OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM BOARD MEETING

Friday September 29, 2017 1:00 P.M.	PERS 11410 SW 68th Parkway Tigard, OR

	ITEM	PRESENTER
A.	**Administration**	
	Welcome New Board Member	THOMAS
	Election of Vice-Chair	
1.	July 28, 2017 Board Meeting Minutes	
2.	Director's Report	RODEMAN
	a. Forward-Looking Calendar	
	b. OPERF Investment Report	
	c. Budget Execution Report	
B.	**Administrative Rulemaking**	
1.	Notice of Annual Benefit Limitation Rule	VAUGHN
2.	Adoption of Membership of Elected or Fixed Term Officer Rule	
3.	Policy Considerations Regarding Employer Side Account Rules	
C.	**Action and Discussion Items**	
1.	IAP Target Date Funds	CHENG
2.	Legislative Update	TAYLOR
3.	Contingency Reserve Distribution	DUNN
4.	Member & Employer Survey Results	CARSON
5.	2016 Valuation Results	MILLIMAN

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OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM
BOARD MEETING MINUTES

July 28, 2017

Board members present:

Chair John Thomas, Stephen Buckley, Lawrence Furnstahl, Krystal Gema, and Vice-chair Pat West were present.

Staff present:

Linda Barnett, Dean Carson, Melanie Chandler, , Yvette Elledge-Rhodes, Alyse Greer, Brian Harrington, , Debra Hembree, Neil Jones, Katie Kobervig, Shane Perry, Beth Porter, Janice Richards, Steve Rodeman, David Shevchenko, Jason Stanley, Marjorie Taylor, Stephanie Vaughn, AnneMarie Vu, Yong Yang

Others present:

Rukaiyah Adams, David Barenberg, Steve Barrett, Kelli Blechschmidt, John Borden, Nancy Brewer, Bob Burket, Alison Chan, Lance Colley, Jennifer Cooperman, Steve Demarest, Marc Feldesman, Debra Grabler, Jeff Gudman, Greg Hartman, Mark Hetser, Saul Hubbard, Ying Ki Kwong, Matt Larrabee, Margaret Liebertz, Rob Liebertz, Jeff Manning, Jeff Mapes, Sandra Montoya, Samantha Naluar, Scott Preppernau, Robin Richardson, Jeremy Rogers, Carol Samuels, James Sinks, Del Stevens, James Strong, Deborah Tremblay, Trudy Vidal, Brad Westphal, Claire Withycombe, James Young

Chair John Thomas called the meeting to order at 1:00 P.M. He made opening remarks about the decisions that are before the board today and the background and research that has been provided to help inform those decisions.

ADMINISTRATION

A.1. MEETING MINUTES OF MAY 26, 2017

Board member Buckley moved and Board member Furnstahl seconded approval of the minutes submitted from the May 26, 2017 Board meeting. The motion passed unanimously.

A.2. DIRECTOR’S REPORT

Executive Director Steve Rodeman reviewed the Forward Looking Calendar and highlighted the important items to be considered by the Board during the year. Rodeman noted the proposed dates for the 2018 calendar and asked members to review these with their personal calendars to ensure the proposed dates would be possible. The April Board meeting date may need to change to be earlier in the week.

Rodeman presented the Oregon Investment Council (OIC) Investment Report of the Oregon Public Employees Retirement Fund (OPERF) for the period ending June 30, 2017.

Rodeman presented the Budget Execution Report. The agency budget has now been signed by the governor which is an update since the report was written. Rodeman noted that the total PERS budget is the second largest agency budget in the state, owing to the benefit payments that are reflected in the total amount paid out by the agency. A position of Chief Financial Officer was added to the agency budget. A recruitment for this position will occur once the duties of the position have been determined.

ADMINSTRATIVE RULEMAKING

Stephanie Vaughn, Policy Analysis and Compliance Section Manager, presented.

B.1. NOTICE OF MEMBERSHIP OF ELECTED OR APPOINTED OR ELECTED OFFICERS RULES

Vaughn presented notice of rulemaking for the Membership of Elected or Appointed Officers rules, OAR 459-010-0180. This rule is being modified to clarify that a Tier One or Tier Two member who is appointed or elected to a fixed term of office can maintain membership during that term in the absence of an election form if contributions are made on the member's behalf for more than one pay period. A rulemaking hearing will be held August 22, 2017, at PERS Headquarters. The public comment period ends on September 1, 2017. No Board action was required.

B.2. ADOPTION OF ELECTRONIC FUNDS TRANSFER RULE

Vaughn presented the modifications for the Electronic Funds Transfer (EFT) rule, OAR 459-005-0225. This rule is being modified to clarify that employers who do not participate in the PERS retirement system are exempt from EFT payment requirements (PERS also administers the state's program on Social Security, so non-PERS employers still remit payments to PERS for that program's functions). A rulemaking hearing was held June 27, 2017. No members of the public attended. The public comment period ended July 7, 2017. No public comment was received. Board member Gema moved to adopt modifications to the Electronic Funds Transfer rule as presented. Furnstahl seconded the motion. The motion passed unanimously.

ACTION AND DISCUSSION ITEMS

C.1. *MORO* IMPLEMENTATION PROJECT CLOSE OUT REPORT

Chief Operations Officer Yvette Elledge-Rhodes presented the close out report of the *Moro* Implementation Project. She highlighted the number of payments made and account adjustment information. She also reviewed some of the most valuable lessons learned and introduced key staff who worked on the project.

Furnstahl and West shared their appreciation for the hard work that was done to successfully navigate this project.

C.2. INFORMATION SECURITY PROJECT CLOSE OUT REPORT

Interim Chief Security Officer Shane Perry presented. He reviewed the status of the project which was requested by the State CIO and LFO office. He highlighted the four key areas which are currently the focus of PERS Information Security Program: remediation activities, vulnerability management, risk assessment, and information security awareness and training.

Additionally, he provided a brief update on the disaster recovery program which received funding in the 2017-19 budget to formally develop and implement a Disaster Recovery solution, including a warm-site to continue operations in the event of a localized disaster. The target date for delivery of this program is June 30, 2018. No Board action was required.

C.3. LEGISLATIVE UPDATE

Senior Policy Director Marjorie Taylor reviewed legislation impacting PERS members which was implemented during the legislative session. One bill of note, Senate Bill 1067, included provisions to provide flexibility and relax restrictions on employers establishing side accounts; limit crediting to the Contingency Reserve until the balance is less than $50 million, and limit the reserve's purpose; and require that reports of the system's Unfunded Actuarial Liability reflects the impact of side accounts.

She noted that the agency budget bill contained four budget notes, specifically requiring reports on the implementation of a cyber security program; progress on the Individual Account Program project; State Data Center usage analysis; and implementation of our disaster recovery and business continuity programs. No Board action was required.

C.4. INSOLVENT EMPLOYERS

Actuarial Services Coordinator Debra Hembree presented on Assistant Chief Administration Officer Mary Dunn's behalf.

At the May 26, 2017 meeting, the PERS Board adopted a new rule to define "insolvency" for the purpose of using the Contingency Reserve to cover costs for an insolvent employer, if the employer met certain criteria. Staff applied this definition and have determined that three employers meet this criteria based on the December 31, 2015 system valuation. There is a combined UAL of $462,955 between the three employers.

Thomas asked if this would be included in the amount that was in the sweep to move money to the benefits in force fund to meet the new minimum amount allowed in the Contingency Reserve fund. Hembree said that more likely the funds would be earmarked specifically to these employers for bookkeeping purposes and actuarial accounting.

Furnstahl moved to authorize the transfer of Contingency Reserve funds of $462,955 to pay the unfunded actuarial liability of the employers staff has determined to be insolvent as per OAR 459-009-0400. Gema seconded the motion. The motion passed unanimously.

C.5. VALUATION METHODS AND ASSUMPTIONS INCLUDING ASSUMED RATE OF RETURN

Matt Larrabee and Scott Preppernau of Milliman presented. The presentation reviewed recommended changes to economic and demographic assumptions for system-wide rate setting valuation results. Those recommendations are:

- Lower the investment return assumption from the current assumption of 7.50% per year, based on an analysis of PERS's current target asset allocation using different sets of capital market outlook assumptions. The averages of the 50th percentiles for those outlooks across 10-year (four outlooks) and 20-year (two outlooks) time horizons fell in the range between 7.00% and 7.25%.
- Update the explicit assumptions regarding administrative expenses for Tier One/Tier Two and OPSRP.
- Update the assumed health cost trend (i.e., health cost inflation) rates for the RHIPA retiree healthcare program.
- Adjust mortality assumptions to use RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.
- Adjust retirement rates for certain member categories and service bands to more closely align with recent and expected future experience; reduce percentage of members assumed to elect a partial lump sum; increase percentage of members assumed to purchase credited

service at retirement.

- Decrease the merit component of the salary increase assumption for two member categories based on observations of the last eight years of experience.
- Update pre-retirement termination of employment assumptions for three member categories.
- Lower assumed rates of ordinary (non-duty) disability to more closely match recent experience.
- Increase the Tier One unused vacation cash out assumption for most categories.
- Adjust the Tier One/Tier Two unused sick leave assumption for three member categories to more closely reflect recently observed experience.
- Decrease the healthy participation assumption for the RHIA retiree healthcare program.
- Decrease the RHIPA participation assumption for one service band.
- When allocating accrued liability for Tier One/Tier Two active members who have earned service with multiple PERS employers, base 85% of the allocation on service with each employer (100% for police & fire members) and base the rest on the member account balance associated with each employer. The assumption for general service has increased 10% since the prior experience study. This movement illustrates the continued migration of projected future Tier One/Tier Two retirement benefits away from the Money Match calculation, which is based on account balances, toward the ongoing Full Formula approach, which is based on final average salary.

Furnstahl shared his evaluation of investment return differences between 10 and 20 year time horizons. Board members discussed their opinions of where the assumed rate should be set.

West moved to adopt the recommended changes to the actuarial methods and assumptions as presented by Milliman in the 2016 Experience Study including setting the assumed rate at 7.20 %. Furnstahl seconded the motion. The motion passed unanimously.

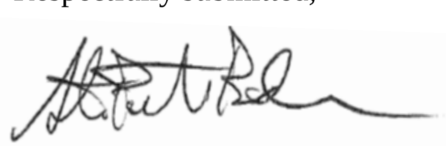
C.6. <u>ADOPTION OF ASSUMED RATE RULE</u>

Vaughn presented the modifications to the Assumed Rate Rule OAR 459-007-0007.This rule must be modified to reflect the new assumed rate determined by the Board and specific the effective date for implementation of the rate for PERS transactions. A rulemaking hearing was held June 27, 2017. No members of the public attended. The public comment period ended July 7, 2017. No public comment was received.

Gema moved to adopt modifications to the Assumed Rate rule including the assumed rate of 7.20% adopted at today’s Board meeting. Furnstahl seconded the motion. The motion passed unanimously.

Thomas adjourned the Board meeting at 2:48 PM.

Respectfully submitted,



Steven Patrick Rodeman
Executive Director

PERS Board Meeting
Forward-Looking Calendar

Friday, December 1, 2017
Temporary Adoption of IAP Target Date Fund Rules
Adoption of Annual Benefit Limitation Rule
Adoption of Employer Side Accounts Rules
Adoption of Disability Rules
Notice of 2017 Legislation Implementation Rules
2016 Valuation Update and Financial Modeling Results
Board Scorecard Report on Agency Performance Measures
Audit Committee Meeting

Friday, February 2, 2018
Adoption of IAP Target Date Fund Rules
Adoption of 2017 Legislation Implementation Rules
Preliminary 2017 Earnings Crediting and Reserving
2018 Legislative Session Preview and 2019 Preliminary Legislative Concepts
Annual Report of Executive Director’s Financial Transactions

Monday, April 2, 2018
Final 2017 Earnings Crediting and Reserving
2018 Legislative Session Review and 2019 Proposed Legislative Concepts
Audit Committee Meeting

Friday, June 1, 2018
Board Scorecard Report on Agency Performance Measures
2019-21 Agency Budget Development
2019 Retiree Health Insurance Plan Renewals and Rates
OSGP Advisory Committee Appointments

Friday, August 3, 2018
2019-21 Agency Request Budget
2017 System Wide Valuation Results
Audit Committee Meeting

Friday, October 5, 2018
Member & Employer Survey Results
2017 Actuarial Valuation and 2019-21 Employer Rates

Friday, December 7, 2018
Approval to File 2019 Final Legislative Concepts
Board Scorecard Report on Agency Performance Measures
Financial Modeling
Audit Committee Meeting

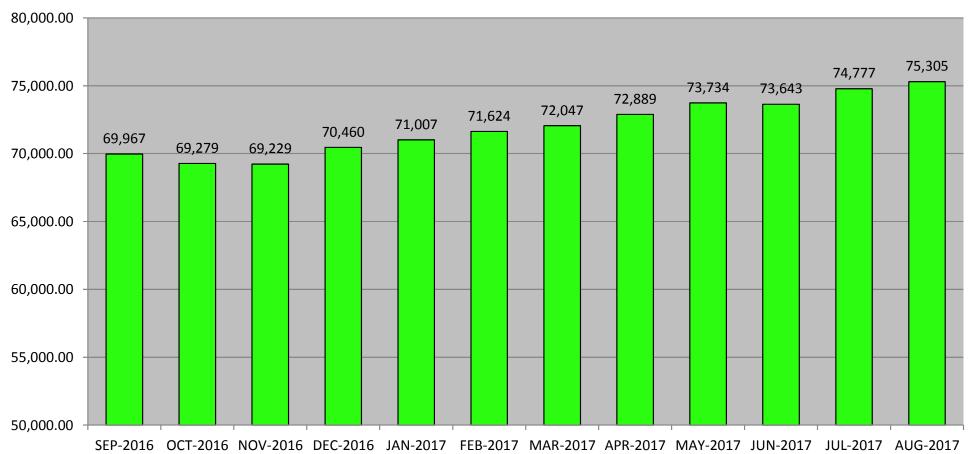
Returns for periods ending AUG-2017 **Oregon Public Employees Retirement Fund**

	Regular Account				Historical Performance (Annual Percentage)							
OPERF	**Policy[1]**	**Target[1]**	**$ Thousands[2]**	**Actual**	**Year-To-Date[3]**	**1 YEAR**	**2 YEARS**	**3 YEARS**	**4 YEARS**	**5 YEARS**	**7 YEARS**	**10 YEARS**
Public Equity	32.5-42.5%	37.5%	$ 29,056,247	38.9%	**14.56**	**18.36**	**12.49**	**6.43**	**9.84**	**11.55**	**11.28**	**4.95**
Private Equity	13.5-21.5%	17.5%	$ 14,649,843	19.6%	**11.18**	**16.93**	**10.55**	**10.21**	**12.29**	**12.38**	**12.78**	**9.05**
Total Equity	**50.0-60.0%**	**55.0%**	**$ 43,706,090**	**58.5%**								
Opportunity Portfolio	0-3%	0%	$ 1,549,425	2.1%	**5.80**	**6.54**	**3.80**	**4.01**	**6.18**	**7.98**	**8.51**	**6.60**
Total Fixed	**15-25%**	**20.0%**	**$ 16,333,512**	**21.9%**	**3.86**	**1.71**	**3.17**	**2.48**	**3.32**	**2.89**	**4.28**	**5.45**
Real Estate	**9.5-15.5%**	**12.5%**	**$ 8,800,885**	**11.8%**	**7.60**	**7.62**	**9.72**	**10.13**	**11.17**	**11.46**	**12.17**	**5.13**
Alternative Investments	**0-12.5%**	**12.5%**	**$ 4,311,480**	**5.8%**	**5.71**	**9.10**	**5.65**	**1.55**	**3.32**	**3.72**		
Cash w/Overlay	**0-3%**	**0%**	**$ 5,430**	**0.0%**	**0.99**	**1.26**	**1.15**	**0.92**	**0.88**	**0.84**	**0.84**	**1.19**
TOTAL OPERF Regular Account		**100.0%**	**$ 74,706,821**	**100.0%**	**10.00**	**12.14**	**9.20**	**6.52**	**8.73**	**9.32**	**9.83**	**5.80**
OPERF Policy Benchmark					**10.32**	**13.12**	**9.69**	**7.18**	**9.48**	**9.84**	**10.12**	**6.32**
Value Added					**(0.33)**	**(0.98)**	**(0.49)**	**(0.66)**	**(0.75)**	**(0.51)**	**(0.30)**	**(0.52)**
TOTAL OPERF Variable Account			**$ 597,878**		**15.10**	**17.56**	**12.56**	**6.11**	**9.69**	**11.03**	**10.85**	**4.35**

Asset Class Benchmarks:

Russell 3000	11.20	16.06	13.73	9.08	12.80	14.27	15.37	7.70
OREGON MSCI ACWI EX US IMI NET	19.20	18.98	10.98	2.75	6.36	7.74	6.68	2.12
MSCI ACWI IMI NET	14.78	17.08	12.12	5.68	9.31	10.66	10.48	4.48
RUSSELL 3000+300 BPS QTR LAG	14.60	24.60	13.09	13.96	16.91	17.12	16.66	11.46
OREGON CUSTOM FI BENCHMARK	3.41	0.96	2.64	2.08	2.77	2.27	3.17	4.41
OREGON CUSTOM REAL ESTATE BENCHMARK	4.47	8.41	9.97	10.88	10.95	10.87	11.95	6.80
CPI +4%	4.38	6.01	5.55	5.10	5.27	5.33	5.75	5.71
91 Day Treasury Bill	0.48	0.62	0.42	0.29	0.23	0.20	0.18	0.50

Total OPERF NAV
(includes Variable Fund assest)
One year ending AUG-2017
($ in Millions)



[1]OIC Policy revised June 2015.

[2]Includes impact of cash overlay management.

[3]For mandates beginning after January 1 (or with lagged performance), YTD numbers are "N/A". Performance is reflected in Total OPERF. YTD is not annualized.

Oregon

Kate Brown, Governor

Public Employees Retirement System
Headquarters:
11410 S.W. 68th Parkway, Tigard, OR
Mailing Address:
P.O. Box 23700
Tigard, OR 97281-3700
(503) 598-7377
TTY (503) 603-7766
www.oregon.gov/pers

September 29, 2017

TO: Members of the PERS Board

FROM: Linda M. Barnett, Budget Officer

SUBJECT: September 2017 Budget Execution Report

2017-19 OPERATIONS BUDGET

Operating expenditures for July 2017 and preliminary expenditures for August 2017 were $2,826,243 and $3,026,703 respectively. Final expenditures for August closed in the Statewide Financial Management System (SFMS) on September 15, 2017, and will be included in the December 2017 report to the Board.

- To date, through the first two months (or 8.3%) of the 2017-19 biennium, the agency has expended a total of $5,852,946 or 5.9% of PERS' legislatively approved operations budget of $98,448,004.
- Agency budget reports are being finalized in SFMS and, until that process is complete, budget execution reports (which normally are attached to this agenda item) cannot be prepared. For example, final allocations to agency budgets that account for the compensation packages within the recently ratified collective bargaining agreements are not yet finalized.

2015-17 OPERATIONS BUDGET

Remaining 2015-17 expenditures paid in July and August were $571,205 and $1,015,003 respectively. PERS has now expended a total of $96,626,401 or 90.3% of the legislatively approved 2015-17 operations budget of $106,949,449.

- The current projected positive variance is $6,089,361, or 5.7% of the operations budget.

- The 2015-17 operations budget will close in SFMS by December 31, 2017. A final report on 2015-17 expenditures will be provided for the February 2018 Board meeting.

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Public Employees Retirement System
Headquarters:
11410 S.W. 68th Parkway, Tigard, OR
Mailing Address:
P.O. Box 23700
Tigard, OR 97281-3700
888-320-7377
TTY (503) 603-7766
www.oregon.gov/pers

September 29, 2017

TO: Members of the PERS Board

FROM: Stephanie Vaughn, Manager, Policy Analysis & Compliance Section

SUBJECT: Notice of Annual Benefit Limitation Rule:
OAR 459-005-0535, *Annual Benefit Limitation*

<u>OVERVIEW</u>

- Action: None. This is notice that staff has begun rulemaking.
- Reason: To respond to an audit finding on administration of determining compliance with the Internal Revenue Code's Section 415 limitations.
- Policy Issue: No policy issues have been identified at this time.

<u>BACKGROUND</u>

The benefit amount payable to any PERS member for a calendar year is limited by Internal Revenue Code Section 415(b). The applicable dollar limitation may be increased by a cost-of-living adjustment, as determined by the IRS. Currently, OAR 459-005-0535 allows for such an adjustment; however, to provide further clarity, PERS staff seek to amend the rule to include language specifying that the cost-of-living adjustment is applied to the applicable dollar limitation for years between a member's separation from employment and retirement, as well as to the years after the member begins receiving benefits. This clarity is being provided in response to an internal audit that reviewed compliance with the IRS' Section 415 limitations.

<u>PUBLIC COMMENT AND HEARING TESTIMONY</u>

A rulemaking hearing will be held October 25, 2017, at 2:00 p.m. at PERS headquarters in Tigard. The public comment period ends November 3, 2017, at 5:00 p.m.

<u>LEGAL REVIEW</u>

The attached draft rule was submitted to the Department of Justice for legal review and any comments or changes will be incorporated before the rule is presented for adoption.

<u>IMPACT</u>

Mandatory: No.

Impact: None; provides transparency to PERS' current practices.

Cost: There are no discrete costs attributable to the rule.

RULEMAKING TIMELINE

September 15, 2017	Staff began the rulemaking process by filing Notice of Rulemaking with the Secretary of State.
September 29, 2017	PERS Board notified that staff began the rulemaking process.
October 1, 2017	*Oregon Bulletin* publishes the Notice. Notice is sent to employers, legislators, and interested parties. Public comment period begins.
October 25, 2017	Rulemaking hearing to be held at 2:00 p.m. at PERS in Tigard.
November 3, 2017	Public comment period ends at 5:00 p.m.
December 1, 2017	Staff will propose adopting the rule modifications, including any changes resulting from public comment or reviews by staff or legal counsel.

