th>
<th>Local Govt.</th>
<th>K-12</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 200</td>
<td>533</td>
<td>1,216</td>
<td>2,675</td>
<td>4,424</td>
</tr>
<tr>
<td>200 - 400</td>
<td>394</td>
<td>639</td>
<td>1,224</td>
<td>2,257</td>
</tr>
<tr>
<td>401 - 600</td>
<td>265</td>
<td>443</td>
<td>854</td>
<td>1,562</td>
</tr>
<tr>
<td>601 - 800</td>
<td>210</td>
<td>306</td>
<td>625</td>
<td>1,141</td>
</tr>
<tr>
<td>801 - 1039</td>
<td>334</td>
<td>406</td>
<td>701</td>
<td>1,441</td>
</tr>
<tr>
<td>&gt; 1039</td>
<td>183</td>
<td>304</td>
<td>278</td>
<td>765</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,919</strong></td>
<td><strong>3,314</strong></td>
<td><strong>6,357</strong></td>
<td><strong>11,590</strong></td>
</tr>
</tbody>
</table>
2. System Benefits (continued)

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 many 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 $19,500 in calendar year 2020 ($26,000 if age 50 or older).

Oregon law 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, 2019, 305 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, 2019)

31,851 total participants

- 26,948 participants are state government employees (includes universities, higher education, and miscellaneous state agencies).
- 18,743 participants are actively contributing to OSGP.

Average monthly contribution to OSGP by age

![Average monthly contribution to OSGP by age](chart)

Average contribution amount: $418.00/month
2. System Benefits (continued)

Average value of OSGP accounts by age

![Bar chart showing average account balance by age group.](chart)

- `< 21`: $1,264
- `21-29`: $3,852
- `30-39`: $14,740
- `40-49`: $41,952
- `50-59`: $80,404
- `60-69`: $111,333
- `>= 70`: $207,190

Total Plan Assets: $2.32 billion
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 OPSPRP 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, 2019)

<table>
<thead>
<tr>
<th>Medical Plans (four plans offered)</th>
<th>Totals</th>
<th>Medicare</th>
<th>Non-Medicare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covered lives</td>
<td>58,267</td>
<td>56,430</td>
<td>1,838</td>
</tr>
<tr>
<td>Retirees (or surviving spouses)</td>
<td>47,613</td>
<td>46,467</td>
<td>1,154</td>
</tr>
<tr>
<td>Spouses/dependents</td>
<td>10,647</td>
<td>9,963</td>
<td>684</td>
</tr>
<tr>
<td>Average age of enrolled retirees</td>
<td>75.33</td>
<td>75.94</td>
<td>56.75</td>
</tr>
</tbody>
</table>

| Dental Plans (two plans offered)  | 37,978       |

<table>
<thead>
<tr>
<th>Statutory health insurance premium subsidies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retirees receiving RHIA (trust fund held by PERS*)</td>
</tr>
<tr>
<td>Retirees receiving RHIPA (trust fund held by PERS**)</td>
</tr>
<tr>
<td>RHIA monthly payment total</td>
</tr>
<tr>
<td>RHIPA monthly payment total</td>
</tr>
</tbody>
</table>

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

**The RHIPA subsidy is for state of Oregon non-Medicare retirees only and varies depending on the employee’s years of state service, from $206.24 (8 years) to $412.48 (30+ years) per month for plan year 2019.

Employer rates (effective July 1, 2019): RHIA: 0.06%; RHIPA (state government only): 0.39%

Actuarial liability (as of December 31, 2018): -$159 million (RHIA); $24 million (RHIPA)
### 2. System Benefits (continued)

#### History of key PERS benefit enhancements, caps, and reductions by year

<table>
<thead>
<tr>
<th>Year</th>
<th>Category</th>
<th>Action</th>
<th>Affected Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>1945</td>
<td>Administrative</td>
<td>The Public Employees Retirement System is signed into law and begins business July 1, 1946, as a money match retirement plan</td>
<td>All</td>
</tr>
<tr>
<td>1947</td>
<td>Retirement Age/Vesting</td>
<td>Requirement for employees to serve a six-month waiting period before becoming PERS members begins</td>
<td>All</td>
</tr>
<tr>
<td>1953</td>
<td>Administrative</td>
<td>By law, the PERS plan is terminated and immediately reopened the next day, allowing public employers to provide Social Security coverage</td>
<td>All</td>
</tr>
<tr>
<td>1967</td>
<td>Investment Risk Allocation</td>
<td>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)</td>
<td>All</td>
</tr>
<tr>
<td>1969</td>
<td>Investment Risk Allocation</td>
<td>Participation in variable account program begins</td>
<td>All</td>
</tr>
<tr>
<td>1972</td>
<td>Cost-of-Living Adjustment</td>
<td>Implemented ad hoc COLA increase (12% to 25% benefit increase)</td>
<td>Existing retirees</td>
</tr>
<tr>
<td>1972</td>
<td>Cost-of-Living Adjustment</td>
<td>Initiated an annual COLA with a 1.5% cap</td>
<td>All retirees</td>
</tr>
<tr>
<td>1973</td>
<td>Benefit Calculation/Formula</td>
<td>Increased Formula Plus Annuity pension factors (General Service: .67 to 1.00; Police &amp; Fire: .92 to 1.35)</td>
<td>Tier One</td>
</tr>
<tr>
<td>1973</td>
<td>Cost-of-Living Adjustment</td>
<td>Annual COLA cap raised from 1.5% to 2%</td>
<td>All retirees</td>
</tr>
<tr>
<td>1973</td>
<td>Cost-of-Living Adjustment</td>
<td>Capped COLA at actual inflation rate or 2%, whichever is less</td>
<td>All retirees</td>
</tr>
<tr>
<td>1973</td>
<td>Final Average Salary</td>
<td>Added accrued sick leave to retirement benefit calculation for participating employers</td>
<td>Tier One/Two</td>
</tr>
<tr>
<td>1974</td>
<td>Cost-of-Living Adjustment</td>
<td>Implemented ad hoc increase (0% to 25% benefit increase)</td>
<td>Existing retirees</td>
</tr>
<tr>
<td>1975</td>
<td>Investment Risk Allocation</td>
<td>Initiated member account assumed rate guarantee</td>
<td>Tier One</td>
</tr>
<tr>
<td>1975</td>
<td>Investment Risk Allocation</td>
<td>Increased assumed earnings rate from 5.5% to 7%</td>
<td>Tier One</td>
</tr>
<tr>
<td>1975</td>
<td>Investment Risk Allocation</td>
<td>Credited member regular accounts with more than the assumed earnings rate*</td>
<td>Tier One</td>
</tr>
<tr>
<td>1976</td>
<td>Investment Risk Allocation</td>
<td>Gain Loss Reserve established to “self-fund” assumed earnings rate crediting</td>
<td>Tier One</td>
</tr>
<tr>
<td>1979</td>
<td>Administrative</td>
<td>Employers allowed to “pick up” member 6% contribution</td>
<td>All</td>
</tr>
<tr>
<td>1979</td>
<td>Investment Risk Allocation</td>
<td>Increased assumed earnings rate from 7% to 7.5%</td>
<td>Tier One</td>
</tr>
<tr>
<td>1981</td>
<td>Benefit Calculation/Formula</td>
<td>Consolidated member contributions from 1% to 7% salary-based sliding scale to universal 6%</td>
<td>All</td>
</tr>
<tr>
<td>1981</td>
<td>Benefit Calculation/Formula</td>
<td>Eliminated Formula Plus Annuity benefit calculation method</td>
<td>Tier One</td>
</tr>
<tr>
<td>1981</td>
<td>Cost-of-Living Adjustment</td>
<td>Implemented ad hoc COLA increase (4% to 11.4% benefit increase)</td>
<td>Existing retirees</td>
</tr>
<tr>
<td>1985</td>
<td>Cost-of-Living Adjustment</td>
<td>Implemented ad hoc COLA increase (3% to 7.28% benefit increase)</td>
<td>Existing retirees</td>
</tr>
<tr>
<td>1985</td>
<td>Benefit Calculation/Formula</td>
<td>Added benefit option to allow lump-sum payment of member account</td>
<td>All</td>
</tr>
<tr>
<td>1987</td>
<td>Benefit Calculation/Formula</td>
<td>Members allowed to purchase six-month waiting period</td>
<td>All</td>
</tr>
<tr>
<td>1987</td>
<td>Benefit Calculation/Formula</td>
<td>New retirement benefit payout options added</td>
<td>All</td>
</tr>
<tr>
<td>1989</td>
<td>Cost-of-Living Adjustment</td>
<td>Implemented ad hoc COLA increase (0% to 25% benefit increase)</td>
<td>Existing retirees</td>
</tr>
<tr>
<td>1989</td>
<td>Investment Risk Allocation</td>
<td>Increased assumed earnings rate from 7.5% to 8%</td>
<td>Tier One</td>
</tr>
<tr>
<td>1989</td>
<td>Retiree Health Benefits</td>
<td>Established Medicare and state employee pre-Medicare insurance premium subsidies</td>
<td>Tier One/Two</td>
</tr>
</tbody>
</table>

2. System Benefits (continued)

History of key PERS benefit enhancements, caps, and reductions (continued)