NEXT STEPS

A rulemaking hearing will be held October 25, 2017, at 2:00 p.m. at PERS headquarters in Tigard. The rule is scheduled to be brought before the PERS Board for adoption at the December 1, 2017 Board meeting.

B.1. Attachment 1 – 459-005-0535, *Annual Benefit Limitation*

OREGON ADMINISTRATIVE RULE
PUBLIC EMPLOYEES RETIREMENT BOARD
CHAPTER 459
DIVISION 005 – ADMINISTRATION

459-005-0535

Annual Benefit Limitation

(1) Applicable Law. This administrative rule shall be construed consistently with the requirements of the Internal Revenue Code (IRC) Section 415(b) and the Treasury regulations and Internal Revenue Service rulings and other interpretation issued thereunder.

(2) Annual Benefit Limitation. The benefits payable to any member for a calendar year, when expressed as an annual benefit, shall not exceed the applicable dollar limitation for that year.

(3) Applicable Dollar Limitation. For purposes of this rule, the “applicable dollar limitation” for each calendar year is the limitation in effect under IRC Section 415(b)(1)(A), with the adjustment described as follows:

(a) Cost-of-Living Adjustments. The limitation under IRC Section 415(b)(1)(A) shall be adjusted for cost of living in accordance with IRC Section 415(d) **and Treasury Regulation Section 1.415(a)-1(d)(3)(v)(C). The adjustment applies to the applicable dollar limitation for years:**

(A) Between separation and retirement of a member; and

(B) After the member’s effective retirement date.

(b) Reduction for Retirement Before Age 62. Except as otherwise provided in the paragraphs (A), (B), and (C) of this subsection, if the member’s benefit begins before the member reaches 62 years of age, the applicable dollar limitation shall be adjusted as provided for in IRC Section 415(b)(2)(C).

(A) This reduction shall not apply to any member who has at least 15 years of creditable service as a full-time employee of a police department or fire department which is organized and operated by the state or a political subdivision of the state to provide police protection, firefighting services, or emergency medical services for any area within the jurisdiction of the state or political subdivision.

(B) This reduction shall not apply to disability retirement allowances or death benefits.

(C) This reduction shall not apply to any portion of a member's annual benefit that is derived from contributions to purchase service credit, as defined in OAR 459-005-0540, Permissive Service Credit.

(c) Reduction for Less than 10 Years of Membership. Except as provided in paragraphs (A) and (B) of this subsection, if the member has less than 10 years of active membership in PERS, the applicable dollar limitation shall be reduced as provided for under IRC Section 415(b)(5)(A).

(A) For the purposes of this section, a member with less than one year of active membership shall be treated as having one year of active membership.

(B) The reduction under this section shall not apply to disability retirement allowances or death benefits.

(d) Increase for Retirement After Age 65. If the member's benefit begins after the member reaches 65 years of age, the applicable dollar limitation shall be increased as provided for under IRC Section 415(b)(2)(D).

(4) Annual Benefit. For purposes of this rule, the "annual benefit" is the benefit payable to a member under ORS Chapter 238 and the pension program under Chapter 238A for a calendar year, excluding any benefit payable under 238.485 through 238.492, and adjusted as described in this section.

(a) Excludable Benefits. The annual benefit shall not include the portion of the member's benefit that is attributable to:

(A) After-tax member contributions, other than member payments to purchase permissive service credit as defined in OAR 459-005-0540, Permissive Service Credit;

(B) Rollover contributions, if such contributions are permitted;

(C) A transfer of assets from another qualified retirement plan; and

(D) Purchases of permissive service credit, as defined in OAR 459-005-0540, Permissive Service Credit, if all of the member's payments to purchase permissive service credit are treated as annual additions for purposes of 459-005-0545, Annual Addition Limitation, in the year purchased.

(b) Adjustment to Straight Life Annuity. The member's benefit shall be adjusted to an actuarially equivalent straight life annuity beginning at the same age. For purposes of this adjustment, the following values are not taken into account:

(A) The value of a qualified spouse joint and survivor annuity to the extent that the value exceeds the sum of the value of a straight life annuity beginning on the same day, and the value of any post-retirement death benefits that would be payable even if the annuity was not in the form of a joint survivor annuity.

(B) The value of benefits that are not directly related to retirement benefits, such as pre-retirement disability benefits and post-retirement medical benefits.

(C) The value of post-retirement cost of living increases, to the extent they do not exceed the increase provided under IRC Section 415(d) and Treasury Regulation Section 1.415(d)-1.

(5) Interest Rates. The following interest rates shall apply for purposes of adjusting the applicable dollar limitation under section (3) of this rule and the annual benefit under section (4) of this rule.

(a) For purposes of reducing the applicable dollar limitation for retirement before 62 years of age under subsection (3)(b) of this rule, the interest rate shall be the greater of five percent or PERS' assumed earnings rate.

(b) For purposes of determining the portion of a member's benefits attributable to after-tax member contributions under paragraph (4)(a)(A) of this rule, the interest rate shall be the greater of 5 percent or the PERS' assumed earnings rate.

(c) For purposes of adjusting the member's annual benefits under section (4) of this rule (other than the adjustment for after-tax member contributions), the interest rate shall be the greater of five percent or PERS' assumed earnings rate.

(d) For purposes of increasing the applicable dollar limitation for retirement after 65 years of age under subsection (3)(d) of this rule, the interest rate shall be the lesser of five percent or PERS' assumed earnings rate.

(6) Mortality Table. For purposes of adjusting the applicable dollar limitation and annual benefit under sections (3) and (4) of this rule, the mortality table used shall be the table prescribed pursuant to the Internal Revenue Code.

(7) The provisions of this rule are effective on January 1, 2004.

Stat. Auth.: ORS 238.630, 238.650 & 238A.125

Stats. Implemented: ORS 238.005 - 238.715

Oregon

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Public Employees Retirement System
Headquarters:
11410 S.W. 68th Parkway, Tigard, OR
Mailing Address:
P.O. Box 23700
Tigard, OR 97281-3700
888-320-7377
TTY (503) 603-7766
www.oregon.gov/pers

September 29, 2017

TO: Members of the PERS Board

FROM: Stephanie Vaughn, Manager, Policy Analysis & Compliance Section

SUBJECT: Adoption of Membership of Elected or Appointed Officers Rule:
OAR 459-010-0180, *Membership of Elected or Appointed Officers*

OVERVIEW

- Action: Adopt modifications to the Membership of Elected or Appointed Officers rule.
- Reason: Clarify that a Tier One or Tier Two member who is appointed or elected to a term of office as described under ORS 238.015(5) can maintain membership during that term in the absence of an election form if contributions are made on the member's behalf for more than one pay period.
- Policy Issue: None identified.

BACKGROUND

Under ORS 238.015(5), a person holding an elective or appointive office with a fixed term, or an office as head of a department to which the person is appointed by the Governor, may become a PERS member by giving written notice within 30 days after taking office if the person had already established PERS membership, or within 30 days after completing the six month waiting period required to become a member under ORS 238.015(1), if the person had not previously established membership. OAR 459-010-0180, which has not been updated since 1998, was written as an "opt-out" of PERS, specifying how such a person would cancel their membership at the end of the term by giving written notice to PERS. Rather, the statute above is structured as an "opt-in" to PERS. The rule modifications properly align the rule with the "opt-in" structure of the statute.

SUMMARY OF MODIFICATIONS TO RULE SINCE NOTICE

No modifications were made to the rule.

PUBLIC COMMENT AND HEARING TESTIMONY

A rulemaking hearing was held August 22, 2017, at 2:00 p.m. at PERS headquarters in Tigard. No members of the public attended. The public comment period ended September 1, 2017, at 5:00 p.m. No public comment was received.

LEGAL REVIEW

The attached draft rule was submitted to the Department of Justice for legal review and any comments or changes are incorporated in the rule as presented for adoption.

IMPACT

Mandatory: No.

Impact: Reduces incidents of unintended failed election to participate in PERS for established members who hold office as an elected or appointed officer when they neglect to submit an election form during a new term, notwithstanding their expressed intent to continue participation in PERS. Promotes administrative efficiency.

Cost: There are no discrete costs attributable to the rule.

RULEMAKING TIMELINE

July 15, 2017	Staff began the rulemaking process by filing Notice of Rulemaking with the Secretary of State.
July 28, 2017	PERS Board notified that staff began the rulemaking process.
August 1, 2017	*Oregon Bulletin* published the Notice. Notice sent to employers, legislators, and interested parties. Public comment period began.
August 22, 2017	Rulemaking hearing held at 2:00 p.m. at PERS in Tigard.
September 1, 2017	Public comment period ended at 5:00 p.m.
September 29, 2017	Board may adopt the permanent rule modifications.

BOARD OPTIONS

The Board may:

1. Pass a motion to "adopt modifications to the Membership of Elected or Appointed Officers rule, as presented."
2. Direct staff to make other changes to the rule or explore other options.

STAFF RECOMMENDATION

Staff recommends the Board choose Option #1.

- Reason: Clarify that a Tier One or Tier Two member who is appointed or elected to a term of office as described under ORS 238.015(5) can maintain membership during that term in the absence of an election form if contributions are made on the member's behalf for more than one pay period.

If the Board does not adopt: Staff would return with rule modifications that more closely fit the Board's policy direction if the Board determines that a change is warranted.

B.2. Attachment 1 – 459-010-0180, *Membership of Elected or Appointed Officers*

OREGON ADMINISTRATIVE RULE
PUBLIC EMPLOYEES RETIREMENT BOARD
CHAPTER 459
DIVISION 010 – MEMBERSHIP

459-010-0180

Membership of Elected *[Officer or Fixed Term Officer]* or Appointed Officers

(1) An *[elected]* officer *[or an officer]* **elected or** appointed for a fixed term**, or appointed as director of a department by the Governor,** *[who]* **may** establish*[es]* membership in PERS **as an elected official by giving the PERS Board written notice of election to participate in PERS within 30 days of taking office, or within 30 days after completing the probationary period, pursuant to ORS 238.015(5). Upon election, such membership may not be discontinued for the duration of the term of office except upon separation from employment.**

(2) A member who is elected or appointed for a fixed term, or appointed as director of a department by the Governor, shall be deemed to have elected to participate in PERS for the term of office if the member and employer contributions are paid to PERS for more than one pay period after the member's term in office or appointment commences. *[may cancel that membership at the end of a term of office by giving written notice to PERS. Such notice shall be filed with PERS within 30 days of the end of the term of office. In the absence of such notice, an officer contributes to PERS for more than one pay period in a subsequent term of office, the officer shall be deemed to have elected to continue participation for the duration of such term of office.]*

Stat. Auth.: ORS 238.650

Stats. Implemented: ORS 238.015

Oregon

Kate Brown, Governor

Public Employees Retirement System
Headquarters:
11410 S.W. 68th Parkway, Tigard, OR
Mailing Address:
P.O. Box 23700
Tigard, OR 97281-3700
888-320-7377
TTY (503) 603-7766
www.oregon.gov/pers

September 29, 2017

TO: Members of the PERS Board

FROM: Stephanie Vaughn, Manager, Policy Analysis & Compliance Section

SUBJECT: Policy Considerations Regarding Employer Side Account Rules

BACKGROUND

Employers can make lump-sum payments to PERS in addition to the regular employer contributions calculated as a percent of payroll. These lump-sum payments are put into side accounts that are then applied to offset a portion of the employer's PERS contribution rate.

On March 31, 2017, Governor Kate Brown submitted a letter to the PERS Board that, in part, asked the Board to consider revising the employer side account rules to give employers more flexibility in establishing those accounts. In addition, Senate Bill 1067(2017) was passed that relaxed many of the statutory constraints that could discourage establishing side accounts.

PERS staff also met with the Employer Advisory Group to discuss questions and concerns about the current side-account process and solicit employer input on how the process could be improved. Employers were requested to provide feedback and, based on that feedback, staff have recommendations on how the existing rules will need to be restructured. That staff work continues, with the expectation that modifications will be presented for adoption at the December 2017 Board meeting.

POLICY CONSIDERATIONS

Below are policy considerations that PERS staff have raised and discussed with employers; we now seek input and feedback from the Board to assure the rule modifications align with the Board's direction when presented for adoption in December.

Should PERS lower the minimum payment requirement to establish a new side account to $250,000?

Prior to approval of SB 1067, statute required each lump-sum payment be put into a new side account for the employer. PERS' current administrative rule required a minimum payment of the lesser of $1 million or 25% of the employer's UAL. Employers requested that the minimum payment to establish a side account be reduced.

This modification applies only to establishing a new side account; with the adoption of SB 1067, PERS can now allow employers to make deposits into existing side accounts (instead of each payment requiring its own distinct account). Each new side account would require at least the minimum payment (reduced as recommended to $250,000). There will be no minimum payment required for employers to add funds to existing side accounts.

As to reducing the current minimum payment requirement, the current $1,000,000 limit applies to only about one-third of the employers (i.e. 25% of their UAL is over $1,000,000). When the minimum amount is dropped to $250,000, it will apply to a majority of employers (about two-thirds). $250,000 is also the mid-point of the amounts suggested by the employers, and is an amount that makes financial sense when taking into consideration annual administrative fees, the amortization period, investment risk, and relative rate relief.

Should PERS lower the administrative fees for employer side accounts to $1,500 for the first year and $500 per subsequent year?

Currently, PERS charges an administrative fee of $2,500 for the first year a side account is established and $1,000 for each subsequent year. These fee amounts are set in statute as upper limits, but they are not currently reflected in administrative rule. When the current fees were adopted in law, staff performed much of the side account work manually. Now, much of the work is automated and streamlined. Recently, staff performed a high-level analysis of the administrative cost to the agency and determined that a fee of $1,500 for the first year and $500 for each subsequent year will cover the cost of establishing and maintaining employer side accounts. Staff recommends modifying the rules to set these administrative fees.

Should PERS limit the number of additional payments into an employer side account?

As noted above, SB 1067 allows employers to make additional payments without the need to establish a new side account for each payment. Still, staff recommends limiting the number of side account payments an employer can make, to streamline processing and avoid the need for frequent adjustments. Staff recommends modifying the rules to limit these additional payments to existing side accounts to two per year, per side account.

Should PERS provide employers different options regarding amortization schedules for employer side accounts?

Employers made a few comments regarding the amortization period for side accounts; these generally fell into two categories:

1) Allow the employer to choose the amortization period over which their side account will be used to offset contributions. Currently, a 20-year amortization period is used for all side accounts. Allowing a different amortization period would be administratively burdensome, particularly if different side accounts are amortized using different amortization schedules. This option would also be more costly for employers, as the actuary would have to provide calculations for all available amortization periods. Staff is not recommending that this option be included in the proposed rule modifications.

2) Allow the employer to elect when to start using a side account to offset their contributions. Under this concept, an employer would set up a side account (which would accrue earnings or losses) but PERS would not begin to offset account funds against that employer's contributions until the employer elected to do so. Staff is not recommending that this option be provided in rule. The statute (ORS 238.229) specifically states that side accounts "…shall be used to offset contributions … that the public employer would otherwise be required to make…." To let an account sit unused for an indefinite period seems inconsistent with this statutory directive.

Oregon

Kate Brown, Governor

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September 29, 2017

TO: Members of the PERS Board

FROM: Steven Patrick Rodeman, Executive Director

SUBJECT: IAP Target Date Funds

The Oregon Investment Council (OIC) held a meeting on September 20, 2017; among its agenda items was a proposal by Treasury staff to change the investment policy regarding PERS member funds in the Individual Account Program (IAP); that proposal was adopted. Under this policy, Treasury staff will proceed establish a Target Date Fund model in which IAP accounts are invested in asset categories determined by the member's year of birth.

In his opening remarks, John Skjervem, Oregon State Treasury Investment Division Director and Chief Investment Officer, explained the rationale for Treasury staff's recommendation for this investment policy change as follows:

> "… The objective that gets the most discussion, that probably has the most visibility, is the opportunity, and in fact, I would say, the obligation we have to IAP participants, to put in place an investment solution that better manages the individual risk return profile of all those individual participants. We don't have that flexibility on the defined benefit plan of OPERF, but we certainly do have that flexibility on the defined contribution side. And so, again, this is an opportunity to affect an investment solution that better matches all of those individual risk return profiles.
>
> "So that is the area that gets the most attention, but, I would submit to the council this morning that your collective responsibility is perhaps even greater on the first objective, which is to protect OPERF from a scenario in which IAP becomes an ever increasing proportion of OPERF and makes the rest of OPERF, the DB part of OPERF, vulnerable to a liquidity call at an inopportune time.
>
> "What do I mean by that? If we do nothing and go along through time, IAP will become an ever greater part of OPERF, and should the cohort that is the biggest and closest to retirement, decide on a day, that 'today is the day and I'm going to retire and Mr. Rodeman can I have my money, please?', that that day coincides with a day or an environment that is bad for private assets, and becomes a draw on our liquidity, that is going to be very disruptive, invasive, and costly for the rest of OPERF.
>
> "So again, I will submit to you, the most important for this council, the most important objective in the transformation of IAP is actually to protect the DB side of OPERF from an inopportune and potentially very disruptive capital call."

At today's PERS Board meeting, Treasury staff will present the IAP Target Date Fund concept. Given the OIC's adoption of this new investment policy, PERS and Treasury staff are working together to implement this new policy at the turn of the calendar year. Questions on the investment changes can be directed to Treasury at their web site: www.oregon.gov/IAP; we will continue to update information about these changes on our web site: www.oregon.gov/pers.

C.1. Attachment 1 – Treasury Materials to OIC on Target Date Funds

Individual Account Program

Update and Proposed Changes

September 29, 2017

Oregon State Treasury

Item C.1. Att 1

Recapitulation from September 2016

Oregon State Treasury (OST or “Treasury”) and Public Employees Retirement System (PERS) staff presented to a joint session of the Oregon Investment Council (OIC) and PERS Board in September 2016. Staff from both agencies presented:

- Background information on the Individual Account Program (IAP);
- Challenges with the current IAP investment model; and
- An alternative IAP investment model that would follow a Target-Date Fund (TDF) structure.

Background on IAP

From the September 2016 presentation:

- The IAP was created by the Oregon Legislature in August 2003 as part of a package of PERS reforms. All member contributions from Tier One, Tier Two and OPSRP members became IAP deposits starting in January 2004.
- The IAP is the member-funded portion of a retiree's benefit – members must contribute 6% of their salary and the account is credited annually with earnings or losses. At retirement, the IAP account balance is distributed (or rolled over) as directed by the member.
- Since the program started in 2004, IAP assets have been invested in the Oregon Public Employees Retirement Fund (OPERF).
- ORS 238A.050(3) directs the OIC to invest IAP assets in OPERF, but also specifically recognizes that the Council may invest IAP assets differently than other assets under its purview.

From ORS238A.050(3): "The Oregon Investment Council may invest assets of the individual account program and pension program differently than the other assets of the Public Employees Retirement System."

Challenges with Current IAP Investment Model

From the September 2016 presentation:

- IAP funds are currently invested in OPERF which reflects a specific risk exposure that is independent of (i.e., does not change relative to) a member's age or retirement horizon.
- Currently, IAP account holders bear full exposure to OPERF's risk and return profile.
- Currently estimated at 15-20% of final salary at retirement, IAP is likely to represent a significant portion of OPSRP members' total retirement benefit.
- Given OPERF's capital appreciation orientation, bear market episodes that result in significant losses for members' IAP accounts could have an outsized impact on those members' retirement decisions.
- Members may not be sufficiently educated on IAP investment risks and/or how to mitigate those risks with comprehensive retirement planning.

Rationale for a TDF Structure for IAP

From the September 2016 presentation:

- A custom TDF suite using existing OPERF investments would likely reduce adverse turnover impacts. Alternatively, converting IAP to an off-the-shelf TDF suite would require as much as $7B in OPERF turnover;
- TDF glide path design could be tailored to IAP account holder demographics;
- The asset allocation models used in the TDF suite would match members' age and risk tolerance profiles. For example, younger members' IAP accounts would have higher equity allocations while older members' IAP accounts would have lower equity allocations; and
- A custom TDF structure could separate glide path design (e.g., age-based asset allocation models) from asset management, allowing the OIC to retain investment authority per statute.

OST & PERS Activities Since September 2016

Treasury staff and PERS senior leadership together participated in over a dozen meetings and calls to develop an approach to migrate IAP from the current investment model to a custom TDF structure. Activities included:

1. PERS and Treasury coordinated with Voya Financial, record keeper for IAP, and State Street Bank, custodian for OPERF;
2. Treasury staff drafted a new investment policy governing IAP, approved by the OIC at the August 2017 meeting, and amended at the September 2017 meeting; and
3. Treasury staff's recommendation of AllianceBernstein (AB) as glide path manager and State Street Global Advisors (SSGA) as index fund manager was approved by the OIC at its September 2017 meeting.

Newly-Approved OIC Policy on IAP Investments

Policy approved at the September 2017 meeting following this slide

INTRODUCTION & OVERVIEW

Summary Policy Statement

The Oregon Investment Council (the "OIC" or the "Council") will maintain a program for the investment of moneys in the Individual Account Program ("IAP" or the "Program") that will provide an array of investment funds with varying levels of risk and return for eligible participating employees.

Purpose and Goals

To describe policy provisions for identifying and meeting the need for varying levels of investment risk across the heterogeneous universe of IAP participants.

Applicability

Classified represented, management service, unclassified executive service

Authority

ORS 238A.025 established IAP as a separate account from the pension program. ORS 238A.050(3) provides discretion to the Council to invest IAP assets differently than the other assets of the Public Employees Retirement System (PERS).