<table>
<thead>
<tr>
<th>Year</th>
<th>Category</th>
<th>Action</th>
<th>Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989</td>
<td>Retiree Health Benefits</td>
<td>Capped Medicare premium subsidy at $60 per month</td>
<td>Tier One/Two</td>
</tr>
<tr>
<td>1989</td>
<td>Retirement Age/Vesting</td>
<td>Added “30 years of service” retirement regardless of age</td>
<td>Tier One/Two</td>
</tr>
<tr>
<td>1991</td>
<td>Benefit Calculation/Formula</td>
<td>Imposed state income tax on PERS benefits</td>
<td>All</td>
</tr>
<tr>
<td>1991</td>
<td>Benefit Calculation/Formula</td>
<td>Established service time-based state income tax offset benefit of between 1% to 4% (SB 656)</td>
<td>Tier One</td>
</tr>
<tr>
<td>1993</td>
<td>Administrative</td>
<td>Divorced spouses entitled to separate account from member’s</td>
<td>All</td>
</tr>
<tr>
<td>1995</td>
<td>Benefit Calculation/Formula</td>
<td>Established state income tax offset benefit for pre-1991 service time (HB 3349)</td>
<td>Tier One</td>
</tr>
<tr>
<td>1995</td>
<td>Benefit Calculation/Formula</td>
<td>Eliminated tax remedy for anyone hired after July 14, 1995</td>
<td>All new hires</td>
</tr>
<tr>
<td>1996</td>
<td>Final Average Salary</td>
<td>Excluded lump-sum vacation payouts from final average salary</td>
<td>Tier Two</td>
</tr>
<tr>
<td>1996</td>
<td>Investment Risk Allocation</td>
<td>Eliminated guaranteed return on regular accounts for new members</td>
<td>Tier Two</td>
</tr>
<tr>
<td>1996</td>
<td>Retirement Age/Vesting</td>
<td>Increased normal retirement age for new members from 58 to 60 (General Service)</td>
<td>Tier Two</td>
</tr>
<tr>
<td>1997</td>
<td>Administrative</td>
<td>Married members must provide proof of spousal consent for retirement option choice</td>
<td>All</td>
</tr>
<tr>
<td>1997</td>
<td>Administrative</td>
<td>Reemployed retirees can work up to 1,040 hours for a PERS-covered employer without loss of benefits (up from 600 hours)</td>
<td>All</td>
</tr>
<tr>
<td>1997</td>
<td>Benefit Calculation/Formula</td>
<td>Out-of-state teaching service and some military purchases allowed</td>
<td>All</td>
</tr>
<tr>
<td>1999</td>
<td>Benefit Calculation/Formula</td>
<td>Locked in existing actuarial equivalency factor tables</td>
<td>Tier One</td>
</tr>
<tr>
<td>2000</td>
<td>Investment Risk Allocation</td>
<td>Eliminated “Last Known Rate” member account crediting guarantee</td>
<td>Tier One</td>
</tr>
<tr>
<td>2003</td>
<td>Benefit Calculation/Formula</td>
<td>Decreased Full Formula benefit pension factor (General Service: 1.67 to 1.50; Police &amp; Fire 2.00 to 1.80)</td>
<td>OPSRP</td>
</tr>
<tr>
<td>2003</td>
<td>Benefit Calculation/Formula</td>
<td>Eliminated Money Match benefit calculation method</td>
<td>OPSRP</td>
</tr>
<tr>
<td>2003</td>
<td>Benefit Calculation/Formula</td>
<td>Redirected member contributions to freeze Money Match benefit levels</td>
<td>Prospective MM retirees</td>
</tr>
<tr>
<td>2003</td>
<td>Benefit Calculation/Formula</td>
<td>Required regularly updated mortality assumptions and actuarial factors</td>
<td>All</td>
</tr>
<tr>
<td>2003</td>
<td>Cost-of-Living Adjustment</td>
<td>Pro-rated first year COLA</td>
<td>OPSRP</td>
</tr>
<tr>
<td>2003</td>
<td>Cost-of-Living Adjustment</td>
<td>Eliminated COLA “bank” carryover</td>
<td>OPSRP</td>
</tr>
<tr>
<td>2003</td>
<td>Final Average Salary</td>
<td>Eliminated lump-sum vacation payouts from subject salary</td>
<td>OPSRP</td>
</tr>
<tr>
<td>2003</td>
<td>Final Average Salary</td>
<td>Eliminated accumulated sick leave from final average salary</td>
<td>OPSRP</td>
</tr>
<tr>
<td>2003</td>
<td>Investment Risk Allocation</td>
<td>Required members to self-fund guaranteed return on member accounts</td>
<td>Tier One</td>
</tr>
<tr>
<td>2003</td>
<td>Investment Risk Allocation</td>
<td>Creates IAP to include all member contributions made on or after January 1, 2004, which receives actual returns with no guarantee</td>
<td>All</td>
</tr>
<tr>
<td>2003</td>
<td>Retiree Health Benefits</td>
<td>Eliminated post-retirement health insurance premium subsidies</td>
<td>OPSRP</td>
</tr>
<tr>
<td>2003</td>
<td>Retirement Age/Vesting</td>
<td>Increased normal retirement age from 60 to 65 (General Service) 55 to 60 (Police &amp; Fire)</td>
<td>OPSRP</td>
</tr>
<tr>
<td>2003</td>
<td>Retirement Age/Vesting</td>
<td>Increased vesting from 5 years or age 50 to 5 years or age 65 (General Service) or age 60 (Police &amp; Fire)</td>
<td>OPSRP</td>
</tr>
<tr>
<td>2005</td>
<td>Benefit Calculation/Formula</td>
<td>Adjusted member accounts and benefit payments to recapture 1999 earnings overcrediting</td>
<td>Tier One</td>
</tr>
<tr>
<td>2009</td>
<td>Retiree Health Benefits</td>
<td>Allowed OPSRP members to participate in PERS retiree health insurance pools without premium subsidy</td>
<td>OPSRP</td>
</tr>
<tr>
<td>2011</td>
<td>Benefit Calculation/Formula</td>
<td>Eliminated HB 3349 tax remedy for prospective retirees who move out of state on or after January 1, 2012</td>
<td>Tier One</td>
</tr>
</tbody>
</table>

Key: Benefit enhancement | Benefit cap or reduction

Continued on following page
## 2. System Benefits (continued)

**History of key PERS benefit enhancements, caps, and reductions (continued)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Category</th>
<th>Action</th>
<th>Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>Cost-of-Living Adjustment</td>
<td>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</td>
<td>All</td>
</tr>
<tr>
<td>2013</td>
<td>Supplementary Payments</td>
<td>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</td>
<td>Retirees</td>
</tr>
<tr>
<td>2013</td>
<td>Benefit Calculation/Formula</td>
<td>Eliminated any tax remedy for retirees who do not pay income taxes in Oregon because they are not residents of Oregon</td>
<td>Tier One</td>
</tr>
<tr>
<td>2014</td>
<td>Investment Risk Allocation</td>
<td>Decreased assumed earnings rate from 8.0% to 7.75%</td>
<td>Tier One</td>
</tr>
<tr>
<td>2015</td>
<td>Supplementary Payments</td>
<td>Supplementary payments invalidated by Oregon Supreme Court</td>
<td>Retirees</td>
</tr>
<tr>
<td>2015</td>
<td>Cost-of-Living Adjustment</td>
<td>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.”</td>
<td>All</td>
</tr>
<tr>
<td>2016</td>
<td>Investment Risk Allocation</td>
<td>Decreased assumed earnings rate from 7.75% to 7.50%</td>
<td>Tier One</td>
</tr>
<tr>
<td>2017</td>
<td>Investment Risk Allocation</td>
<td>Decreased assumed earnings rate from 7.50% to 7.20%</td>
<td>Tier One</td>
</tr>
<tr>
<td>2017</td>
<td>Investment Risk Allocation</td>
<td>Oregon Investment Council changes IAP investment strategy to Target-Date Funds, intended to reduce investment risk and volatility as members age</td>
<td>All</td>
</tr>
<tr>
<td>2019</td>
<td>Administrative</td>
<td>Alternate method to calculate death benefit for certain Tier One/Tier Two members who die before retirement</td>
<td>Tier One/Tier Two</td>
</tr>
<tr>
<td>2019</td>
<td>Benefit Calculation/Formula</td>
<td>Reduces member contributions to IAP. Establishes limit on salary used for benefit calculations</td>
<td>All</td>
</tr>
</tbody>
</table>

**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:

\[
\text{B} = \text{C} + \text{E}
\]

- **B** = **BENEFITS**
  - Present value of earned benefits
  - Set by: Oregon Legislature

- **C** = **CONTRIBUTIONS**
  - Employer funds to pay for pension benefits
  - Set by: PERS Board

- **E** = **EARNINGS**
  - Future returns on investment funds
  - 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, 2018)**

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, 2018, PERS was 69% funded (75%, 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, 2018, the unfunded actuarial liability (UAL) was $27.0 billion ($21.8 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)**

![Graph showing PERS fund value from 1991 to 2018. The values increase over time, with a significant rise in the last few years.]
### 3. System Funding Level and Status (continued)

**Unfunded actuarial liability (UAL) history and funded ratio\(^1\)**

<table>
<thead>
<tr>
<th>Valuation Date</th>
<th>Without Side Accounts</th>
<th>With Side Accounts(^3) (starting in 2002)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>UAL ($M)</td>
<td>Funded Ratio (%)</td>
</tr>
<tr>
<td>2000</td>
<td>1,545</td>
<td>96.4</td>
</tr>
<tr>
<td>2001</td>
<td>-2,031</td>
<td>105.4</td>
</tr>
<tr>
<td>2002</td>
<td>3,983</td>
<td>89.9</td>
</tr>
<tr>
<td>2003</td>
<td>6,227</td>
<td>86.0</td>
</tr>
<tr>
<td>2004</td>
<td>7,678</td>
<td>84.0</td>
</tr>
<tr>
<td>2005</td>
<td>4,919</td>
<td>91.0</td>
</tr>
<tr>
<td>2006</td>
<td>2,229</td>
<td>95.7</td>
</tr>
<tr>
<td>2007</td>
<td>1,538</td>
<td>97.1</td>
</tr>
<tr>
<td>2008</td>
<td>16,133</td>
<td>70.4</td>
</tr>
<tr>
<td>2009</td>
<td>13,598</td>
<td>76.0</td>
</tr>
<tr>
<td>2010(^4)</td>
<td>13,300</td>
<td>78.0</td>
</tr>
<tr>
<td>2011</td>
<td>16,255</td>
<td>73.0</td>
</tr>
<tr>
<td>2012(^5)</td>
<td>11,100</td>
<td>82.0</td>
</tr>
<tr>
<td>2013</td>
<td>8,500</td>
<td>86.0</td>
</tr>
<tr>
<td>2014(^6)</td>
<td>18,000</td>
<td>76.0</td>
</tr>
<tr>
<td>2015</td>
<td>21,800</td>
<td>71.0</td>
</tr>
<tr>
<td>2016</td>
<td>25,300</td>
<td>69.0</td>
</tr>
<tr>
<td>2017(^7)</td>
<td>22,300</td>
<td>73.0</td>
</tr>
<tr>
<td>2018(^8)</td>
<td>27,000</td>
<td>69.0</td>
</tr>
</tbody>
</table>

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.
8. Includes board-adopted actuarial assumptions/methods from the 2018 Experience Study.

**Actuarial accrued liabilities (as of December 31, 2018)**

Approximately 71% of PERS’ total accrued liability is for members who are no longer working in PERS-covered employment (retired and inactive members).
3. System Funding Level and Status (continued)

The following projections from the PERS actuaries reflect legislative directives in SB 1049 (2019) that include a one-time re-amortization of the Tier One/Tier Two UAL, creation of new side accounts by participation in the Employer Incentive Fund, and a partial redirection of employee contributions to new Employee Pension Stability Accounts.

Projected system-funded status (including side accounts)

- 2019 funded status increases due to estimated year-end 2019 investment returns.
- Funded status projected to reach 93% in 2037 with steady +7.2% returns.