POLICY PROVISIONS

Definitions

Defined Benefit Retirement Plan: A retirement plan in which an employer or sponsor provides a specified pension payment upon retirement based on a predefined formula. As of 2016, the vast majority of IAP participants were also eligible for a defined benefit plan through the PERS.

Defined Contribution Retirement Plan: A retirement plan in which regular periodic contributions are made into an investment account, which can be distributed upon retirement. The value of such an investment account depends on the contributions and their timing, as well as the performances of the account's investments. Defined contribution plans include retirement plans offered by private companies such as 401(k) plans. Defined contribution plans also include 457 plans and 401(a) plans, such as IAP.

Target-Date Funds: A suite of funds, each with a specific target date, that systematically rebalances to a time-varying asset allocation. In the context of IAP, these target dates are the approximate calendar year a participant expects to retire. For example, a participant planning to retire in 2050 would invest in the 2050 target-date fund.

Glide Path: A predefined asset allocation for a Target-Date Fund that varies based on the number of years to the target date, as proxied by the level of equity (public or private) exposure. Typically, the further away from the target date, the more of the Target-Date Fund's asset allocation will be comprised of more equity risk on the expectation that prudent equity risk is rewarded over the long-term.

Policy Statements

As of 2016, there are over 200,000 individual participants of varying ages in IAP, a Defined Contribution Retirement Plan. To adapt the Program to these participants, the Council directs staff to establish a set of Target-Date Funds (TDFs) available for PERS to assign to each Program participant. These funds are collectively called the *Individual Account Program Funds* (the "IAP Funds"). IAP participants approaching retirement would be assigned to less-risky IAP Funds while younger IAP participants would be assigned to riskier IAP Funds with potentially greater return potential. Although each participant likely has a unique combination of "life circumstance" and risk appetite, the objective is to make IAP Funds appropriate for the broad and diverse population of IAP participants. Participants seeking further retirement planning customization are expected to make arrangements outside of the Program, such as utilization of the Oregon Savings Growth Plan which is accessible to some participants.

1. **Selection of Target-Date Fund Manager.** The selection of a Target-Date Fund Manager (the "Manager") is the decision of the OIC, and is made subject to the research and recommendations of staff. Consultants may be used to assist in evaluating prospective managers, but the OIC will retain authority over the decision. The OIC may delegate authority for policy implementation to the State Treasurer and OST's Chief Investment Officer.

2. **Asset Allocation for the IAP Funds.** Working with staff, the Manager will recommend to the Council a glide path for the IAP Funds which would include the Oregon Public Employees Retirement Fund (OPERF), capital market investment vehicles, or a combination thereof. To the extent that PERS could provide readily available data, the glide path will be customized to the demographic profile and circumstances of the pool of IAP participants, such as access to a Defined Benefit Retirement Plan or Social Security.

3. **General Oversight of Target-Date Fund Manager and the IAP Funds.** All performance calculations shall be provided by an independent third party, such as the custodian or recordkeeper. Staff shall review the Manager, the IAP Funds, and IAP and report to the Council no less frequently than every other year.

4. **Termination of Target-Date Fund Manager.** Termination is the decision of the OIC and the Council may terminate "at will" according to the terms of the contractual relationship. Staff shall evaluate the Manager on several attributes, including contract compliance, adherence to Program objectives and fund volatility and performance. If staff believes after diligent analysis that the Manager has not met Program standards on one or more attributes, staff may recommend to the Council termination of the existing manager and the concurrent selection of a new manager.

5. **Establishment of an IAP Fund that invests solely in the Oregon Short Term Fund.** The Council directs staff to establish a fund that invests only in the Oregon Short Term Fund (OSTF). The purpose of this option is to offer a low-risk investment vehicle available for IAP participants.

Exceptions

List any exceptions to the policy statements.

Failure to Comply

Failure to comply with this policy may be cause for disciplinary action up to and including dismissal.

PROCEDURES and FORMS

None.

ADMINISTRATION

Review

Annually.

Feedback

Your comments are extremely important to improving the effectiveness of this policy. If you would like to comment on the provisions of this policy, you may do so by e-mailing the Policy Analyst. To ensure your comments are received without delay, *please list the policy number and name in your e-mail's subject*. Your comments will be reviewed during the policy revisions process and may result in changes to the policy.

AB's September 2016 Presentation to the OIC

Presentation following this slide

September 20, 2017

AB CUSTOM TARGET-DATE SOLUTIONS

STATE OF OREGON

Chris Nikolich Head of Glide Path Strategies—Multi-Asset Solutions

Ray Decker Managing Director, Head of Client Service—Defined Contribution

Liz Smith Senior Managing Director—Public Funds

Agenda

- Introduction of AB
- Demographic Analysis
- Glide Path Design
- Implementation and Ongoing Services

AB: A Unique Combination of Expertise, Innovative Solutions and Global Reach

OUR GOAL

TO KEEP CLIENTS AHEAD OF TOMORROW

We work every day to earn our clients' trust, create innovative solutions tailored to their unique needs and deliver the performance they expect.

OUR FIRM

3,454 EMPLOYEES + 21 COUNTRIES + 47 CITIES

$517 BILLION AUM

201 BUY-SIDE ANALYSTS
Avg. 16 years' experience and 7 years with AB

141 PORTFOLIO MANAGERS
Avg. 22 years' experience and 12 years with AB

WHAT SETS US APART

People & Culture

We attract the industry's best—people with relentless drive and ingenuity who prize delivering for clients above all else.

Global Structure

We've built an extensive and integrated global research and investing footprint over four decades, which gives us the broadest possible perspective.

How We Collaborate

Our experts share ideas across geographies, asset classes and sectors—their collective insights drive innovation and lead to better client outcomes.

Client Focus

We work with all types of clients; as markets and needs evolve, we do, too—focusing our firm's full resources on achieving their objectives.

Historical analysis does not guarantee future results.
In US dollars. As of June 30, 2017. Source: AB

Expertise in Defined Contribution

AB's Goal: Shape Better Experiences and Outcomes for Our Clients

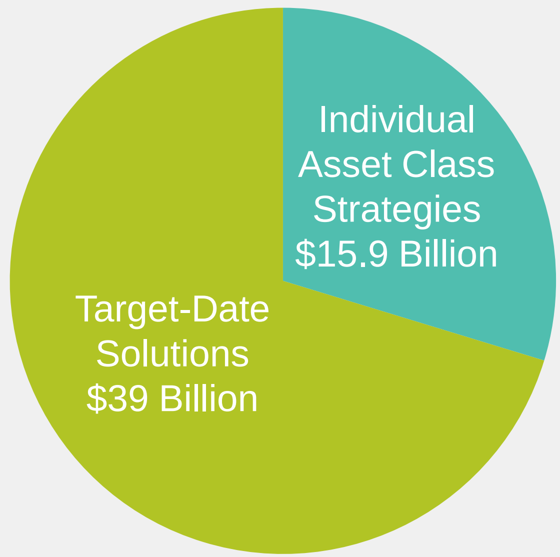
We get there with:

+ **Global market expertise**—to help clients navigate evolving regulatory challenges and market opportunities with a broad spectrum of investments

+ **Visionary research**—we transform insights and expertise into progressive market solutions

+ **Collaborative**—AB's more than 70 DC experts collaborate across our firm and industry to address our clients' needs and deliver unique solutions for their portfolios

AB Defined Contribution Global AUM: $54.9 Billion



As of June 30, 2017. Data includes pending implementations.
Source: AB

Experience Counts

Leveraging more than a Decade of Glide Path Design for Large DC Plans

Unmatched Client List

Largest, Most Sophisticated DC Plans

- Three of the top 10* and six of the top 30 in US*
- 22 US clients†
- $38 billion in custom target-date assets under management globally†

Experienced Default Provider

Helping Participants Achieve Better Retirement Outcomes

- Available to over 1.5 million plan participants
- Aggregate plan assets of $150 billion
- Automatically incorporate lifetime income for 2 DC plans

State-of-the-Art Technology Platform

Unparalleled Expertise

- Worked with 11 different record-keepers
- Incorporating 38 third-party managers
- Trading over $6 billion of cash flows, rebalancing and manager changes annually

Global Experience: US, UK and Japan

*P&I September 2015
†June 30, 2017

Extensive Track Record of CRS/LIS* Implementations

Industry	Plan Assets ($ in Millions)	CRS/LIS Assets ($ in Millions)	Participants	Underlying Components	Record-Keeper
Aerospace/Defense Products & Services	$32,706	$3,058	135,527	Active/Passive	Voya
Conglomerate	$28,582	$5,006	123,410	All Passive	Fidelity
Conglomerate	$21,563	$3,032	69,998	All Passive	Alight
State Government	$15,588	$4,236	213,000	Active/Passive	Empower
Manufacturing and Technology	$14,554	$6,295	88,220	Active/Passive	Fidelity
Drug Manufacturers	$8,182	$3,856	24,711	Active/Passive	Fidelity
State Government	$7,400	$1,351	268,000	Active/Passive	Empower
Communications Equipment	$6,913	$1,377	9,991	Active/Passive	Alight
Airlines	$6,725	$1,220	12,047	Active/Passive	Charles Schwab
Electric Utility	$3,886	$830	13,238	Active/Passive	Xerox
Grocery Stores	$2,085	$1,866	113,558	Active/Passive	Fidelity
State Government	$1,900	$815	66,205	Active/Passive	ICMA
Life Insurance	$1,844	$704	9,242	Active/Passive	Alight
State Municipal Employee System	$1,174	$394	16,041	All Passive	Alerus
Diversified Computer Systems	$931	$469	4,096	Active/Passive	Fidelity
Asset Management	$842	$451	2,791	All Active	Voya
Restaurants	$594	$126	37,251	All Passive	Voya
Manufacturing and Technology	$436	$221	3,999	All Passive	Alight
Food - Major Diversified	$234	$27	1,907	Active/Passive	Alight
Trucks & Other Vehicles	$217	$217	3,786	Active/Passive	Kravitz
Legal	$207	$81	1,088	All Active	Fidelity
Variety Stores	$183	$243	8,843	Active/Passive	Empower
	$156,746	**$35,875**	**1,226,949**		

*CRS/LIS denotes AB's Customized Retirement Strategies and Lifetime Income Strategy services.
The above clients and target-date/LIS assets are US-based as of June 30, 2017. DC Plan Asset and Participant Data measurement dates vary based on the information available in BrightScope, Money Market Directory and EFAST2 as of March 2017. Plan Assets represent DC or hybrid plans with a DC component.
Source: AB, BrightScope, Money Market Directory and EFAST2 (for DC Plan Asset and Participant Data).

AB's Roles and Responsibilities

Making the Custom Target-Date Fund Implementation Seamless for the State of Oregon

Investments	**Design Glide Path**	+ Glide path + Asset classes + Components

Operations	**Ongoing Operational Support**	+ Develop operational structure
		+ Interface with:
		  + Plan Sponsor (PERS)
		  + Managers
		  + Custodian (State Street)

Communications	**Advise and Consult on Participant Communications Strategy**	+ Introduction + Ongoing

Summary: Demographic Research and Glide Path Design

- Benefits of Transition to Glide Path
  - Improve Risk Control for Participants Approaching Retirement
  - Maintain Growth Oriented Focus for Younger Participants
  - Retain Contribution to Diversification and Growth from OPERF

- Key Demographic Inputs
  - Target 90% Total Replacement Rate From all Sources
  - Oregon Participant Salaries, Savings and Tenure
  - Age 65 Retirement

- Proposed Glide Path
  - Modest Increase to Growth Allocation for Young Savers
  - Significant Increase to Fixed Income for Near Retirees
  - Expect Improved Consistency, Lower Downside Risk and Lower Median Growth

Demographic Analysis

State of Oregon Demographics Summary

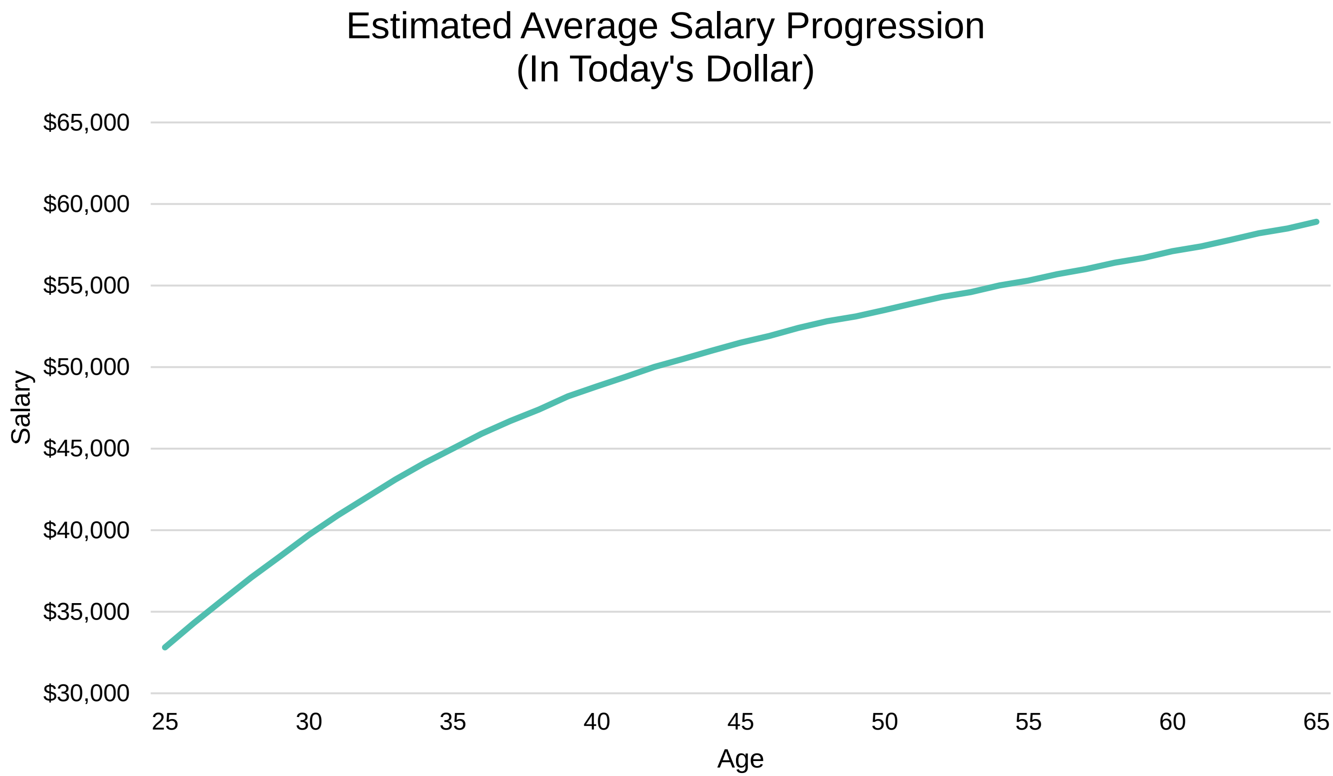
- Standard Goals & Risk Tolerance
  - Providing long-term real asset growth while working
  - Prolonging savings in retirement
  - Mitigating participant risk especially when approaching and while in retirement
- Demographic Summary
  - Average retirement age: 63*
  - Average account balance increases with age and reaches its peak at 0.8x final salary near retirement
  - Average salary level and DC deferrals are around population average with additional benefits from DB
  - Low employment risk or frequency of job-changing
- Target total replacement rate
  - Target average total replacement rate of 90%
  - Average DB replacement rate of 45% + Social Security replacement rate of 35%

* Used average retirement age of 65 in glide path modeling and analysis.

Experienced Real Salary Increase by Age

Data source: Oregon Public Employees Retirement System 2016 Experience Study
Weighted average is calculated based on number of active members within each category sourced from Oregon Public Employees Retirement System December 31, 2015 Actuarial Valuation Report

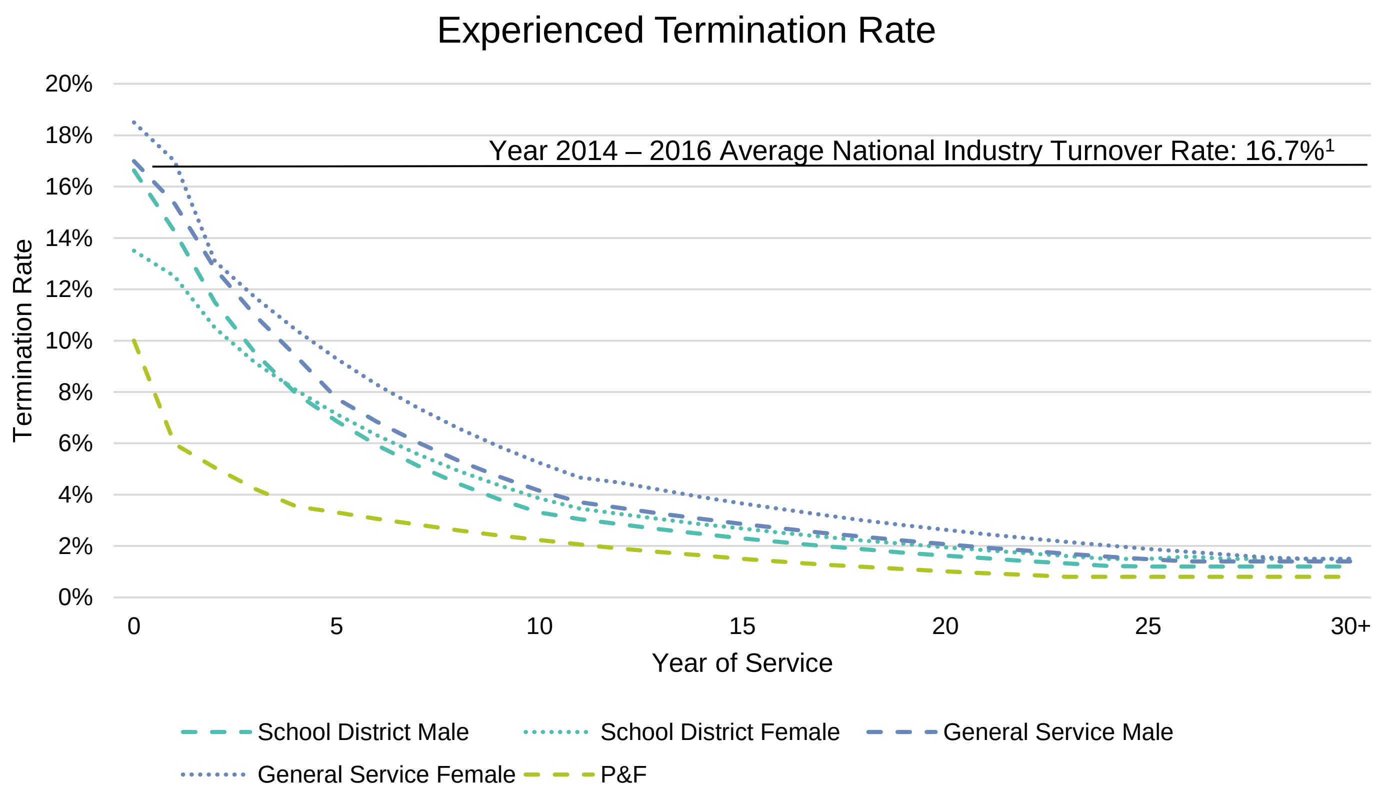
Estimated Average Salary Progression by Age



Age 25 salary is based on 2015 payroll information sourced from Oregon Public Employees Retirement System December 31, 2015 Actuarial Valuation Report.
Real salary progression is based on weighted average Milliman real salary increase assumption sourced from Oregon Public Employees Retirement System 2016 experience study. It is the sum of merit salary increase assumption and 1% real wage growth assumption for the entire population.

Low Employment Risk / Job Turnover

+ Termination rate substantially decreases as year of service increases



Data source: Oregon Public Employees Retirement System 2016 Experience Study

[1] Year 2014 – 2016 average national industry turnover rate is sourced from Compdata Surveys, BenchmarkPro 2016 Report

Average Retirement Age

- Based on Oregon PERS 2016 experience study, differences in retirement patterns were observed across length of services, job classes, and eligibility for unreduced benefits (details in appendix)
- Age 63 is the weighted average retirement age across tiers and job classes based on both plan normal retirement age and observed average age at effective retirement date
- Average retirement age of 65 is used in State of Oregon glide path design and analysis

	Plan Avg Normal Retirement Age[1]	PERS Observed Avg Age at Effective Retirement Date[2]	Active Participants Weights[3]
Tier 1	58	61	18%
Tier 2	60	63	24%
OPSRP	65	64	58%
Weighted Avg	**63**	**63**	

[1] Sourced from Tier 1, Tier 2, OPSRP Plan Information. Weighted average of general service normal retirement age and Police & Fire normal retirement age.
[2] Data as of December 31, 2017 provided by PERS
[3] Sourced from Oregon Public Employees Retirement System December 31, 2015 Actuarial Valuation Report. Police & Fire is included.