Projected UAL (unfunded actuarial liability) excluding side accounts

- 2019 UAL decreases due to estimated year-end 2019 investment returns.
- At steady +7.2% returns, UAL remains relatively level for several years before declining to below $8 billion at year-end 2037.
## 4. System Revenue

### Member and employer contributions and investment income for calendar years

<table>
<thead>
<tr>
<th>Year</th>
<th>Member Contributions ($M)</th>
<th>Employer Contributions ($M)</th>
<th>Amortization of Employer Side Accounts ($M)*</th>
<th>Total Employer ($M)</th>
<th>Net Investment &amp; Other Income ($M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>287</td>
<td>427</td>
<td>N/A</td>
<td>427</td>
<td>4,110</td>
</tr>
<tr>
<td>1996</td>
<td>296</td>
<td>463</td>
<td>N/A</td>
<td>463</td>
<td>4,358</td>
</tr>
<tr>
<td>1997</td>
<td>291</td>
<td>473</td>
<td>N/A</td>
<td>473</td>
<td>4,582</td>
</tr>
<tr>
<td>1998</td>
<td>318</td>
<td>488</td>
<td>N/A</td>
<td>488</td>
<td>3,978</td>
</tr>
<tr>
<td>1999</td>
<td>347</td>
<td>577</td>
<td>N/A</td>
<td>577</td>
<td>7,463</td>
</tr>
<tr>
<td>2000</td>
<td>359</td>
<td>654</td>
<td>N/A</td>
<td>654</td>
<td>143</td>
</tr>
<tr>
<td>2001</td>
<td>385</td>
<td>689</td>
<td>N/A</td>
<td>689</td>
<td>-2,708</td>
</tr>
<tr>
<td>2002</td>
<td>398</td>
<td>725</td>
<td>8</td>
<td>733</td>
<td>-3,460</td>
</tr>
<tr>
<td>2003</td>
<td>405</td>
<td>582</td>
<td>97</td>
<td>679</td>
<td>8,866</td>
</tr>
<tr>
<td>2004</td>
<td>371**</td>
<td>408</td>
<td>278</td>
<td>686</td>
<td>5,933</td>
</tr>
<tr>
<td>2005</td>
<td>434</td>
<td>504</td>
<td>357</td>
<td>861</td>
<td>6,179</td>
</tr>
<tr>
<td>2006</td>
<td>456</td>
<td>637</td>
<td>474</td>
<td>1,111</td>
<td>8,163</td>
</tr>
<tr>
<td>2007</td>
<td>468</td>
<td>633</td>
<td>466</td>
<td>1,099</td>
<td>5,808</td>
</tr>
<tr>
<td>2008</td>
<td>484</td>
<td>669</td>
<td>541</td>
<td>1,210</td>
<td>-17,235</td>
</tr>
<tr>
<td>2009</td>
<td>515</td>
<td>561</td>
<td>540</td>
<td>1,101</td>
<td>8,053</td>
</tr>
<tr>
<td>2010</td>
<td>502</td>
<td>435</td>
<td>558</td>
<td>993</td>
<td>6,444</td>
</tr>
<tr>
<td>2011</td>
<td>510</td>
<td>627</td>
<td>509</td>
<td>1,136</td>
<td>1,935</td>
</tr>
<tr>
<td>2012</td>
<td>513</td>
<td>915</td>
<td>443</td>
<td>1,358</td>
<td>7,859</td>
</tr>
<tr>
<td>2013</td>
<td>561</td>
<td>942</td>
<td>448</td>
<td>1,390</td>
<td>9,458</td>
</tr>
<tr>
<td>2014</td>
<td>524</td>
<td>994</td>
<td>472</td>
<td>1,466</td>
<td>4,819</td>
</tr>
<tr>
<td>2015</td>
<td>611</td>
<td>1,185</td>
<td>542</td>
<td>1,727</td>
<td>1,380</td>
</tr>
<tr>
<td>2016</td>
<td>610</td>
<td>1,036</td>
<td>628</td>
<td>1,644</td>
<td>4,840</td>
</tr>
<tr>
<td>2017</td>
<td>628</td>
<td>1,241</td>
<td>653</td>
<td>1,894</td>
<td>10,633</td>
</tr>
<tr>
<td>2018</td>
<td>649</td>
<td>1,808</td>
<td>663</td>
<td>2,471</td>
<td>166</td>
</tr>
</tbody>
</table>

*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)

2018 earnings crediting ($ millions)

<table>
<thead>
<tr>
<th>Reserve/Account</th>
<th>Balance Before 2018 Crediting</th>
<th>Final 2018 Crediting</th>
<th>Final Ending Reserve Balance</th>
<th>Crediting Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier One Member Regular Accounts</td>
<td>3,647.7</td>
<td>262.6</td>
<td>3,910.3</td>
<td>7.20%</td>
</tr>
<tr>
<td>Tier One Rate Guarantee Reserve</td>
<td>510.5</td>
<td>(252.9)</td>
<td>257.6</td>
<td>N/A</td>
</tr>
<tr>
<td>Tier Two Member Regular Accounts</td>
<td>915.5</td>
<td>2.1</td>
<td>917.6</td>
<td>0.23%</td>
</tr>
<tr>
<td>Benefits In Force Reserve</td>
<td>21,885.6</td>
<td>51.3</td>
<td>21,936.9</td>
<td>0.23%</td>
</tr>
<tr>
<td>Employer Reserves</td>
<td>28,148.0</td>
<td>65.7</td>
<td>28,213.7</td>
<td>0.23%</td>
</tr>
<tr>
<td>OPSRP Pension</td>
<td>4,764.3</td>
<td>11.8</td>
<td>4,776.1</td>
<td>0.24%</td>
</tr>
<tr>
<td>IAP Accounts, as a whole</td>
<td>8,787.5</td>
<td>(55.5)</td>
<td>8,732.0</td>
<td>-0.63%</td>
</tr>
<tr>
<td>*UAL Lump-Sum Pmt. Side Accounts</td>
<td>5,180.0</td>
<td>33.4</td>
<td>5,213.4</td>
<td>Various</td>
</tr>
<tr>
<td>Contingency Reserve</td>
<td>50.0</td>
<td>-</td>
<td>50.0</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$73,889.1</strong></td>
<td><strong>$118.5</strong></td>
<td><strong>$74,007.6</strong></td>
<td></td>
</tr>
</tbody>
</table>

*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.

**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%). 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%).

**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.
4. System Revenue (continued)

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

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

*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).
4. System Revenue (continued)

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).

2021-2023 employer contribution rate increase projections (2018 valuation data) (Does not reflect the impact of SB 1049)

<table>
<thead>
<tr>
<th>($ millions)</th>
<th>Projected 2019-21 Payroll*</th>
<th>(A) Projected 2019-21 Contribution</th>
<th>Projected 2021-23 Payroll*</th>
<th>(B) Projected 2021-23 Total Contribution**</th>
<th>(B) - (A) Projected Contribution Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Agencies</td>
<td>$6,600</td>
<td>$1,135</td>
<td>$7,070</td>
<td>$1,565</td>
<td>$430</td>
</tr>
<tr>
<td>School Districts</td>
<td>$7,335</td>
<td>$1,310</td>
<td>$7,860</td>
<td>$1,520</td>
<td>$210</td>
</tr>
<tr>
<td>All Others</td>
<td>$8,535</td>
<td>$1,560</td>
<td>$9,140</td>
<td>$2,080</td>
<td>$520</td>
</tr>
<tr>
<td>Total</td>
<td>$22,470</td>
<td>$4,005</td>
<td>$24,070</td>
<td>$5,165</td>
<td>$1,160</td>
</tr>
</tbody>
</table>

*Assumes payroll growth at 3.5% annually based on 12/31/2018 active member census, reflecting proportional payroll composition (Tier One/Tier Two vs. OPSRP) as of 12/31/2018.

**Collared net rates are used to project 2021-23 employer contributions.
4. System Revenue (continued)

Employer side accounts (does not reflect the impact of SB 1049)

When an employer makes a lump-sum payment to prepay its pension obligations, the money is placed in a “side account.” This account reduces the paying employer’s pension contribution rates.

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, 2018, 153 employers have side accounts. Of these, 43 employers have multiple side accounts: two counties, two cities, three special districts, three community colleges, and 33 school districts.

<table>
<thead>
<tr>
<th>Employer Type</th>
<th># w/ Side Accounts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent Locals (not a member of a pool)</td>
<td>7</td>
</tr>
<tr>
<td>State Govt. (all, including universities)</td>
<td>1</td>
</tr>
<tr>
<td>Pooled Counties</td>
<td>9</td>
</tr>
<tr>
<td>Pooled Cities</td>
<td>9</td>
</tr>
<tr>
<td>Pooled Special Districts</td>
<td>9</td>
</tr>
<tr>
<td>Community Colleges</td>
<td>17</td>
</tr>
<tr>
<td>School Districts</td>
<td>101</td>
</tr>
</tbody>
</table>

As of December 31, 2018, side account assets totaled $5.2 billion.

<table>
<thead>
<tr>
<th>Employer Type</th>
<th>Balance (Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent</td>
<td>$83.1</td>
</tr>
<tr>
<td>State Govt.</td>
<td>$1,617.3</td>
</tr>
<tr>
<td>Pooled Counties</td>
<td>$129.8</td>
</tr>
<tr>
<td>Pooled Cities</td>
<td>$48.0</td>
</tr>
<tr>
<td>Pooled Special Districts</td>
<td>$93.5</td>
</tr>
<tr>
<td>Community Colleges</td>
<td>$526.5</td>
</tr>
<tr>
<td>School Districts</td>
<td>$2,711.0</td>
</tr>
</tbody>
</table>

Side accounts established prior to December 31, 2009, are amortized through December 31, 2027. For side accounts established after this date, the fixed amortization period ends 18 years after the first rate-setting valuation following its creation. However, with the adoption of SB 1566 by the 2017 Legislative Assembly, employers making a lump-sum payment of at least $10 million dollars now have the option of selecting a shorter amortization schedule of six years, 10 years, 16 years, or 20 years 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.
4. System Revenue (continued)

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.

<table>
<thead>
<tr>
<th>Calendar Year</th>
<th>Average Earnings/Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>10.22%</td>
</tr>
<tr>
<td>2008</td>
<td>-27.83%</td>
</tr>
<tr>
<td>2009</td>
<td>19.52%</td>
</tr>
<tr>
<td>2010</td>
<td>13.13%</td>
</tr>
<tr>
<td>2011</td>
<td>2.96%</td>
</tr>
<tr>
<td>2012</td>
<td>15.39%</td>
</tr>
<tr>
<td>2013</td>
<td>16.67%</td>
</tr>
<tr>
<td>2014</td>
<td>7.79%</td>
</tr>
<tr>
<td>2015</td>
<td>2.25%</td>
</tr>
<tr>
<td>2016</td>
<td>7.65%</td>
</tr>
<tr>
<td>2017</td>
<td>16.71%</td>
</tr>
<tr>
<td>2018</td>
<td>0.56%</td>
</tr>
</tbody>
</table>
### 4. System Revenue (continued)