Glide Path Design

AB Target-Date Investment Philosophy

+ Glide paths must **balance the four major risks** facing plan participants: growth risk, inflation risk, market risk and longevity risk

+ Capital market forecasts must **capture the importance of current conditions** and the sequencing of returns to guard against the long-run risks participants face

+ **Customization enhances outcomes** by incorporating participant demographics and plan sponsor philosophy relating to investment alternatives and risk

+ Diversifying asset class exposures utilized **should vary by age** in order to best reduce risks specific to that age cohort

State of Oregon Glide Path Construction

Process Overview

Risk Budgets	Portfolio Building Blocks	Glide Path
Determine Plan Sponsor Objectives	Define Strategy Universe	Align Risk Budgets and Building Blocks
Perform Demographic Analysis	Assess Implementation Vehicles	Integrate, Optimize and Refine
Determine Participant Risk Budgets	Generate Portfolio Building Blocks	Finalize Glide Path

Assess Expected and Ongoing Value-Add

Key Inputs and Highlights of Glide Path Design

+ Increase growth potential for young savers, improve risk control as approaching retirement and enhance retirement income potential above DB (45%) and Social Security (35%)

Participant Demographics

Oregon Public Employees Retirement Fund (OPERF)

Current Capital Market Environment

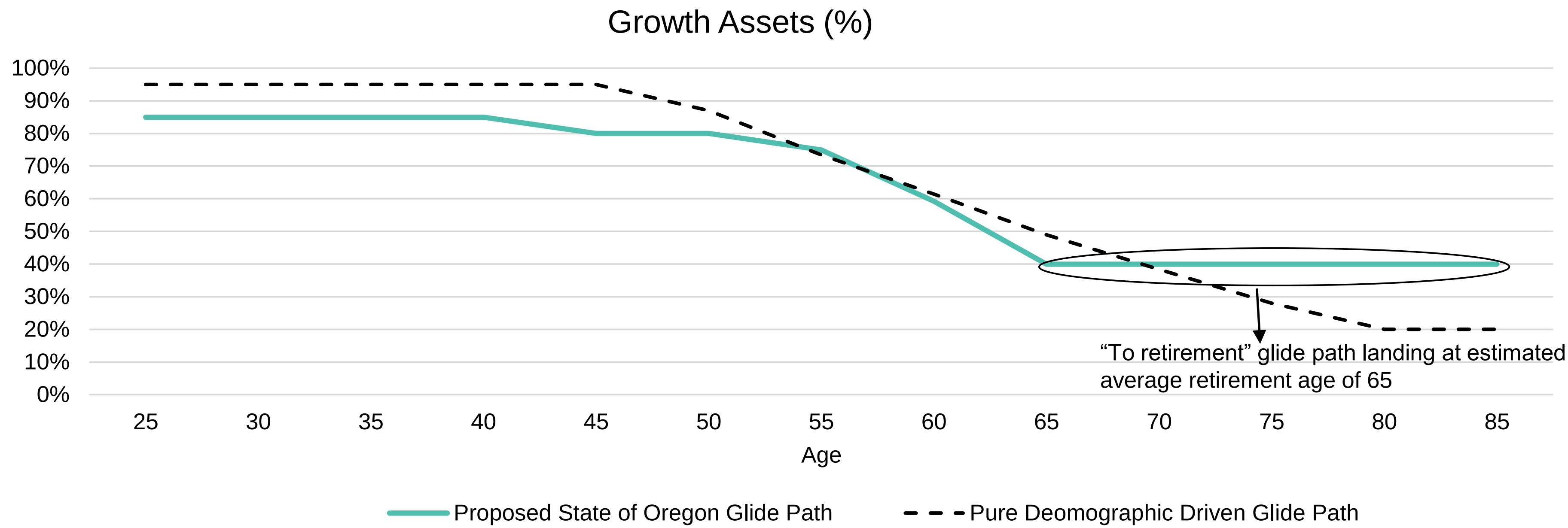
Glide Path Design

- Designed a customized glide path landing at age 65
- Allocation to OPERF is determined by OST and incorporated into the design
- OPERF portfolio is assessed and non-OPERF allocations are designed by AB accordingly
- Modeled passive implementation for all non-OPERF allocations

Proposed State of Oregon Glide Path Summary

+ A customized glide path landing at age 65 is designed, with total 10 vintages (2060-2020 plus Retirement Allocation Fund)

+ OPERF allocation is determined by OST, AB assessed OPERF portfolio and designed the remaining allocations assuming passive implementation

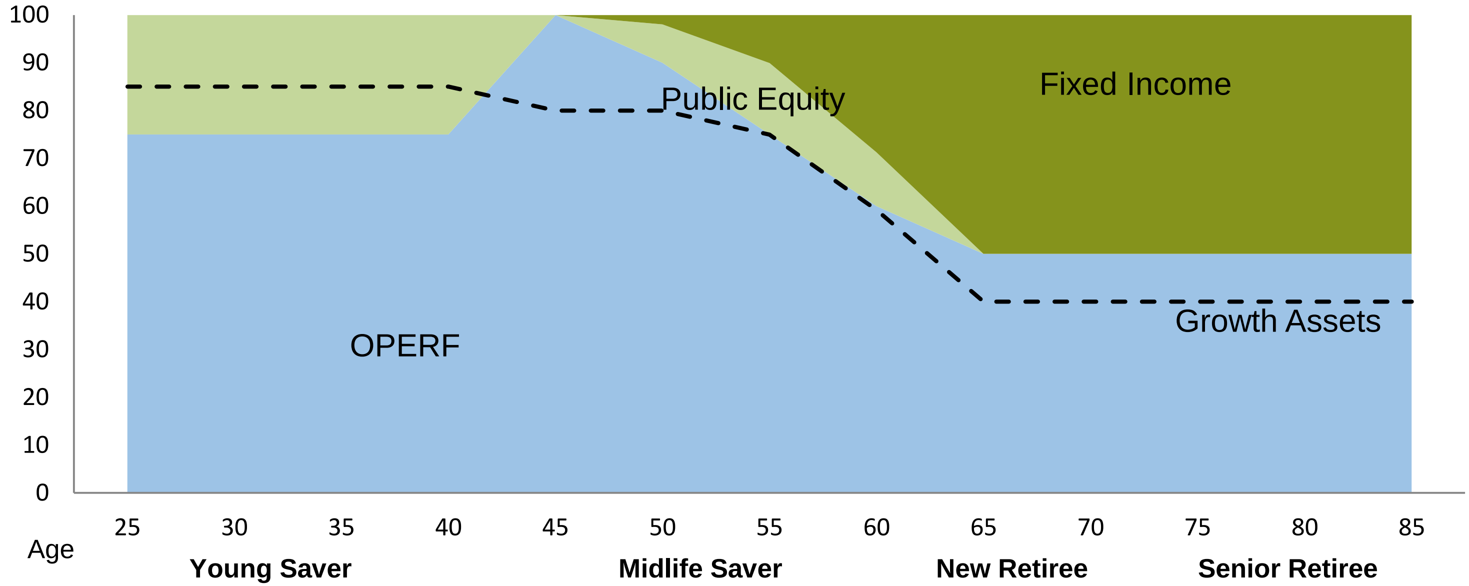


	25	30	35	40	45	50	55	60	65	70	75	80	85
OPERF	75.00	75.00	75.00	75.00	100.00	90.00	75.00	60.00	50.00	50.00	50.00	50.00	50.00

80% of OPERF allocation is counted as growth assets

Proposed State of Oregon Glide Path

State of Oregon

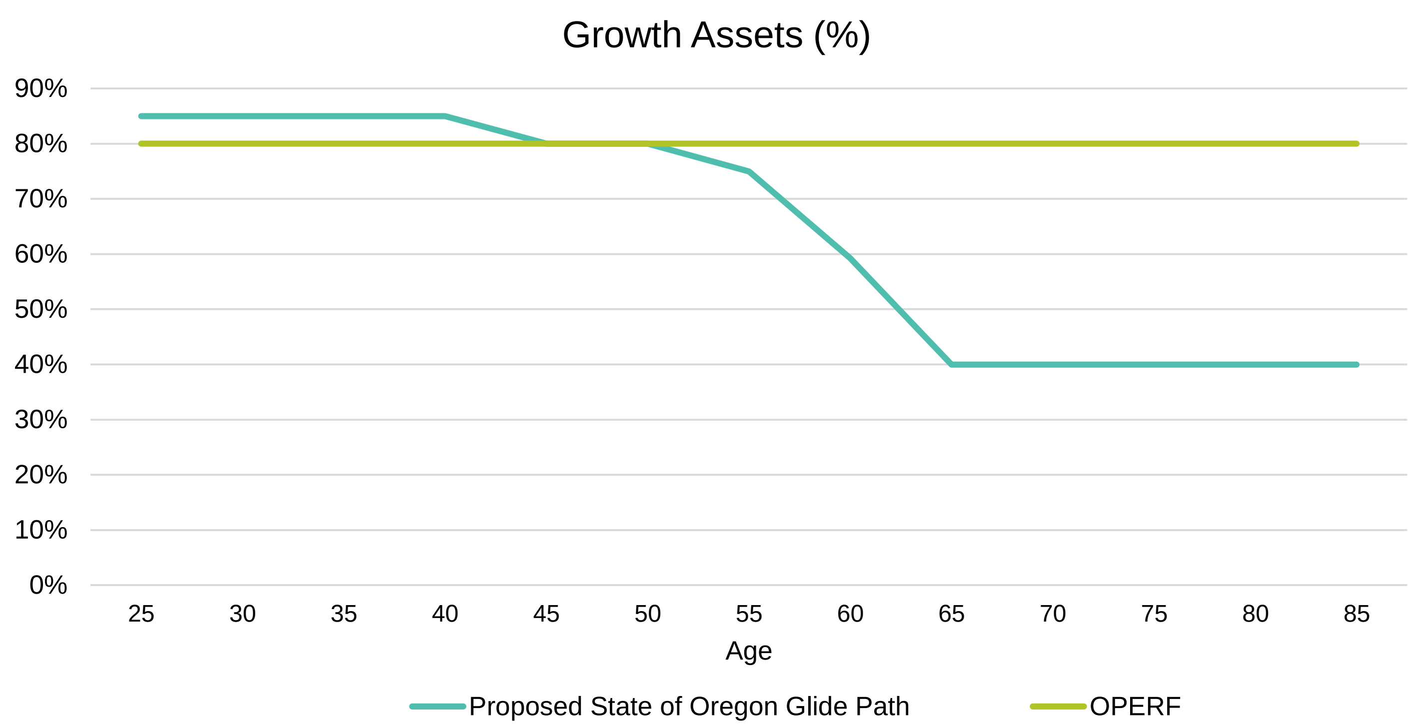


Proposed State of Oregon Glide Path	25	30	35	40	45	50	55	60	65	70	75	80	85
US All Market Equity	15.00	15.00	15.00	15.00	-	5.10	9.85	7.65	-	-	-	-	-
ACWI ex US Equity	10.00	10.00	10.00	10.00	-	2.90	5.10	3.60	-	-	-	-	-
Core Bond	-	-	-	-	-	2.00	7.70	16.30	18.65	18.65	18.65	18.65	18.65
TIPS	-	-	-	-	-	-	2.35	8.15	12.05	12.05	12.05	12.05	12.05
Short Duration Bond	-	-	-	-	-	-	-	4.30	19.30	19.30	19.30	19.30	19.30
OPERF	75.00	75.00	75.00	75.00	100.00	90.00	75.00	60.00	50.00	50.00	50.00	50.00	50.00
Public Equity	25.00	25.00	25.00	25.00	-	8.00	14.95	11.25	-	-	-	-	-
Fixed Income	-	-	-	-	-	2.00	10.05	28.75	50.00	50.00	50.00	50.00	50.00
OPERF	75.00	75.00	75.00	75.00	100.00	90.00	75.00	60.00	50.00	50.00	50.00	50.00	50.00
Total Growth Assets*	85.00	85.00	85.00	85.00	80.00	80.00	74.95	59.25	40.00	40.00	40.00	40.00	40.00

* 80% of OPERF allocation is counted as growth assets

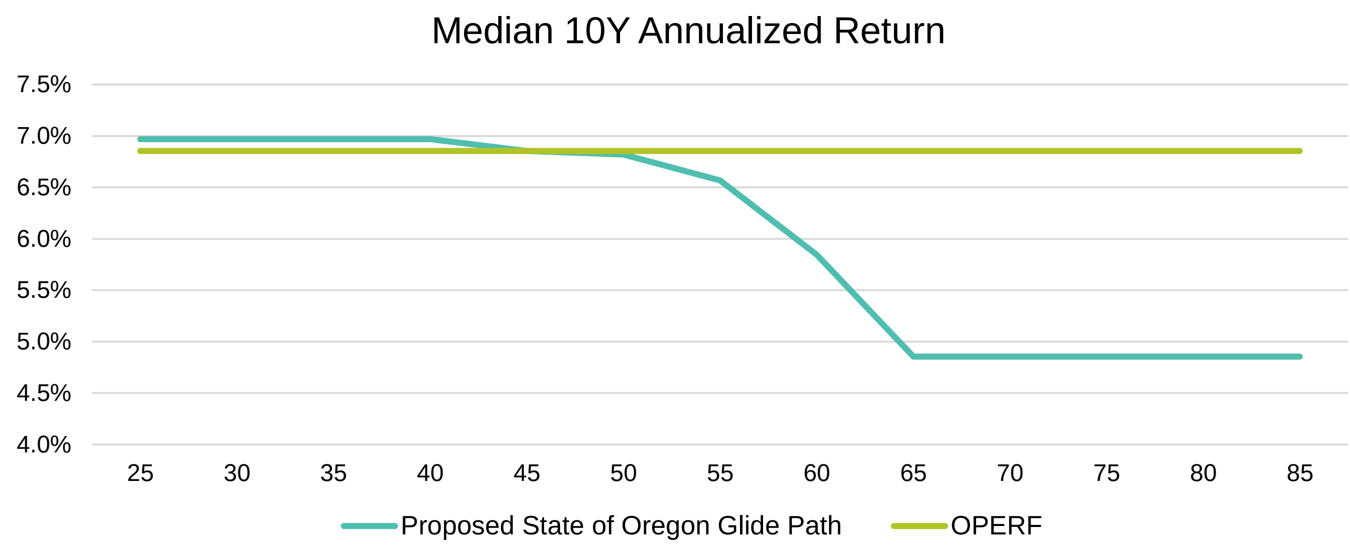
Return vs. Risk Trade-Off

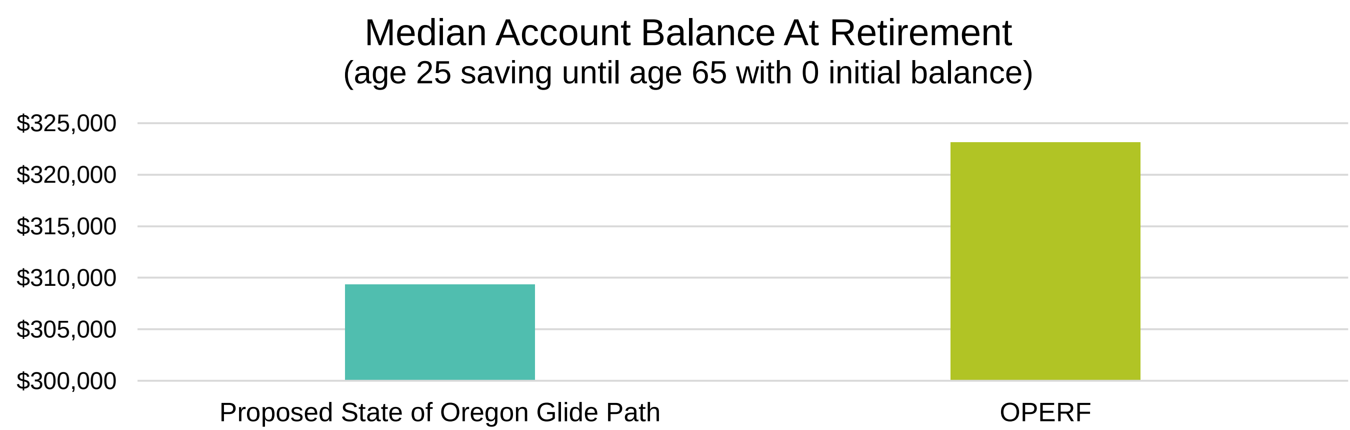
+ Proposed glide path increases growth allocation for younger participants vs. OPERF to enhance wealth accumulation and reduces growth allocation as participants approaching retirement to protect them from downside market risk



80% of OPERF allocation is counted as growth assets

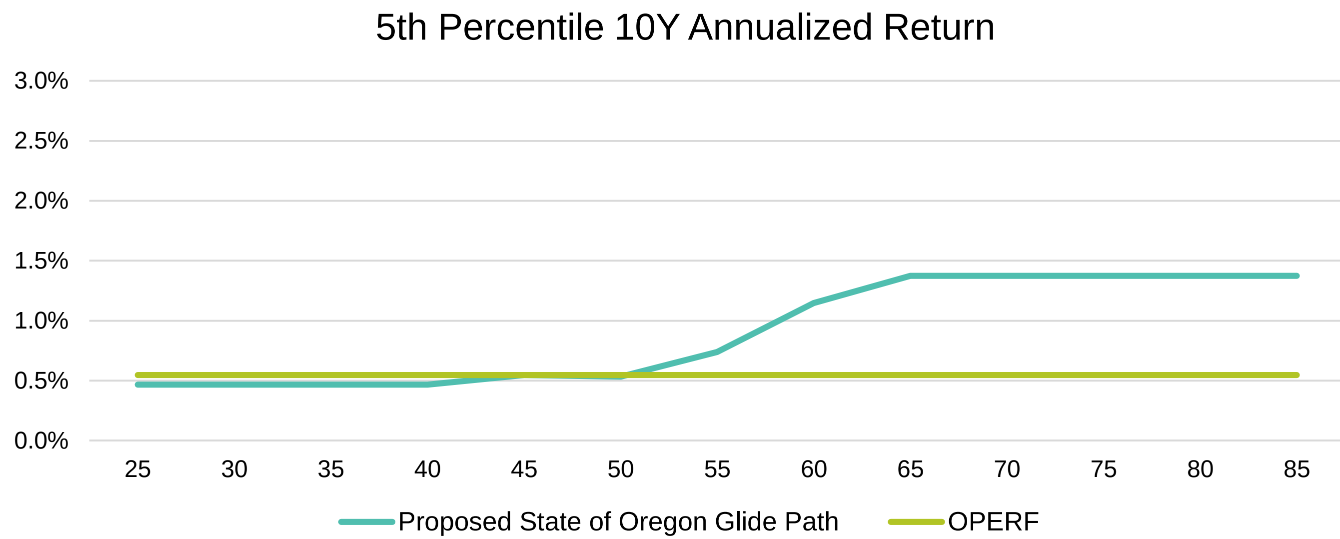
Lower Growth Allocation Approaching Retirement Leads to Lower Long Term Median Return But Provides Better Long Term Downside Protection

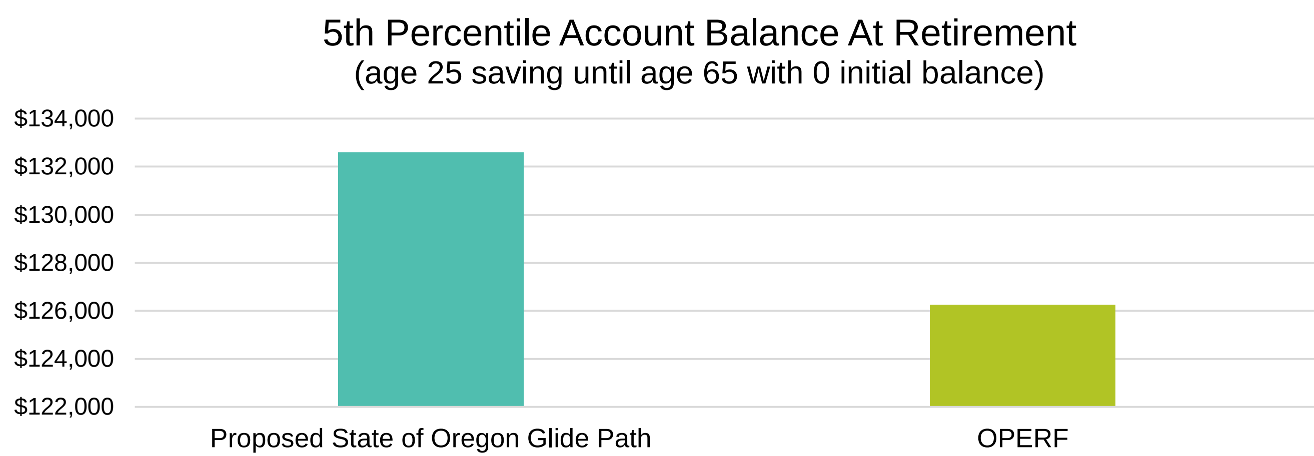




Based on 10K trial of Monte Carlo Simulation with CME initial market condition as of 2016Q4

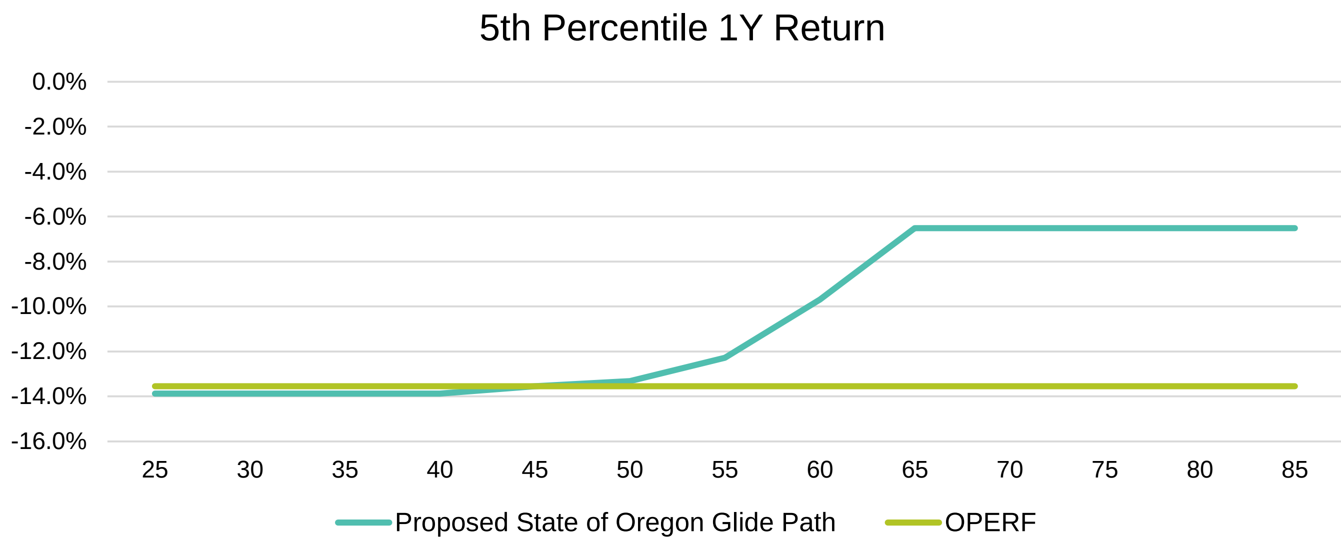
Lower Growth Allocation Approaching Retirement Leads to Lower Long Term Median Return But Provides Better Long Term Downside Protection