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Earnings (%)</th>
<th>Tier One</th>
<th>Tier Two</th>
<th>Variable Account</th>
<th>IAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>5.09</td>
<td>5.09</td>
<td></td>
<td>7.47</td>
<td></td>
</tr>
<tr>
<td>1971</td>
<td>6.27</td>
<td>6.27</td>
<td></td>
<td>9.47</td>
<td></td>
</tr>
<tr>
<td>1972</td>
<td>7.46</td>
<td>7.46</td>
<td></td>
<td>13.87</td>
<td></td>
</tr>
<tr>
<td>1973</td>
<td>0.00</td>
<td>0.00</td>
<td></td>
<td>-16.39</td>
<td></td>
</tr>
<tr>
<td>1974</td>
<td>0.00</td>
<td>5.50</td>
<td></td>
<td>-18.16</td>
<td></td>
</tr>
<tr>
<td>1975</td>
<td>9.19</td>
<td>7.50</td>
<td></td>
<td>18.94</td>
<td></td>
</tr>
<tr>
<td>1976</td>
<td>10.38</td>
<td>7.75</td>
<td></td>
<td>18.58</td>
<td></td>
</tr>
<tr>
<td>1977</td>
<td>4.79</td>
<td>7.00</td>
<td></td>
<td>-2.62</td>
<td></td>
</tr>
<tr>
<td>1978</td>
<td>7.37</td>
<td>7.00</td>
<td></td>
<td>7.03</td>
<td></td>
</tr>
<tr>
<td>1979</td>
<td>12.32</td>
<td>11.09</td>
<td></td>
<td>20.40</td>
<td></td>
</tr>
<tr>
<td>1980</td>
<td>16.92</td>
<td>13.00</td>
<td></td>
<td>29.94</td>
<td></td>
</tr>
<tr>
<td>1981</td>
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<td></td>
<td>-2.25</td>
<td></td>
</tr>
<tr>
<td>1982</td>
<td>15.31</td>
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<td></td>
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<tr>
<td>1983</td>
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<td></td>
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<tr>
<td>1984</td>
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<td>7.50</td>
<td></td>
<td>4.00</td>
<td></td>
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<td>1985</td>
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<td></td>
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<td>18.37</td>
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<td>18.98</td>
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<td>9.00</td>
<td>7.50</td>
<td></td>
<td>4.54</td>
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</tr>
<tr>
<td>1988</td>
<td>16.86</td>
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<td></td>
<td>18.62</td>
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<td>1989</td>
<td>19.74</td>
<td>14.50</td>
<td></td>
<td>26.84</td>
<td></td>
</tr>
<tr>
<td>1990</td>
<td>-1.53</td>
<td>8.00</td>
<td></td>
<td>-7.84</td>
<td></td>
</tr>
<tr>
<td>1991</td>
<td>22.45</td>
<td>15.00</td>
<td></td>
<td>35.05</td>
<td></td>
</tr>
<tr>
<td>1992</td>
<td>6.94</td>
<td>8.00</td>
<td></td>
<td>10.54</td>
<td></td>
</tr>
<tr>
<td>1993</td>
<td>15.04</td>
<td>12.00</td>
<td></td>
<td>12.65</td>
<td></td>
</tr>
<tr>
<td>1994</td>
<td>2.16</td>
<td>8.00</td>
<td></td>
<td>-1.76</td>
<td></td>
</tr>
<tr>
<td>1995</td>
<td>20.78</td>
<td>12.50</td>
<td></td>
<td>29.92</td>
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</tr>
<tr>
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<tr>
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<tr>
<td>1998</td>
<td>15.43</td>
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<tr>
<td>1999</td>
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<td>21.97</td>
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</tr>
<tr>
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<tr>
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<td>8.00</td>
<td>-6.66</td>
<td>-11.19</td>
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</tr>
<tr>
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<td>8.00</td>
<td>-9.93</td>
<td>-21.51</td>
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</tr>
<tr>
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<td>8.00</td>
<td>22.00</td>
<td>34.68</td>
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</tr>
<tr>
<td>2004</td>
<td>13.80</td>
<td>8.00</td>
<td>13.27</td>
<td>13.00</td>
<td>12.77</td>
</tr>
<tr>
<td>2005</td>
<td>13.04</td>
<td>8.00</td>
<td>18.31**</td>
<td>8.29</td>
<td>12.80</td>
</tr>
<tr>
<td>2006</td>
<td>15.57</td>
<td>8.00</td>
<td>15.45</td>
<td>15.61</td>
<td>14.98</td>
</tr>
<tr>
<td>2007</td>
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<td>7.97***</td>
<td>9.47</td>
<td>1.75</td>
<td>9.46</td>
</tr>
<tr>
<td>2008</td>
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<td>8.00</td>
<td>-27.18</td>
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<td>-26.75</td>
</tr>
<tr>
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<td>19.12</td>
<td>35.57</td>
<td>18.47</td>
</tr>
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<td>12.44</td>
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</tr>
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<td>2.21</td>
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<td>2.15</td>
</tr>
<tr>
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<td>8.00</td>
<td>14.68</td>
<td>18.43</td>
<td>14.09</td>
</tr>
<tr>
<td>2013</td>
<td>15.76</td>
<td>8.00</td>
<td>15.62</td>
<td>25.74</td>
<td>15.59</td>
</tr>
<tr>
<td>2014</td>
<td>7.29</td>
<td>7.75</td>
<td>7.24</td>
<td>4.29</td>
<td>7.05</td>
</tr>
<tr>
<td>2015</td>
<td>2.21</td>
<td>7.75</td>
<td>1.87</td>
<td>-1.61</td>
<td>1.85</td>
</tr>
<tr>
<td>2016</td>
<td>6.9</td>
<td>7.50</td>
<td>7.15</td>
<td>8.76</td>
<td>7.13</td>
</tr>
<tr>
<td>2017</td>
<td>15.3</td>
<td>7.50</td>
<td>15.23</td>
<td>26.48</td>
<td>14.72</td>
</tr>
<tr>
<td>2018</td>
<td>0.19</td>
<td>7.20</td>
<td>0.23</td>
<td>-10.03</td>
<td></td>
</tr>
</tbody>
</table>

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%.

****Various Target-Date Fund returns.
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 2018 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 2018 earnings
5. Economic Impact of PERS Monthly Benefit Payments in 2018

Oregon PERS monthly benefits contribute to Oregon’s economy

Oregon PERS paid approximately $4.08 billion in benefits (not including benefit payments from the Individual Account Program (IAP)) to PERS retirees living in Oregon in 2018. 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 $4.4 billion in total economic value

The $4.08 billion in annual benefit payments multiply to $4.4 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 36,914 Oregon jobs and add approximately $1.32 billion in wages to Oregon’s economy.

Additionally, the state of Oregon collected an estimated $228.3 million in income taxes on PERS retiree monthly benefits during 2018.

Investment income provided 73.9% of total PERS revenues since 1970. Member contributions accounted for 4.8%, with employer contributions providing 21.3%.

Money for PERS benefit payments comes from three sources (1970-2018)
5. Economic Impact of PERS Benefit Payments in 2018 (continued)

Oregon PERS benefit payments by county (2018 calendar year)

[Cities and Counties with respective benefit payments and jobs supported by benefit payments]


[Beneath the map, a table indicating the number of retirees, amount of money paid, and jobs supported by benefit payments for each county]
5. Economic Impact of PERS Benefit Payments in 2018 (continued)

Oregon PERS benefit payments by state (2018 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, 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 that contains member contributions 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

AS OF FISCAL YEAR ENDING JUNE 30, 2019, BY MAILING ADDRESS

Note: Marion County is the official mailing address of many state agencies.
### PERS-participating employers by county, according to mailing address (906)

#### 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 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
- Coos County 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 (12)
Canyon City, Town of
Dayville School District #16J
Grant County
Grant County Emergency Communications Agency
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
Madrona 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
Rogue 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 (21)
Central Cascades Fire & EMS
Chiloquin, City of
Chiloquin-Agency Lake RFPD
Crescent RFPD
EagleRidge High School
Horsefly Irrigation District
Keno RFPD
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 (10)
Adel School District #21
Lake County
Lake County ESD
Lake County Library District
Lake County School District #7
Lake District Hospital
Lakeview, Town of
North Lake School District #14
Paisley School District
Plush School District

LANE (56)
Bethel School District
Bridge Charter Academy
Blachly School District
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
Gosnold 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
Oakridge School District
Oakridge, City of
Pleasant Hill Goshen Fire & Rescue
Pleasant Hill School District

Pleasant Hill RFPD
Rainbow Water District
Ridgeline Montessori
Siuslaw Public Library
Siuslaw RFPD #1
Siuslaw School District #97J
South Lane County Fire and Rescue
South Lane School District
Springfield School District #19
Springfield, City of
The Village School
University of Oregon
Veneta, City of
West Lane Technical Learning Center
Western Lane Ambulance District
Westfir, City of

LINCOLN (23)
Central Oregon Coast Fire and Rescue District
Depoe Bay RFPD
Depoe Bay, City of
Eddyville Charter School
Greater Toledo Pool
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
Millsburg, 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 (21)
Adrian School District #61
Annex Elementary School
Arock School District #81
Four Rivers Community School
Harper School District #66
Jordan Valley School District #3
Jordan Valley, City of
Juntura Grade School
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

MARION (142)
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
Oregon Business Development
Oregon Board of Medical Examiners
Oregon Board of Massage Therapists
Oregon Board of Dentistry
Oregon Advocacy Commission Office
Office of the Governor
NorthWest Senior & Disability Services
North Santiam School District #29J
North Marion School District #15
Mt. Angel School District #91
Mt. Angel Fire District
Mount Angel, City of
Military Department
Mid-Valley Behavioral Care Network
Mental Health Regulatory Agency
Marion County Housing Authority
Marion County Fire District #1
Marion County
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 RFPD 2
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 RFPD
Stayton, City of
Sublimity RFPD
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 ESD
Multnomah County RFPD #14
Multnomah Learning Academy
Opal School
Oregon Beef Council
Oregon Dairy Products Commission
Oregon Film
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  
Netucca RFPD  
Netucca 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 (18)  
Columbia Gorge Community College  
Columbia Gorge ESD  
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  
Wahtonka Community School  
Wasco County  
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  
Corinuelus, 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  
McMinville Schools  
McMinville Water and Light Department  
McMinville, 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 2018.

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 2018 retirement date range.
• Any record that had a greater than one-year gap between termination date and retirement date.

ASSUMPTIONS:
For the purposes of this study, the following assumptions were used:

• Any account with a variable balance at the date of retirement was considered a variable account member.
• For final average salary (FAS), we used monthly FAS from the member’s actual benefit calculation where available.
• When monthly FAS from the actual benefit calculation 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 under which the member’s actual benefit was calculated.
• Monthly gross benefit amounts include HB3349 and/or SB656 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, provided that both retirements are applicable to this study based on the above criteria. 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.