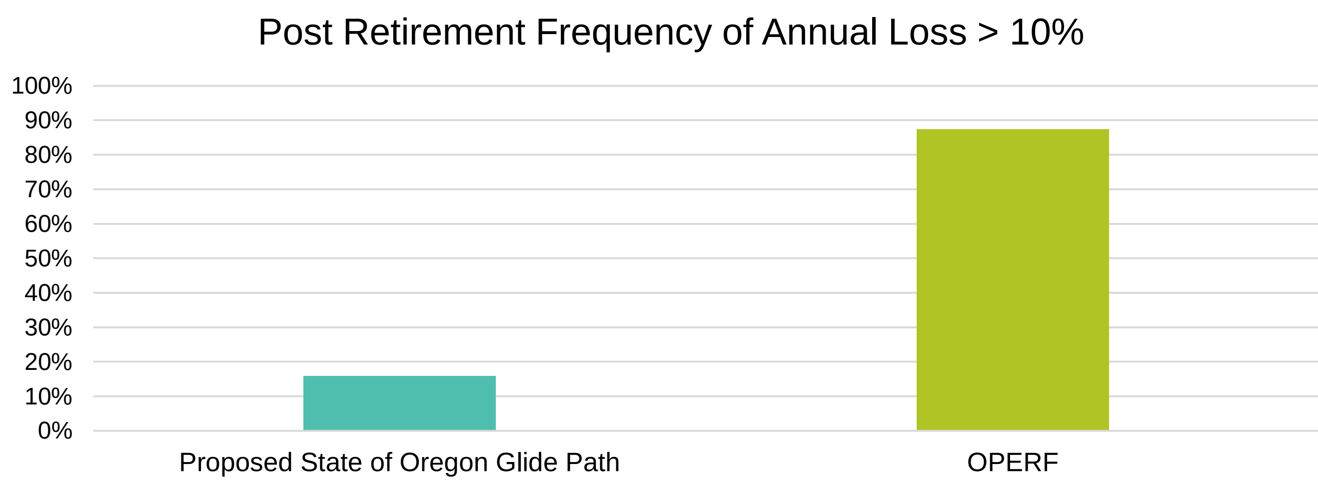




Based on 10K trial of Monte Carlo Simulation with CME initial market condition as of 2016Q4

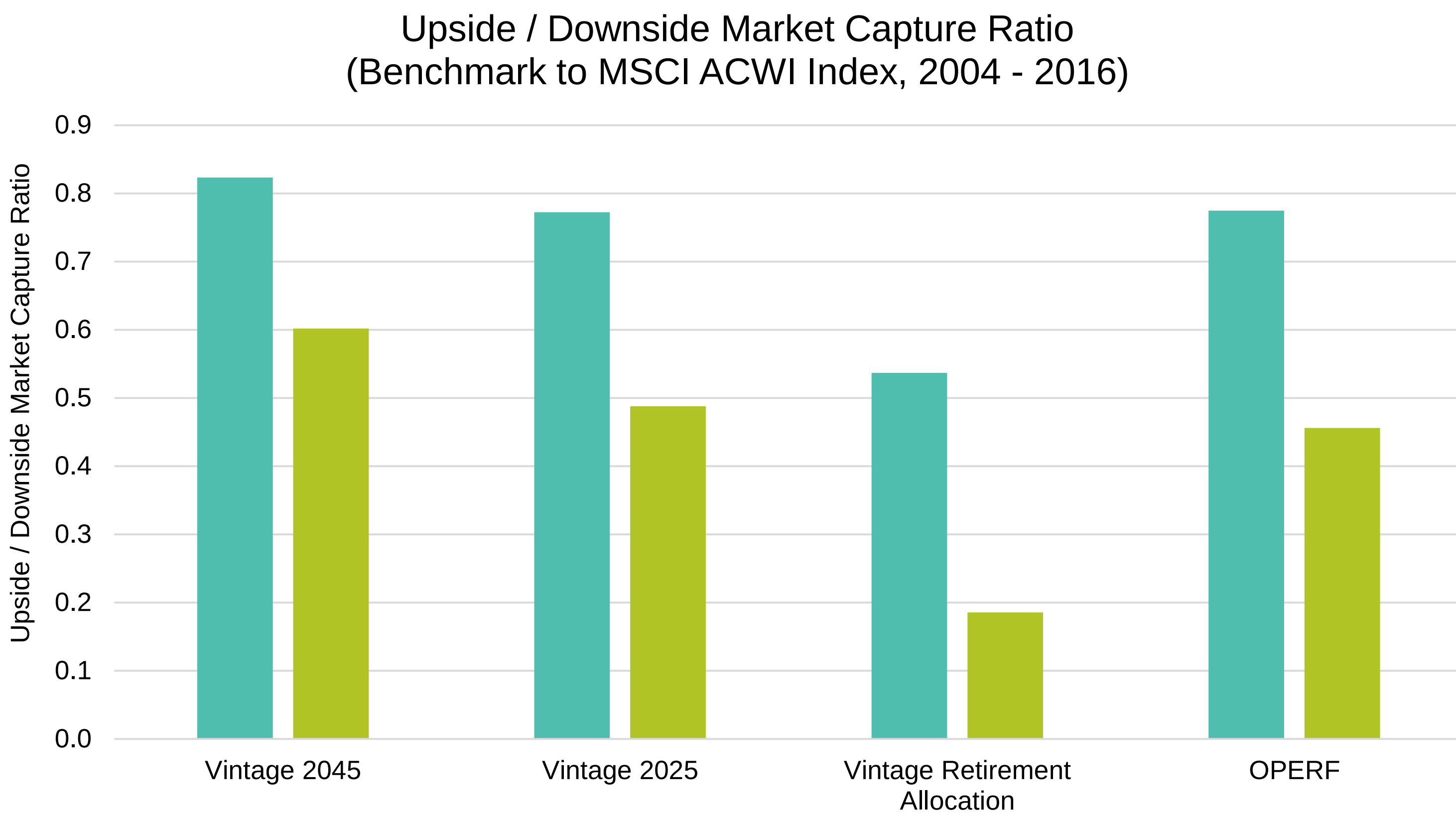
Lower Growth Allocation Approaching Retirement Reduces Short Term Downside Risk and Provides Additional Downside Protection Post Retirement if Participants Don't Roll Out





Based on 10K trial of Monte Carlo Simulation with CME initial market condition as of 2016Q4

Historical Simulated Upside / Downside Market Capture Ratio



Historical simulation based on annual return within period 2004 – 2016. These returns are derived through back-testing, and are presented for illustrative purposes only and do not reflect the performance of any AllianceBernstein product. Back-testing is designed to allow one to understand and evaluate certain strategies by seeing how they would have performed, hypothetically, during certain time periods. Back-tested results have important limitations, may represent only a small sample of possible scenarios and should not be considered indicative of future results. In particular, they do not reflect actual trading in an account, so there is no guarantee that, in fact, an actual account would have achieved the results shown. Back-tested results also assume that investment decisions would not have changed over time and in response to market conditions, which might have occurred in an actual account. Up / Down market is determined by MSCI ACWI Index annual performance. Down market within the period were year 2008, 2011 and 2015.
Actual % return is actual OPERF annual return provided by PERS. TDF % return is historical simulated return based on proposed glide path and the following historical index return with a 10bps passive mandate fee applied: Russell 3000 Index, MSCI ACWI ex US (NET UH USD), Bloomberg Barclays US Aggregate Index, Bloomberg Barclays US Govt Inflation-Linked 1-10 Y, Bloomberg Barclays US Govt/Credit 1-3 Y.

OPERF

OPERF: Analysis Summary

Estimated Growth Allocation = 80% Based on Total Volatility vs. Equity Volatility

	Allocation	Equity Beta	Liquid Proxy	Comment
Public Equity	40.0%	1.02	100% Equity	
Fixed Income	19.4%	-0.01	46% Diversified Bonds + 37% US Treasury + 13% Leveraged Loans + 4% High Yield	
Alternatives	8.9%	0.62	25% Infrastructure Equity + 35% Natural Resource Equity + 40% Hedge Fund of Funds	
Real Estate	11.9%	1.04	80% REITs + Residual	Opportunistic/REIT transitioning to Core
Private Equity	19.8%	0.84	85% US Equity + Residual	Large Buyout with little Venture Capital
OPERF Proxy		**0.75**	**75% Equity + 15% (REIT-Equity) + 10% Diversified Bonds + Residual**	**Residual Volatility = 6% Information Ratio = 0.2**

+ OPERF Proxy 10-Year Forward Looking Risk/Return: 13.5% Volatility = 79% of Global Equity Volatility, 6.9% Geometric Return, 0.44 Sharpe Ratio

Actual Allocation sourced from State Street Report as of 6/30/17. Allocation in Opportunity and Cash & Misc are merged with Alternatives allocation; Equity Betas calculated by regressing Liquid Proxies on Equity, Equity – REIT, Bonds; Equity = MSCI ACWI, US Equity = Russell 3000, REITs = US NAREIT, Diversified Bonds = Barclay US Aggregate; US Treasury = Barclay US Treasury, Leveraged Loans = S&P LSTA Index, High Yield = BOA/ML High Yield Index, Infrastructure Equity = DJ/Brookfield Infrastructure Index, Natural Resource Equity = HSBC Energy/Mining, Hedge Fund of Funds = HFRI FOF Index; Real Estate Liquid Proxy derived by regressing Cambridge Associates Private Real Estate Index on NAREIT Index lagged 0-8 quarters and summing the betas; Private Equity Liquid Proxy derived by regressing 50% actual Oregon Private Equity NAV / 50% Cambridge Associated Private Equity Index on Russell 3000 lagged 0-8 quarters and summing the betas; all historical calculations based on 3Q97-4Q16; OPERF forward looking return estimation is based on 10K trial of Monte Carlo Simulation with CME initial market condition as of 2016Q4.

Source: Bloomberg, Cambridge Associates, State Street, OIC, AB

Implementation & Ongoing Services

Summary: AB's Implementation and Ongoing Services

- Seamless Implementation
  - Serves as the overall project manager for the investment, operational and communications implementation
  - Develop implementation project plan and timeline with plan representatives and service providers
  - Lead weekly/bi-weekly project calls and report progress to the working teams

- Ongoing Operational Oversight
  - Work with Oregon and their service providers to determine trading processes and timing
  - Provide initial and ongoing operational support inclusive of cash flow management, rebalancing and glide path progression

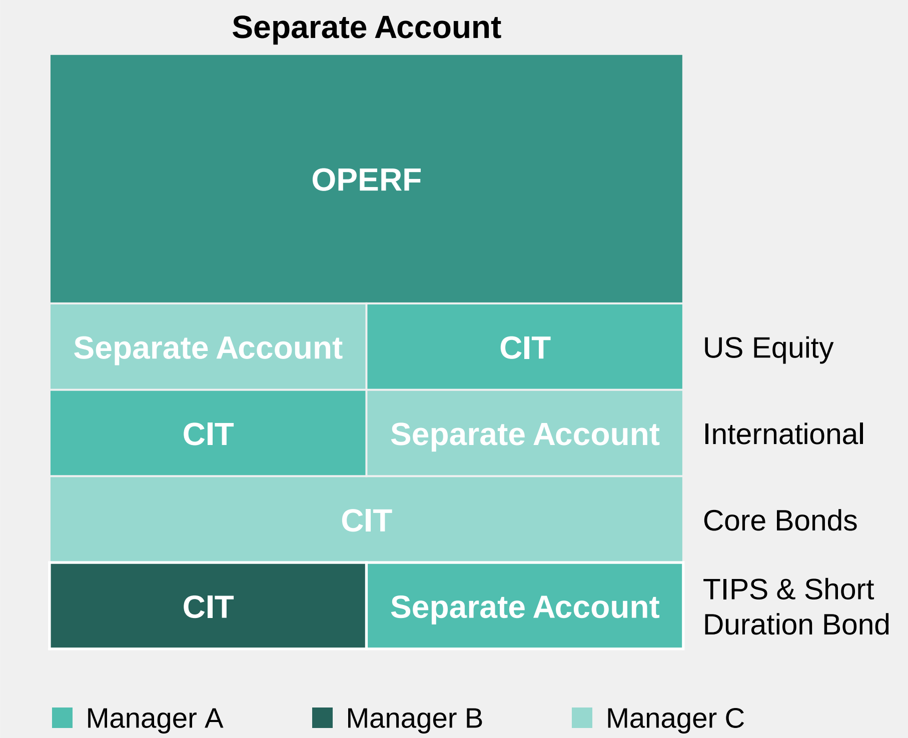
- Participant Communications
  - Provide participant communications assistance and expertise
  - Provide custom content for participant communications inclusive of fund fact sheets, train-the-trainer presentations, Call Center Q&As, website and participant newsletters

Custom Target-Date Funds

Operational Roles and Responsibilities

Glide Path Design	**State of Oregon ("OPERF")** **AB ("Non-OPERF")** Investment Fiduciaries
Cash Flow, Glide Path Progression & Rebalancing	**AB**
Record-Keeper (Voya) Interface	**PERS**
Valuation and Custody	**State Street**
Manager Selection	**OST**
Control	**State of Oregon**

Illustration: "IAP 20XX Target-Date Fund"



Appendix

State of Oregon: Custom Target-Date Fund Vintage Recommendation

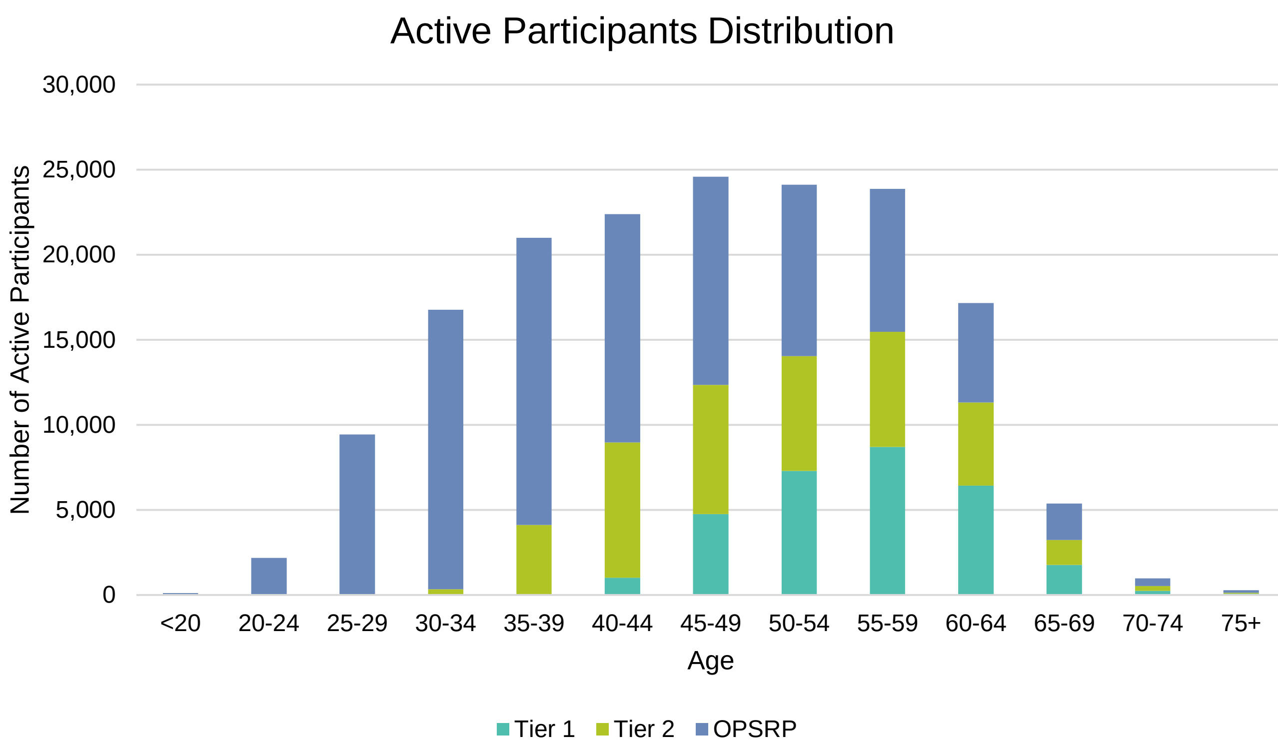
If the Employee was born…	Vintage
In 1993 or after	2060
Between 1988 and 1992	2055
Between 1983 and 1987	2050
Between 1978 and 1982	2045
Between 1973 and 1977	2040
Between 1968 and 1972	2035
Between 1963 and 1967	2030
Between 1958 and 1962	2025
Between 1953 and 1957	2020
In 1952 or before	Retirement Allocation Fund

Vintage Addition and Potential Consolidation every Five Years

- In 2020, we would recommend the addition of a 2065 vintage designed for younger employees
- These employees would be age 22 or younger in 2020 (born in 1998 or after)
- Many plan sponsors prefer to limit the growth of the number of target-date fund vintages by consolidating vintages that have reached their final asset allocation (age 65 for the Oregon funds)
- As an example, the 2020 Target-Date Fund will reach it's final asset allocation in 2020
- At this point, it could be merged into the Retirement Allocation Fund since both funds will have the identical asset allocation going forward
- Impacted participants would be notified in advance and the record-keeper would transfer their balances to the Retirement Allocation Fund
- This approach of adding/consolidating a target-date fund vintage every five years will maintain the total number of the vintages to 10

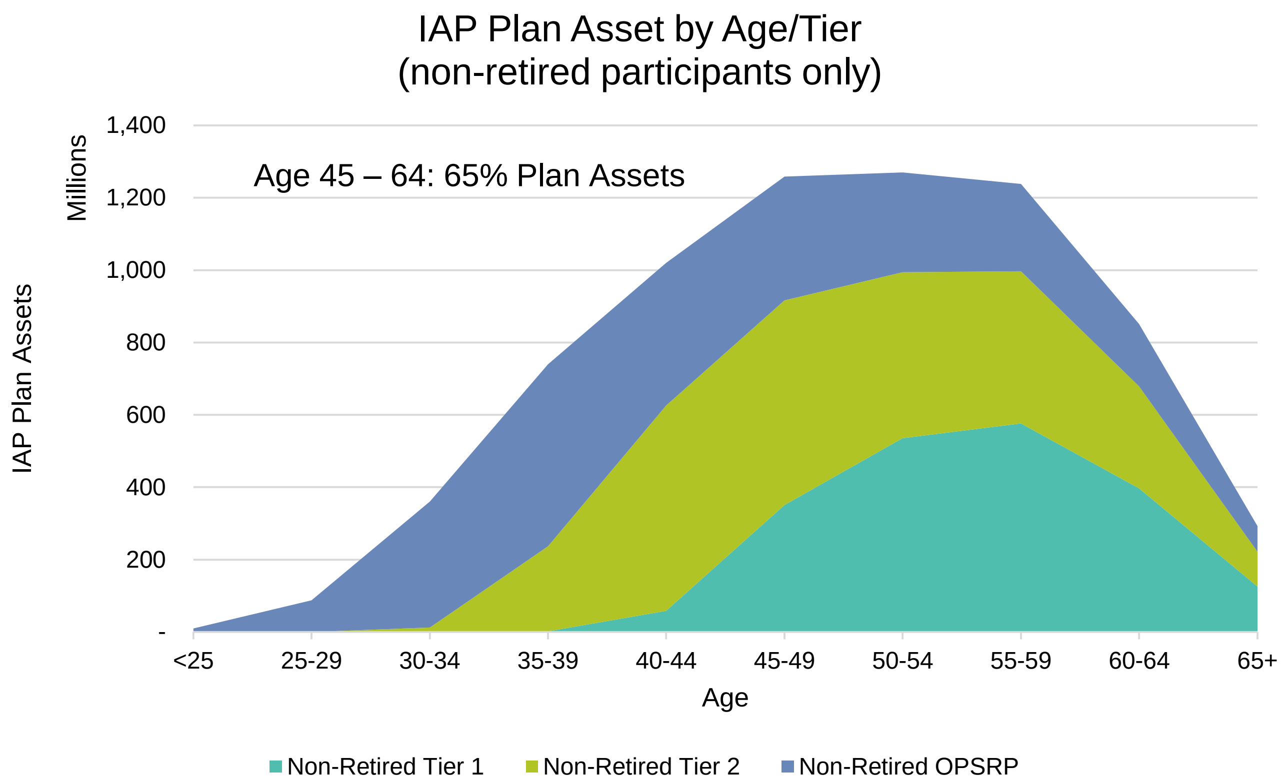
OPSRP Members Dominate Active Participants

- More than half of active participants are OPSRP members
- Young and midlife participants are especially dominated by OPSRP members



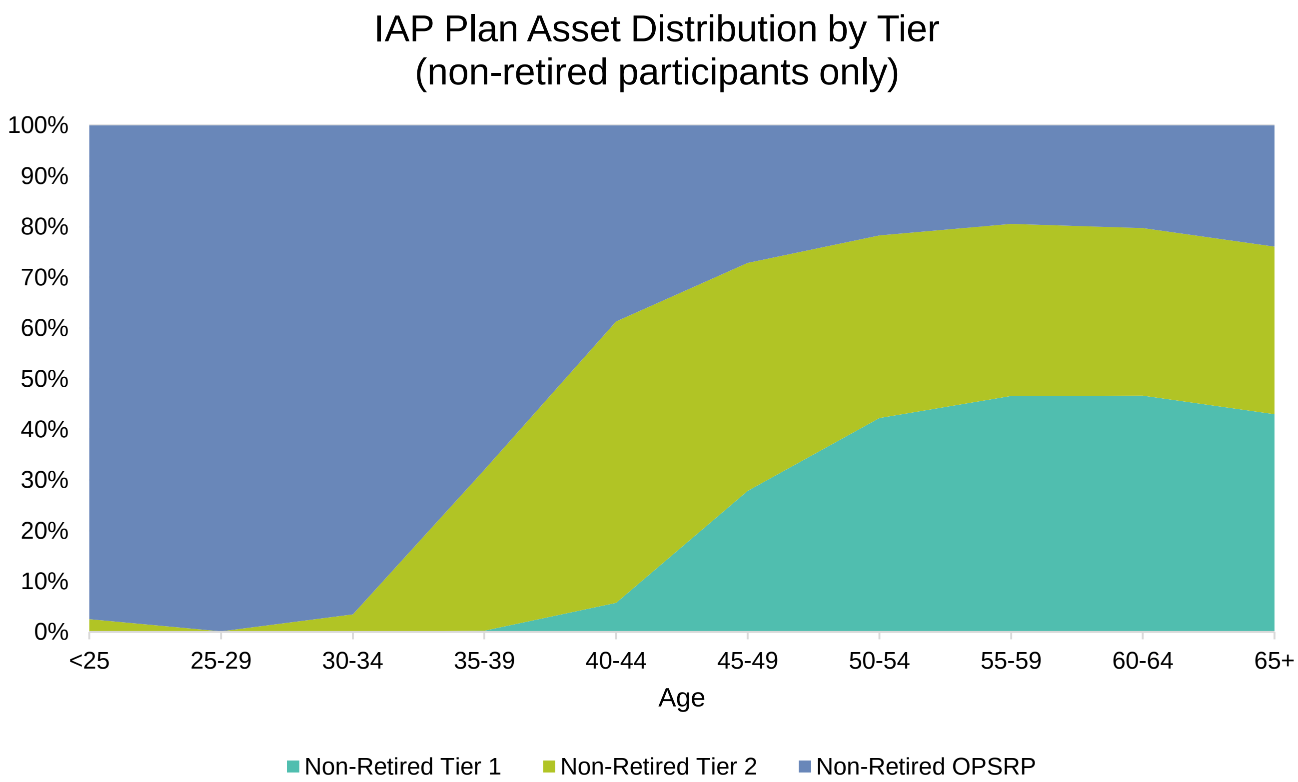
Data source: Oregon Public Employees Retirement System December 31, 2015 Actuarial Valuation Report

Majority of Plan Assets Are In Age 45 – 64



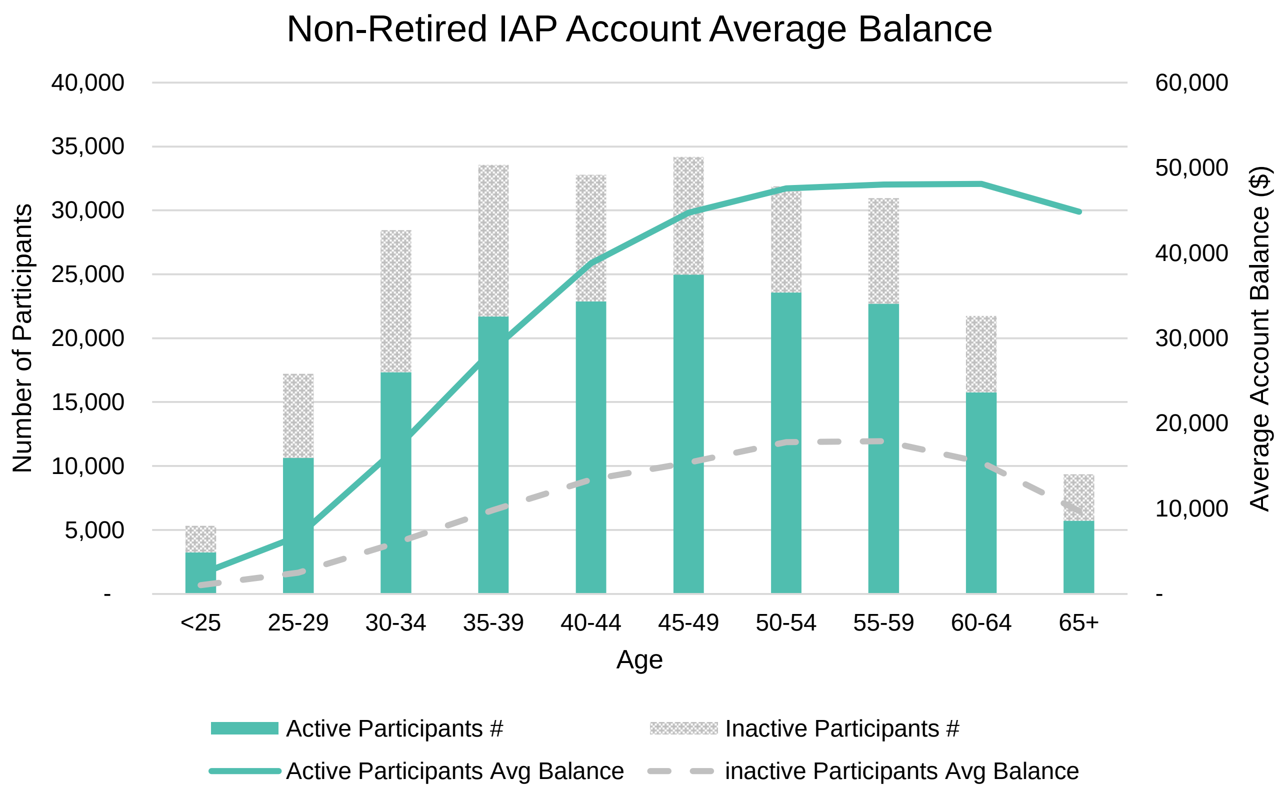
Data as of December 31, 2016 provided by PERS

Most of the Assets Held by Younger Participants Are From OPSRP Members Assets Held by Senior Participants Are More Split Among Tiers



Data as of December 31, 2016 provided by PERS

Average Account Balances Are Highest Near Retirement



Data as of December 31, 2016 provided by PERS

Retirement Benefit Summary

- Estimated average replacement ratio from DB & Social Security is 80%.
- Tier 1 / Tier 2 members have higher replacement ratio from DB compared with OPSRP members, given longer estimated service year at retirement and higher full formula factor, which partially offset by lower Social Security replacement ratio given earlier average retirement age.

	Tier 1	Tier 2	OPSRP	Weighted Average Across Tiers
Average Age at Retirement[1]	61	63	64	63
Average Non-Retired Members Age[1]	55	50	42	46
Average Active Members Service Year[2]	24	15	6	11
Estimated Total Service Year at Retirement	30	28	28	28
Estimated Average DB Replacement Ratio[3] (based on full formula)	51%	48%	42%	45%
IAP Contribution (made on the after Jan 1, 2004)	6% of covered salary			6%
Estimated Work Life Social Security Replacement Ratio (if eligible)[4]	33%	35%	37%	36%
Estimated Replacement Ratio from DB and Social Security	84%	83%	79%	81%

[1] Average age at retirement and average non-retired members age are provided by PERS as of December 31, 2016
[2] Average active members service data is sourced from Oregon Public Employees Retirement System December 31, 2015 Actuarial Valuation Report.
[3] DB replacement ratio is estimated based on estimated total service year at retirement and benefit full formula, weighted averaged across job classes.
[4] Social Security replacement ratio is estimated for the entire work life of a participant. Estimation is based on estimated salary progression, assuming participants start work at age 25, retire at average retirement age, and start withdrawing benefit at either retirement or at age 62 (if retire before age 62). A very small percentage of participants may not be eligible for Social Security.

AB's Proprietary Individual Participant Glide Path Design Tool (CyRIL)

The Outcome Objective: How the Participant Will Spend Their Savings

AB's Four Drawdown Profiles

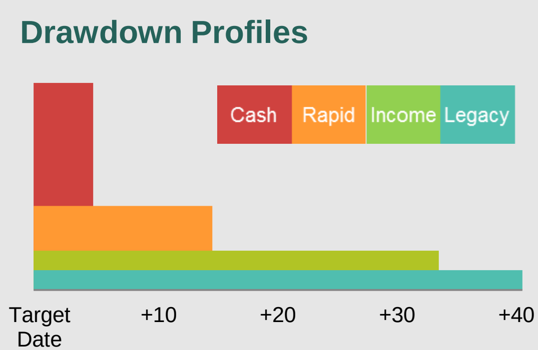
Will determine average investment horizon

Cash: Over first 5 yrs

Rapid Drawdown: Over first 15 yrs

Income for Life: Over expected retirement period (with 75% success)

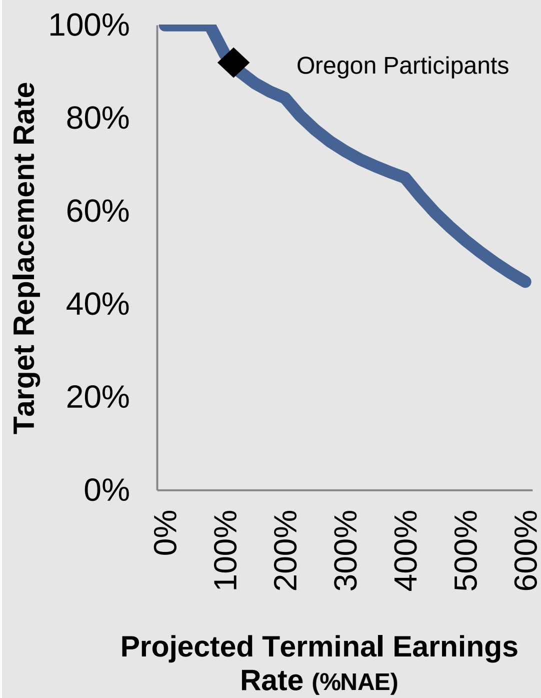
Legacy: No drawdown interest only



All assumed to be inflation linked

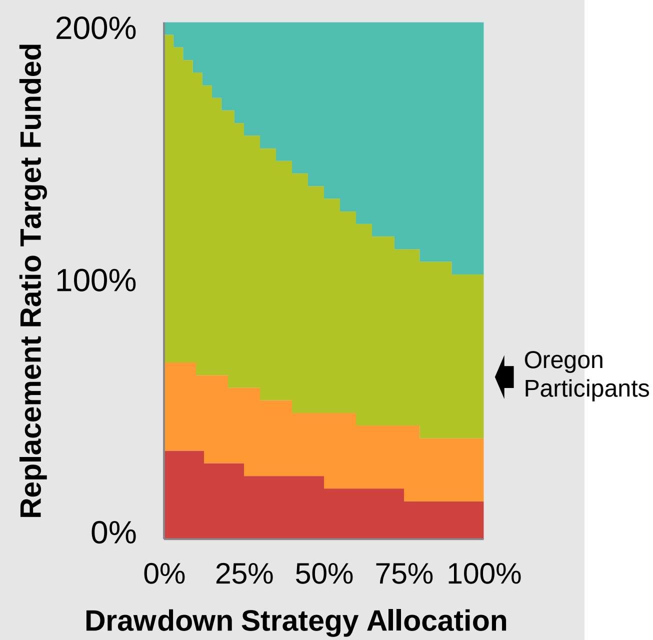
Target Replacement Ratio

Varies by expected earnings at retirement level



AB CyRIL Analysis

Based on expected funding of target replacement ratio, an allocation is made to the drawdown strategies



Historical High Ratio of Lump Sum Withdrawal At Retirement Ratio Is Trending Down Through Time

Year of Retirement	Accounts Receiving Installments	Accounts Receiving Lump Sum	Ratio (Lump Sum vs. All Retirements)
2004	12	2,841	99.58%
2005	56	2,407	97.73%
2006	203	2,722	93.06%
2007	387	2,758	87.69%
2008	383	2,566	87.01%
2009	267	2,256	89.42%
2010	367	3,882	91.36%
2011	1,432	7,259	83.52%
2012	1,123	5,882	83.97%
2013	1,524	7,971	83.95%
2014	1,323	5,367	80.22%
2015	1,551	6,062	79.63%
2016	1,311	5,500	80.75%
2017	549	2,352	81.08%

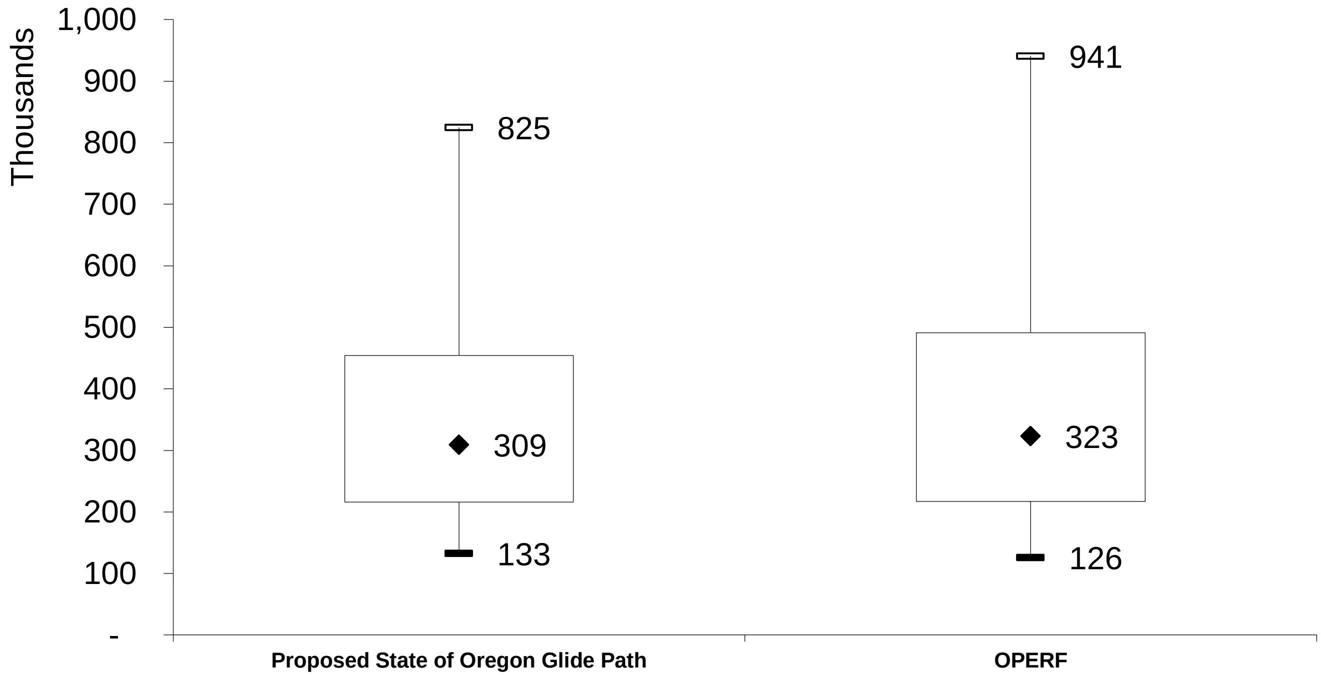
For reference only. No impact on glide path design.

NOTE: The source for the above table is all applicable completed retirements from internal IAP Disbursements tracking database. This includes accounts for which **IAP balance** at retirement was not immediately available; these accounts are not included in the above charts.

Data as of December 31, 2016 provided by PERS

Lower Growth Allocation Approaching Retirement Leads to Lower Long Term Median Return But Provides Better Long Term Downside Protection

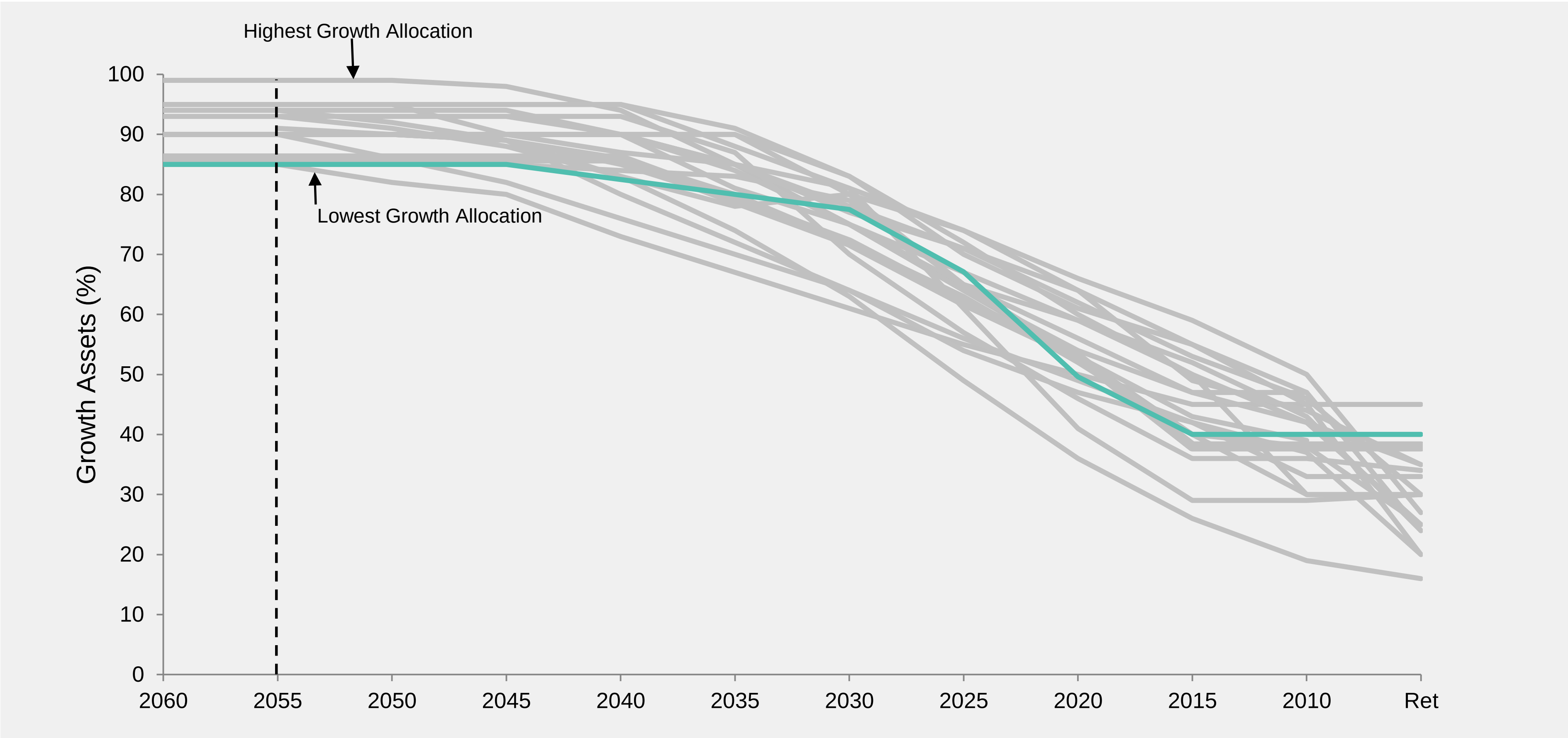
Simulated Account Balance at Retirement
(in thousands, age 25 saving until age 65 with 0 initial balance)



Based on 10K trial of Monte Carlo Simulation with CME initial market condition as of 2016Q4

Proposed State of Oregon Glide Path vs. Off-the-Shelf TDF Products

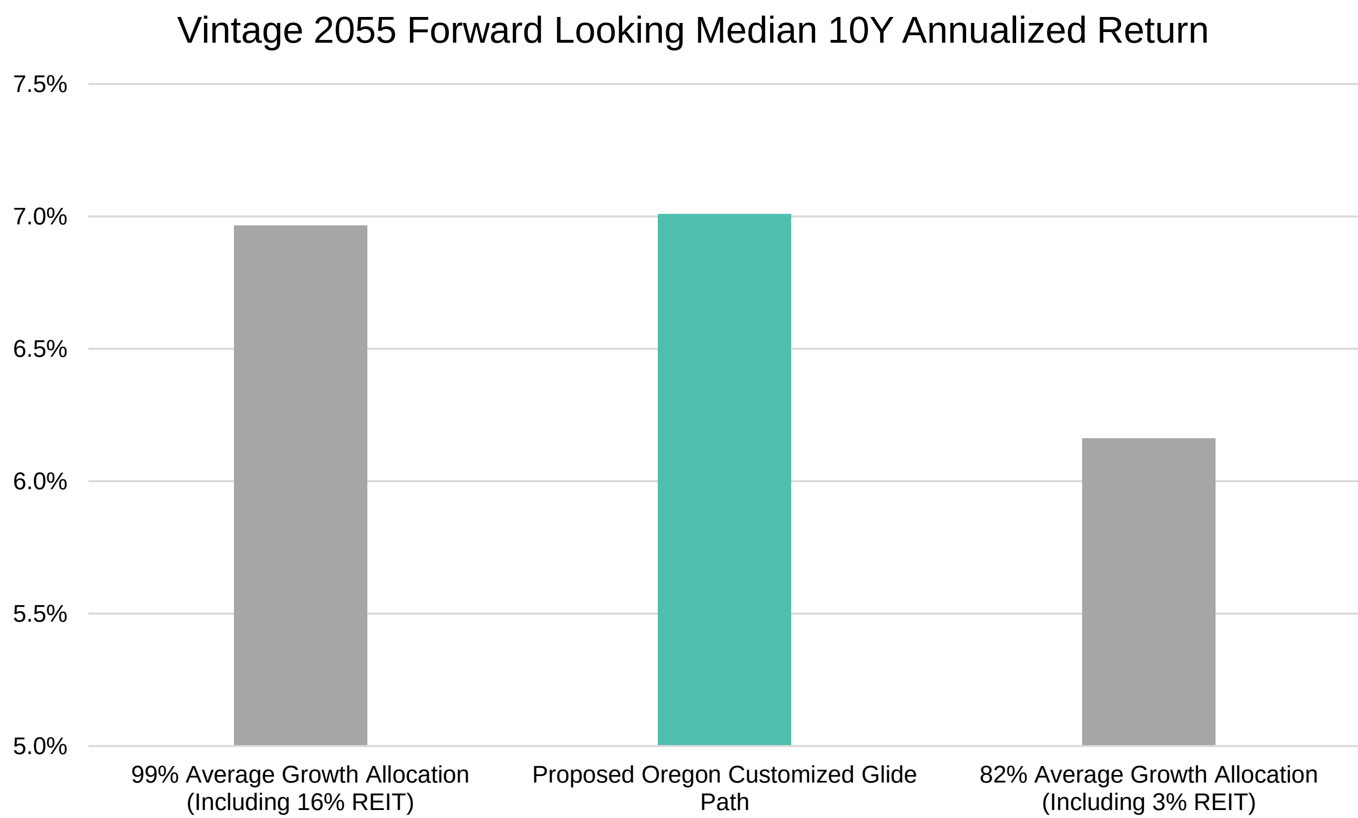
Glide Path Growth Asset Allocation Comparison



Source: Morningstar, Morningstar TDF Reports and Prospectus. Data as of December 31, 2016. Equity Allocation(%) includes real assets such as commodities, real estate, natural resources and other equity-like alternatives.

Proposed State of Oregon Glide Path vs. Off-the-Shelf TDF Products

Vintage 2055 Forward Looking 10Y Return Comparison



Based on 10K trial of Monte Carlo Simulation with CME initial market condition as of 2016Q4

The Capital-Markets Engine

The Bernstein Capital-Markets Engine is a proprietary model that uses our research and historical data to create a vast range of market returns, which takes into account the linkages within and among the capital markets, as well as their unpredictability; and finally (4) A Probability Distribution of Outcomes: based on the assets invested pursuant to the stated asset allocation, 90% of the estimated ranges of returns and asset values the client could expect to experience are represented within the range established by the 5th and 95th percentiles on "box-and-whiskers" graphs. However, outcomes outside this range are expected to occur 10% of the time; thus, the range does not establish the boundaries for all outcomes. Expected market returns on bonds are derived taking into account yield and other criteria. An important assumption is that stocks will, over time, outperform long bonds by a reasonable amount, although this is in no way a certainty. Moreover, actual future results may not meet Bernstein's estimates of the range of market returns, as these results are subject to a variety of economic, market and other variables. Accordingly, the analysis should not be construed as a promise of actual future results, the actual range of future results or the actual probability that these results will be realized. The information provided here is not intended for public use or distribution beyond our private meeting.

Takeaways

- Due to PERS "annual earnings" accounting approach for IAP, modifying IAP can only be made at the end of each calendar year.
- Treasury, at the direction of the OIC, is responsible for IAP investments (i.e., the "simple stuff"). PERS, at the direction of its board, is responsible for IAP administration (i.e., the "hard stuff"). While this TDF transition is a novel approach for OST and PERS, the financial services industry has considerable experience with similar implementations.
  - PERS and Treasury worked with AB to design the glide path (i.e., the asset allocation for the TDFs) and with SSGA to manage the IAP index funds.
  - Voya Financial will provide projected values by participant for AB to use in calculating fund flows from OPERF to the index funds (approximately $2 billion at initial implementation).
  - State Street Bank is standing by to implement related custody and fund accounting changes.

With recent OIC policy and investment approvals and all external partners now engaged, Treasury is ready to implement when PERS is ready.

Oregon
Kate Brown, Governor

Public Employees Retirement System
Headquarters:
11410 S.W. 68th Parkway, Tigard, OR
Mailing Address:
P.O. Box 23700
Tigard, OR 97281-3700
888-320-7377
TTY (503) 603-7766
www.oregon.gov/pers

September 29, 2017

TO: Members of the PERS Board

FROM: Marjorie Taylor, Senior Policy Director

SUBJECT: Legislative Update

EXECUTIVE RECRUITMENTS

As directed in Senate Bill 5534 and House Bill 5006, PERS opened executive recruitments for the positions of Deputy Director and Chief Financial Officer. Evaluations are complete for the Deputy Director recruitment and the position should be filled before this meeting. Applications are being accepted for the Chief Financial Officer position, and we expect the position to be filled by December 1. These staffing changes may require some agency reorganization, and we anticipate engaging the Legislative Fiscal Office and Chief Financial Office in that conversation.

GOVERNOR'S PERS UAL TASK FORCE

The Governor's PERS UAL Task Force has met three times. The seven-member, volunteer panel has proposed a variety of potential one-time or on going sources of funds that may be applied to the PERS unfunded actuarial liability. Information about the task force's activities can be located on their web site at http://www.oregon.gov/gov/policy/Pages/PERS-UAL-TASK-FORCE.aspx.The next, and probably last, meeting of the task force is scheduled for October 13, 2017; its final report is due to the Governor by November 1.

SEPTEMBER 2017 LEGISLATIVE DAYS

As directed by budget notes in Senate Bill 5534, PERS and the Office of the State Chief Information Officer reported to the Joint Interim Committee on Information Management and Technology on several agency initiatives for the Information Security Program; Business Continuity and Disaster Recovery Programs; status of the Individual Account Program administration project; and State Data Center usage analysis. The presentation slide deck is attached for reference.

WELCOME NEW BOARD MEMBER

During September legislative days, the Senate Rules Committee considered the appointment of Steven Demarest as a new member of the PERS Board. His appointment was confirmed by the Senate and we welcome him to his first board meeting. Mr. Demarest replaces Pat West in the position that is required to be filled by someone in, or retired from, a bargaining unit.

C.2. Attachment 1 – Budget Note Report Senate Bill 5534

Oregon Public Employees Retirement System

Budget Note Report – Senate Bill 5534

Joint Legislative Committee on Information Management and Technology

September 19, 2017

C.2. Attachment 1

PERS Oregon Public Employees Retirement System

Presentation Overview

Four Budget Notes were included in the PERS agency budget – Senate Bill 5534

These notes directed PERS to jointly report, under the direction of the Department of Administrative Services – Office of the State Chief Information Officer, to the Interim Joint Legislative Committee on Information Management and Technology during Legislative Days in September and November 2017 and to the Legislature during its 2018 session on the following topics:

1. Develop and implement an industry standard Information Security Program, including defining the long-term maintenance, operation, and funding plans for the program
2. The status of the Individual Account Program
3. Develop and implement an industry standard: a) Business Continuity Program; and b) Disaster Recovery Program and Disaster Recovery Warm-site
4. Complete a comprehensive State Data Center usage analysis as requested in April 2016 and jointly report on the feasibility study findings

This presentation contains these reports for the September 2017 legislative days. In developing this report, we appreciate the collaboration and coordination provided by the OSCIO's management and staff, who have reviewed and commented to us on the report's contents.

In addition, we provide a brief overview of how we propose to manage these program initiatives comprehensively.

1. Information Security Program – Background

2015-17 Biennium Activities

- In April 2016, PERS was directed, in a joint letter from OSCIO and LFO to complete 16 Information Security priorities
- **Information Security Enhancements Project** PERS contracted with HP Enterprise Security to support remediation activities and planning for an improved Information System program *(Project completed June 2017)*
- **Project deliverables** PERS delivered the Security Plan, Disaster Recovery Plan, Business Continuity Plan and other artifacts to the State CIO and CISO for review and approval
- **Funding and staffing** for the PERS Cybersecurity Program were requested as part POP #101; although support services funding was approved through that POP, all program staffing was transferred to OSCIO through Senate Bill 90

1. Information Security Program – Current Status

OSCIO Enterprise Security Office (ESO) engagement in assessment and completion of PERS security deliverables

Collaborative effort to complete remaining priorities

- **Security Plan:** Updated – Expect ESO approval by September 30, 2017
- **Disaster Recovery Plan (DRP)** and **Business Continuity Plan (BCP):** ESO recommendations completed – Expect ESO approval by September 30, 2017
- **Incident Response Plan:** Completed & signed
- **PERS Security Policies** and **Information Security Training Program Development:** On-track to complete by September 30, 2017
- **PERS Information Security Program Project (POP #101):** Complete program deployment including staffing, information security training, remaining critical remediation activities, and ongoing program operations (dependent of Information Security resources) still being developed

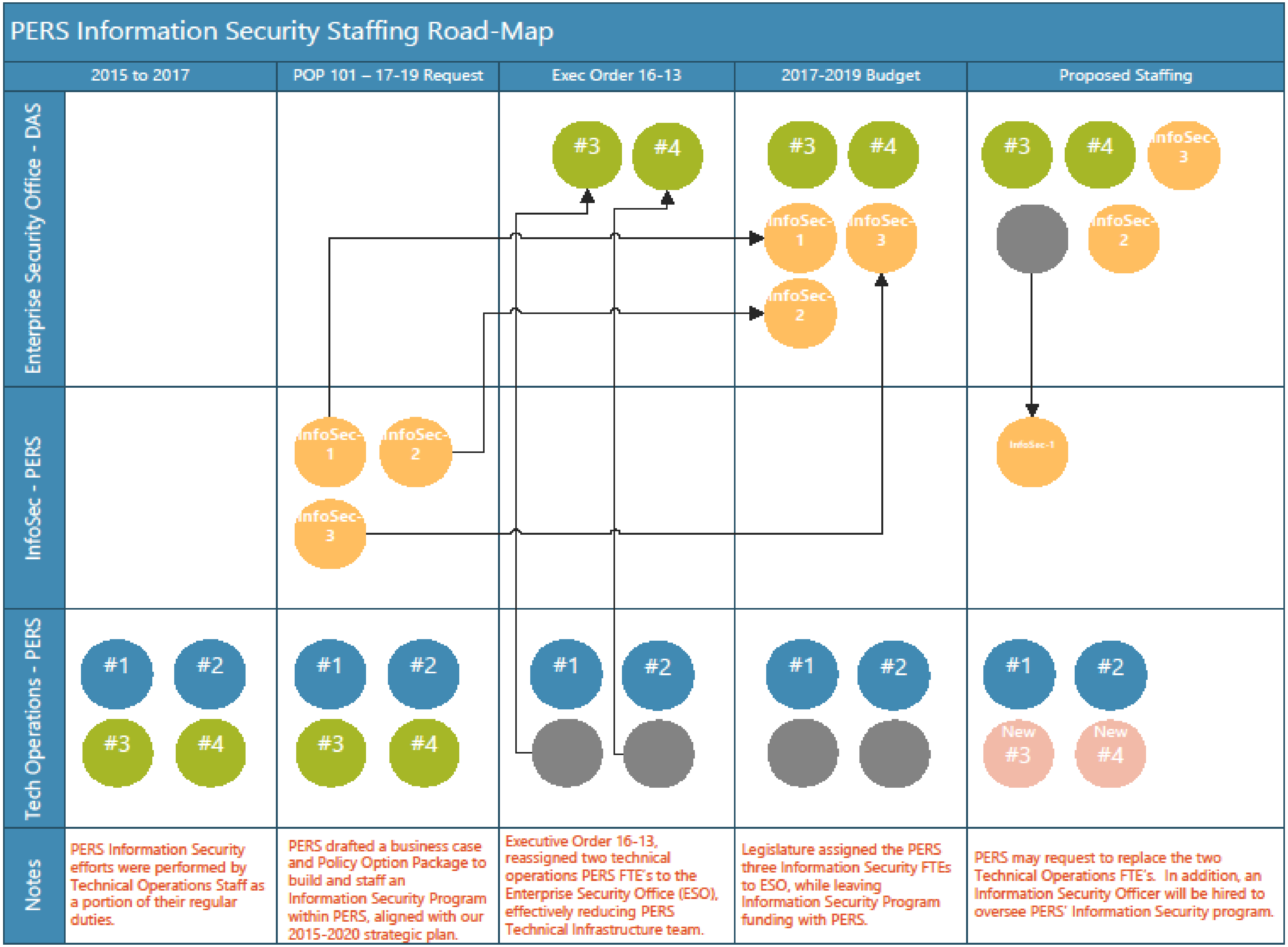
1. Information Security Program – Next Steps

PERS Information Security Resources

- Develop an Information Security Resource Plan for PERS *(In progress)*
- Hire a permanent Information Security Officer (ISO) to assist PERS with the implementation of their Security Program and remediation efforts
- Transition the two technical operations positions, which were reassigned to OSCIO/ESO as part of Senate Bill 90, to focus on PERS Information Security operations and remediation efforts
- Work with LFO/DAS CFO to replace the two technical operations positions to restore agency technical operations support

Next Steps

- November 2017 status update (staffing and program status)


PERS Information Security Staffing Road-Map
2015 to 2017
POP 101 – 17-19 Request
Exec Order 16-13
2017-2019 Budget
Proposed Staffing
Enterprise Security Office - DAS
InfoSec - PERS
Tech Operations - PERS
Notes
#1
#2
#3
#4
InfoSec-1
InfoSec-2
InfoSec-3
New #3
New #4
PERS Information Security efforts were performed by Technical Operations Staff as a portion of their regular duties.
PERS drafted a business case and Policy Option Package to build and staff an Information Security Program within PERS, aligned with our 2015-2020 strategic plan.
Executive Order 16-13, reassigned two technical operations PERS FTE's to the Enterprise Security Office (ESO), effectively reducing PERS Technical Infrastructure team.
Legislature assigned the PERS three Information Security FTEs to ESO, while leaving Information Security Program funding with PERS.
PERS may request to replace the two Technical Operations FTE's. In addition, an Information Security Officer will be hired to oversee PERS' Information Security program.

2. IAP Administration Project – Update

Background

The agency proposed to eliminate the use of a third-party administrator (TPA) for record keeping and payment processing of the Individual Account Program (IAP). Current administration is split between PERS and a TPA, creating fundamental structural problems which lead to lengthy processing time and errors. When the conversion project is complete, TPA costs will be eliminated and member services will be improved.

Budget Requests and Outcomes

Phase I: Initiation – Planning and IAP Architecture Proof Of Concept

- June 2013 – September 2014
- Outcome: Completed independent Systems Architectural review and recommendations, architectural design document, and SOA Proof of Concept

Phase II: Elaboration – Initial requirements gathering and architecture development

- June 2014 – June 2015
- Outcome: Schedule was executed as planned

Phase III: Construction and Implementation – Construction and implementation of new system

- July 2015 to a target deployment date of January 2019
- Outcome: Legislatively adopted 2017-19 budget provided one half of the requested funding and position authority, with a direction to report back on project status

PERS Oregon Public Employees Retirement System

2. IAP Administration Project – Next Steps

The Legislative Fiscal Office recommended the IAP Program be partially funded for 2017-2019. A variety of external and internal factors have contributed to reconsidering the necessary scope, with resulting budget and schedule impacts. These factors include:

- Gaps in business requirements such as:
  - Financial reporting requirements needed earlier than originally planned;
  - Requirement for IAP prior year earnings needed earlier than planned; and
  - Revisions to IAP contributions data handling
- Possible new requirement to incorporate IAP Target Date Fund (TDF) reporting as directed by the Oregon Investment Council; this change will impact project requirements and require revisions to completed work
- Limited jClarety technical debt funding impacted IAP schedule dependencies, creating backlog items

PERS anticipates submitting a revised project budget request to the February 2018 session based on the revised scope and schedule necessary to address these factors.

3a. Business Continuity Program - Update

Background

In 2010, the PERS Executive Team approved a Business Continuity Plan (BCP). BCP planning was paused 2012-2015 during agency reorganization and implementation of a new management system. Work has resumed on updating and reinvigorating the agency's BCP.

Current Status

The updated draft of the BCP has been provided to the Enterprise Security Office (ESO) for review. The ESO has provided feedback focusing on the security elements within the plan.

The plan includes the following major elements:

- **Risk Analysis and Assessment** – evaluates potential consequences related to risks
- **Business Impact Analysis (BIA)** – prioritizes business functions by assessing the potential impact if PERS were to experience a business continuity event
- **Incident Response Plan** – contains policies, procedures, and contingency plans that enable staff to provide a rapid, coordinated, and effective response to a continuity event, protecting employees and agency assets while minimizing interruptions to business operations
- **Crisis Communication and Management Plan** – guidance to help agency management communicate information about the incident
- **Business Resumption Plan** – contains policies and procedures designed to enable business units to resume operations by using work-a-rounds until core business functions can be fully restored

3a. Business Continuity Program – Next Steps

- Continue collaboration with the OSCIO / ESO to obtain acceptance of current BCP deliverable (including security components), expected September 30, 2017
- Complete a roll-out plan for approving, training, testing and reviewing the BCP
- Steps will include:
  - Obtain final approval by PERS Executive Leadership Team;
  - Train key agency staff on their BCP responsibilities;
  - Perform a table-top exercise to test adequacy of the plan;
  - Update the plan with lessons learned from the exercise;
  - Provide awareness training to all staff; and
  - Evaluate the resources needed to adequately maintain a Business Continuity Program that meets industry standards and obtain the necessary resources

3b. Disaster Recovery Program – Update & Next Steps

Background

The PERS Disaster Recovery Plan (DRP) defines the necessary steps to ensure payment of pension benefits to current retirees in the event of a localized disaster that impacts the PERS Data Center. This is a stop-gap approach to ensure continued payment of benefits. Depending on the duration and extent of the outage, normal agency operations, such as starting new benefit payments or adjusting current payments, would resume over time.

Update

- Current PERS DRP submitted to OSCIO for review - Deliverable acceptance expected by September 30, 2017
- PERS and OSCIO agree further work is required to create a viable DRP for the Oregon Retirement Information Online Network (ORION) system
- Funding was approved for FY 17-19 as part of POP #804 for PERS to develop and implement an industry standard Disaster Recovery Program

Next Steps

PERS and OSCIO agree further work is required to create a viable DRP for ORION. Immediate priorities (prior to comprehensive program development) include:

- Develop ORION DR plan in collaboration with OSCIO/ETS
- Update ORION DR plan following Backup Data Center (DR/Warm Site) implementation

4. State Data Center Use Analysis and Migration - Background

- In April 2016, PERS was directed to perform a State Data Center (SDC) use analysis as part of the prioritized Information Security planning effort
- PERS engaged with OSCIO / ETS on **SDC use analysis and data center migration planning** in 2016 with an initial focus on providing critical disaster recovery (DR) services prior to migration of the production data center
- **Urgency -** PERS does not have a backup / disaster recovery (DR) site to support critical operations in the event of a disaster impacting ability to operate the primary data center
- Funding for the **Backup Data Center (Disaster Recovery / Warm Site)** project was approved as part of POP #805

PERS Oregon Public Employees Retirement System

4. State Data Center Migration – Update & Next Steps

Current Status and Priorities

- The PERS Data Center Migration roadmap is being revised in collaboration with OSCIO / ETS to align with current opportunities and priorities
- Formal documentation summarizing the SDC Usage Analysis and Data Center Migration Plan in development
- High-level roadmap
  - Data Center Migration Plan
  - Backup Data Center (Disaster Recovery / Warm Site) planning and implementation
  - Migration of new or existing services to SDC
  - Production Data Center migration
    (Tentatively co-location following SDC power upgrade)

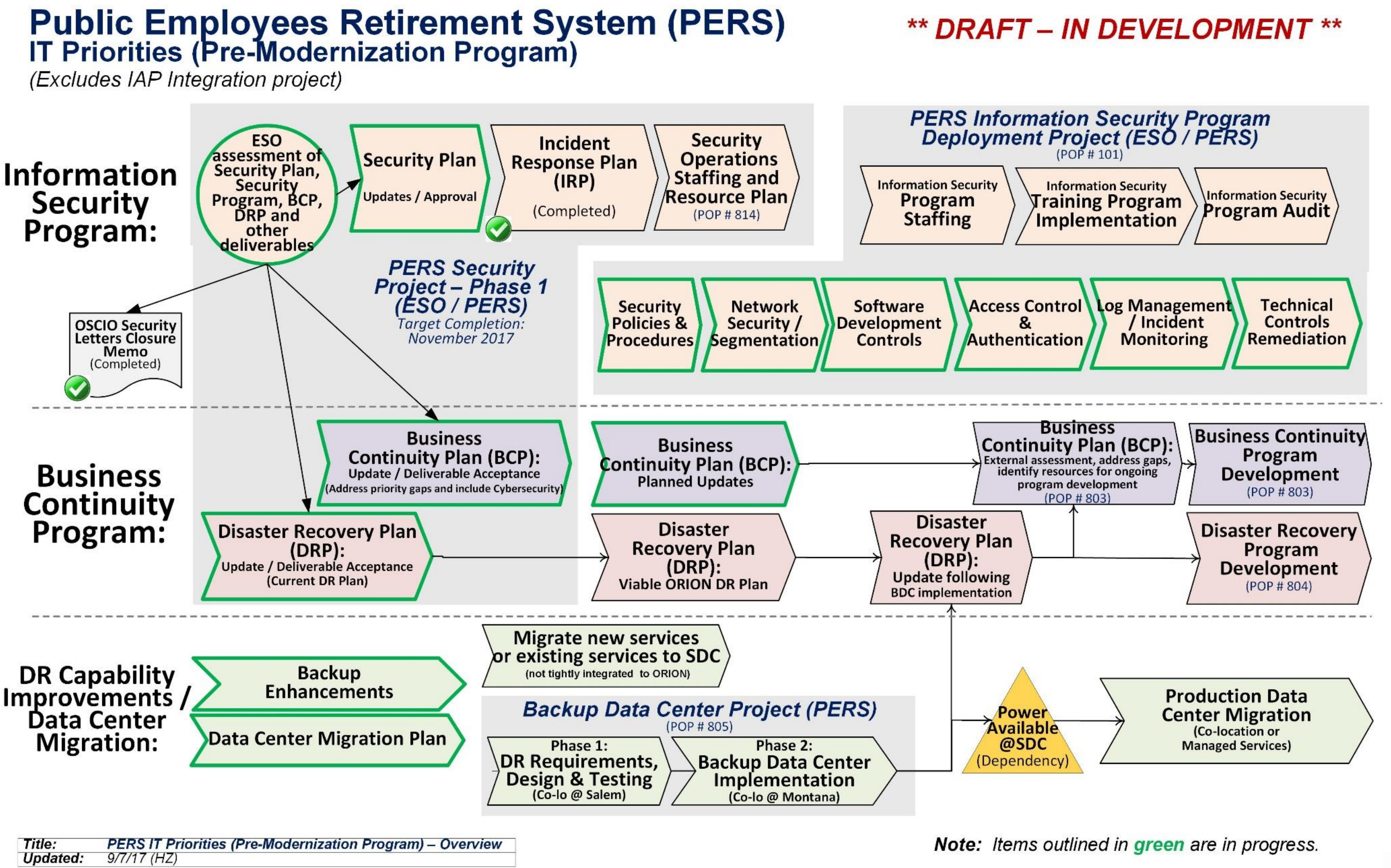
Next Steps

- Complete summary documentation on SDC use analysis and PERS Data Center Migration Plan
- Initial planning for **Backup Data Center (Disaster Recovery**) project (POP # 805)
- November 2017 status update

Program Management Overview – Introduction

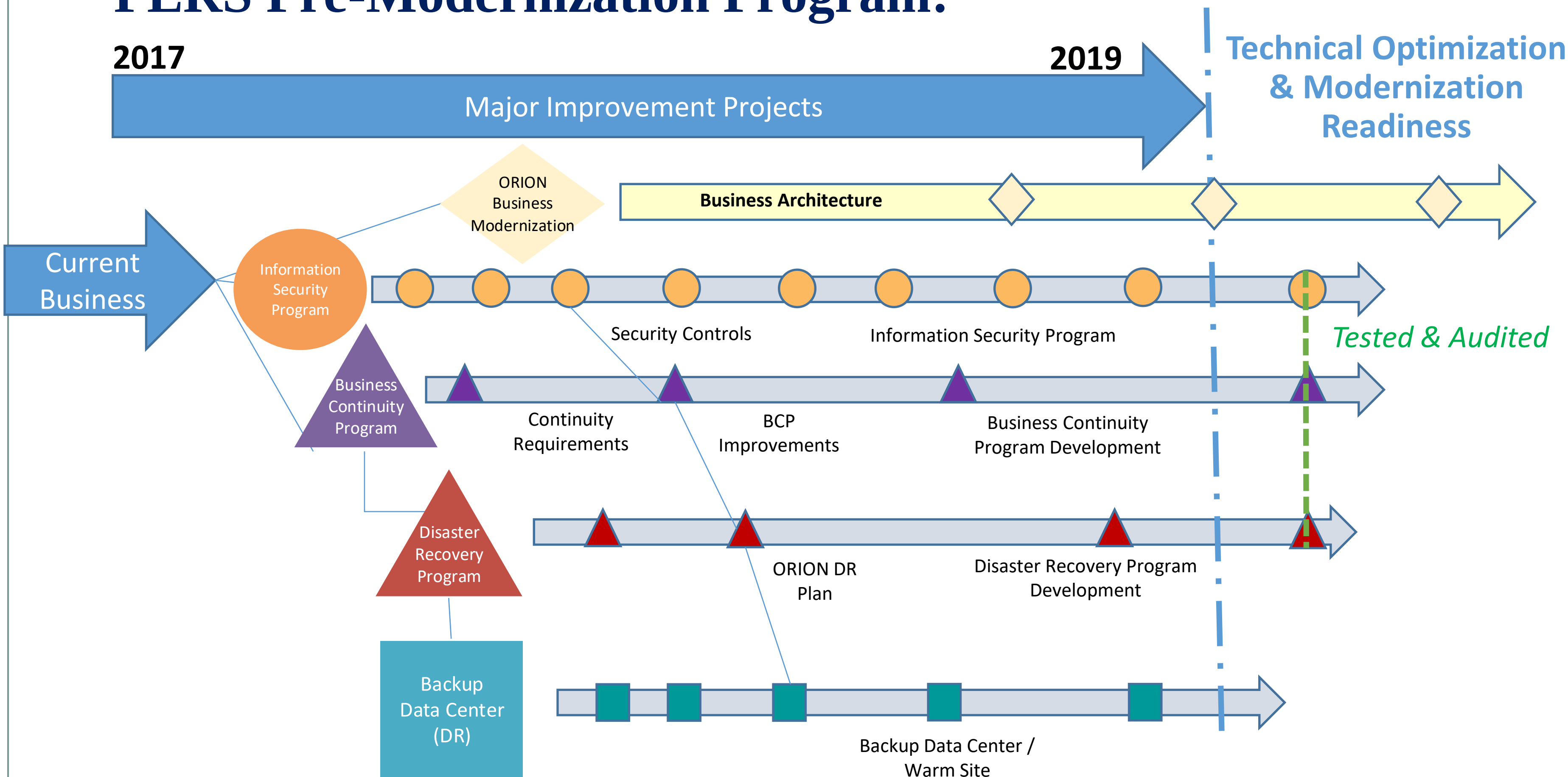
- **Legislative expectations -** PERS is expected to complete or make significant progress on all approved 2017-19 IT initiatives prior to initiating the *ORION Modernization Program*
- **Relationships, dependencies and resource contention** between planned Information Security, Business Continuity, and Disaster Recovery improvements
- OSCIO recommends PERS plan to manage projects and activities as part of an **integrated program**
- OSCIO to provide **project oversight** and guidance to PERS
- **Initial planning -** PERS is in the process of defining program components and resource needs

Program Management Overview



Program Management Overview

PERS Pre-Modernization Program:



PERS Oregon Public Employees Retirement System

Program Management Overview - Next Steps

- **Prioritization and sequencing** of all related IT deliverables
- Program and Project Management **staffing**
- Further **definition of program and component projects** including identification of relationships, dependencies, and constraints
- November 2017 status update

Oregon

Kate Brown, Governor

Public Employees Retirement System
Headquarters:
11410 S.W. 68th Parkway, Tigard, OR
Mailing Address:
P.O. Box 23700
Tigard, OR 97281-3700
(503) 598-7377
TTY (503) 603-7766
http://oregon.gov/pers

September 29, 2017

TO: Members of the PERS Board

FROM: Mary Dunn, Assistant Chief Administration Officer

SUBJECT: Allocation of Excess Contingency Reserve Funds

BACKGROUND

Senate Bill 1067 amended ORS 238.670 (1) to limit the Board's crediting of funds to the Contingency Reserve; specifically stating, "…the board may not credit further amounts to the reserve account if the amounts in the reserve account exceed $50 million." Additionally, the bill repealed 238.670(1)(c), which allowed the PERS Board discretion to use reserve funds "to provide for any other contingency that [they] may determine to be appropriate."

The Contingency Reserve is part of the PERS Fund, and ORS 238.660(2) provides that "assets of the fund may not be diverted or otherwise put to any use that is not for the exclusive benefit of members and their beneficiaries."

POLICY ISSUE

Should the excess funds over the newly designated funding level of $50 million be transferred to the Benefits in Force Reserve (BIF) along with the previously designated $345.8 million?

At its April 2017 meeting, the PERS Board preliminarily approved allocating $345.8 million from the Contingency Reserve to the BIF. Those funds were the excess above the Contingency Reserve funding level that the PERS Board had previously adopted. By allocating these excess reserve funds to the BIF, the funds would be accounted for in the system valuation as assets available to pay benefits, reducing the system's unfunded actuarial liability. Additionally, the BIF is currently underfunded relative to the liability owed for members currently receiving benefit payments. These reasons still support allocating the additional excess funds to the BIF. As of September 15, 2017, the Contingency Reserve balance is $582.7 million; the total BIF allocation would be $532.7 million, which includes the previously approved $345.8 million.

Contingency Reserve	Associated Action
$582.7 million	• Contingency Reserve balance as of 9/15/17
-$345.8 million	• Set aside to BIF from April Board meeting
$236.9 million	
-$50.0 million	• Senate Bill 1067 funding limit
$186.9 million	• Board to make recommendation on allocation
Cumulative Total	• Total re-allocation from Contingency Reserve in 2017
$345.8 million	
$186.9 million	
$532.7 million	

How should previous Board approved uses of the Contingency Reserve, which have not yet been transferred out of the reserve, be accounted for?

On November 18, 2016, the PERS Board approved a request from the Employer Advisory Group to use the Contingency Reserve to cover contributions and earnings resulting from correcting the OPSRP Contribution Start Date; those costs were estimated to be $21,809,890. Moving all of those funds at once is impractical given the magnitude of corrections that will result from this project and that PERS is still refining details of these corrections with impacted employers. Therefore, the funds have not yet been moved out of the Contingency Reserve for this effort. Additionally, the total financial impact won't be known until the project is complete, which may take years as there is no particular urgency unless the potentially affected member withdraws or is retired (at which point any needed corrections are made).

Therefore, staff recommends covering the costs of the OPSRP Contribution Start Date issue, as requested by the Employer Advisory Group and approved by the PERS Board, out of the $50 million remaining in the Contingency Reserve once the project begins. As those draws are made, the Reserve could be restored to the maximum funding level, if the PERS Board chooses to do so, from future earnings in excess of the assumed rate.

Should the Employer Contingency set aside for Insolvent Employers be reduced?

$25 million of the total current Contingency Reserve balance has been earmarked for employer insolvencies; about 5% of the current reserve. At its July 2017 meeting, PERS staff received approval from the PERS Board to resolve its first request to address insolvent employers. That request was for three employers, totaling $463,955. Based on that history and context, staff recommends that the new Contingency Reserve funding level (reduced to $50 million) include $2.5 million for employer insolvency, representing 5% of the new balance.

NEXT STEPS

Staff will seek stakeholder input on these issues regarding funding and allocation of the Contingency Reserve until November 10, 2017. We will then present a final recommendation based on any comments received to the PERS Board at its December 1, 2017 meeting.

Please note that any allocation of the Contingency Reserve that is adopted to be effective in the 2017 calendar year will be reflected in the 2017 system valuation and recognized during the subsequent employer rate setting cycle (for employer rates that take effect July 1, 2019).

Oregon

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www.oregon.gov/pers

September 29, 2017

TO: Members of the PERS Board

FROM: Dean Carson, Member Engagement & Communications Director

SUBJECT: 2017 Member & Employer Satisfaction Survey Results

PERS conducted satisfaction surveys for active and retired members as well as employers in August 2017. The 2005 Legislature required all agencies to survey for standardized customer service performance measures and report results in their budget presentations. In addition to these standard questions, we made a number of enhancements to the 2017 survey to gather information that aligns with goals and objectives from our 2015-2020 Strategic Plan.

The 2017 survey results continue to show good overall ratings from both members and employers. We will continue to conduct yearly surveys to measure improvement in the services we provide, and to give members and employers the opportunity to share their feedback.

MEMBER SATISFACTION SURVEY

PERS made a concerted effort to generate better active member participation in our 2017 survey. In 2016, we only received 1,381 responses, with 80% of those coming from retired members. So we opened new communication channels in 2017, such as promoting the survey link more prominently on our homepage and featuring direct links in the August 1 *Perspectives* newsletter (which is currently emailed to employers and posted online), including an “Editor’s Note” that explained more about PERS’ strategic efforts to engage members throughout their careers and connecting that effort to soliciting feedback through the survey to help us improve services. PERS also launched use of a new mass communications tool, GovDelivery, with an August 16, 2017 email to 188,500 members that included a link to the survey.

These expanded solicitation efforts resulted in 4,642 members taking the survey in 2017 – over 3,000 more responses than last year. Of those, 1,131 were active members and 3,511 were retired.

SURVEY CONTENT IMPROVEMENTS

We improved the survey content to help us build a communications strategy that aims at engaging PERS members throughout their careers and branding PERS as a retirement education and planning resource. New questions asked members how they currently receive information from or about PERS and what their preferred method of communication is: email, newsletters, in person, etc.

Responses show there are stark differences between active and retired members. Active members overwhelmingly prefer to receive information by email, the PERS website, and annual statements. Retired members continue to rely on our hard copy *Perspectives* newsletter or hard-copy correspondence.

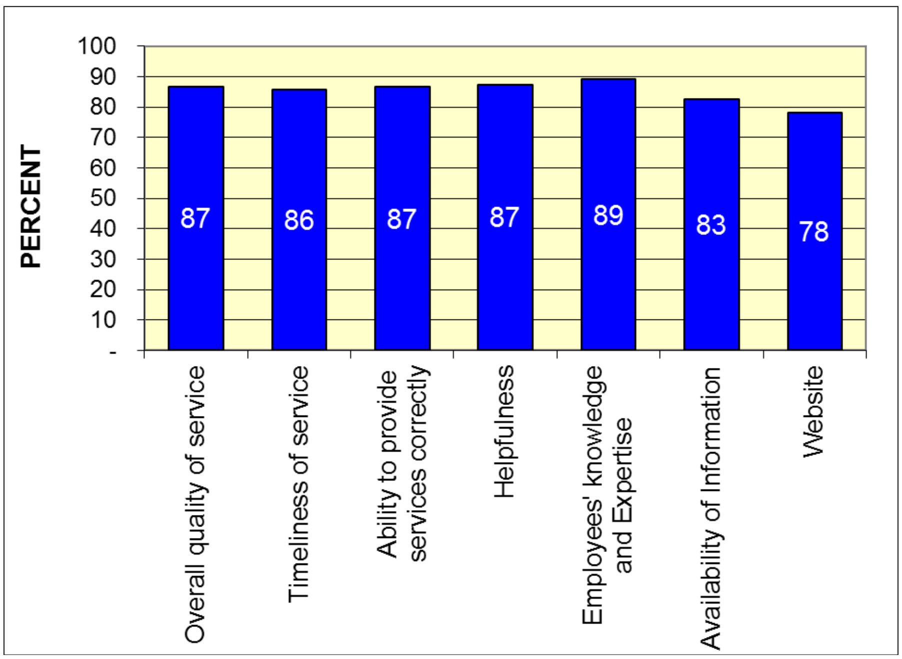
This year, we added several questions to help our member engagement efforts and benchmark ourselves with our peers. Two of the questions were:

- I feel confident my retirement is secure with PERS
- PERS sends communications that are relevant to my needs

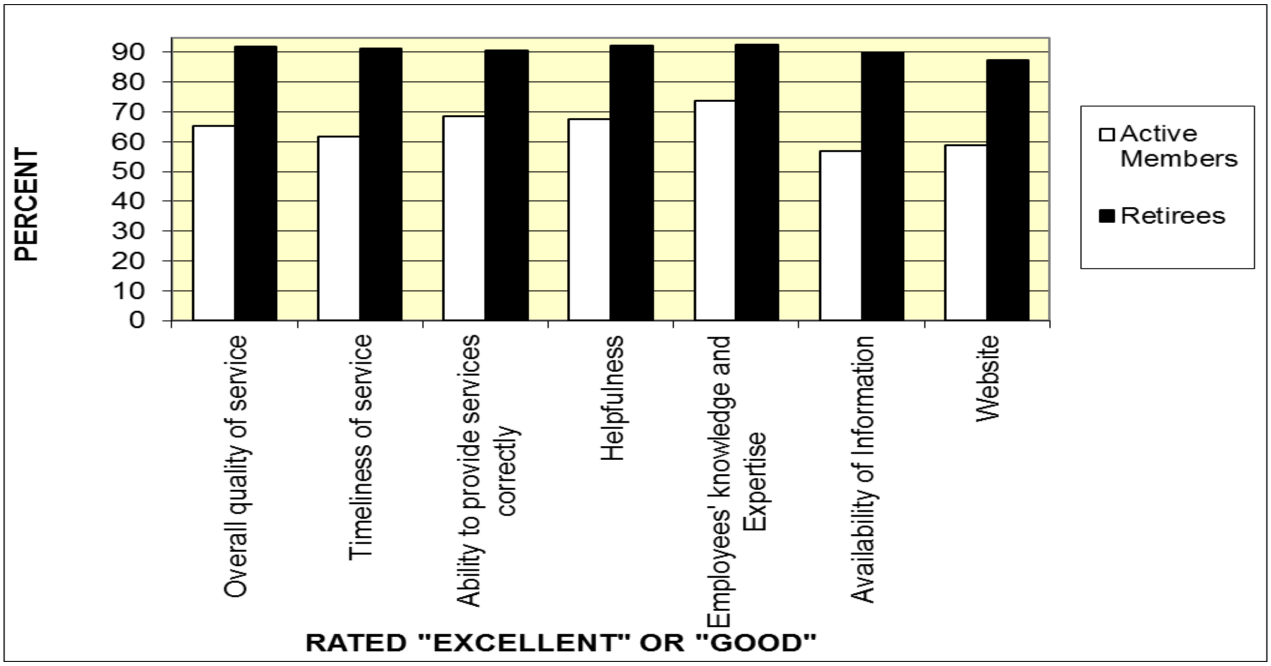
The responses for both of these questions had similar trends. The majority of retired members felt confident that their retirement is secure with PERS and we send relevant communications. Active members, however, were less confident and did not feel that PERS sends out relevant communications. This data will help us develop a more informed member engagement strategy.

2017 ACTIVE AND REIRED MEMBER RESULTS

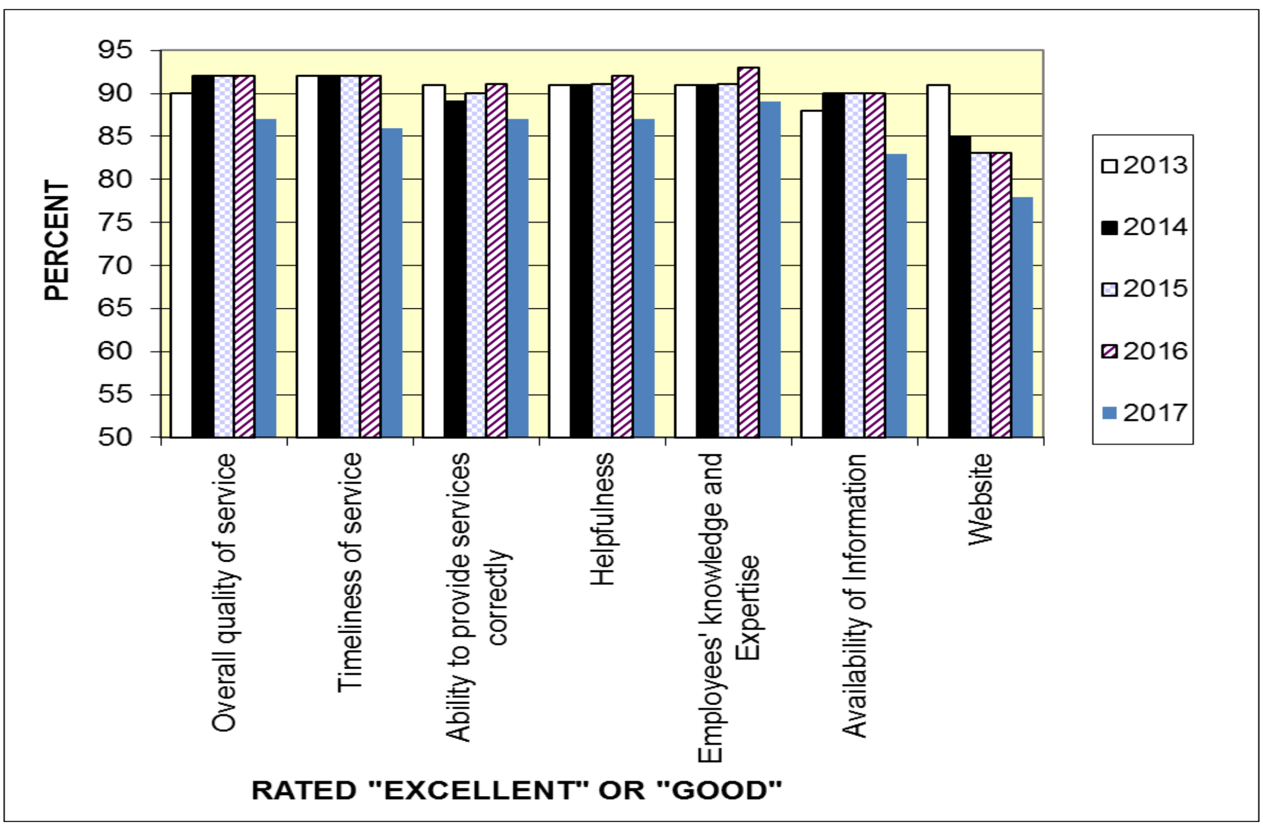
Percent of member respondents rating PERS “excellent” or “good.” State measures do not include “Don’t Know” responses and data have been rebaslined to exclude those responses.



COMPARISON OF 2017 ACTIVE AND RETIRED MEMBERS RESULTS



COMPARISON OF 2013-2017 MEMBER RESULTS



KEY MEMBER ISSUES AND SUGGESTIONS (in order of number of responses)

1. PERS Website

PERS unveiled a new website on April 25, 2017. Therefore, we eliminated survey questions about ease of navigation or suggestions for changes that were asked in the 2016 survey. However, members responded negatively to the redesigned website, so we may consider adding questions back to the 2018 survey regarding navigation and changes.

Resolution:

We need to refresh the website and solicit member input on changes that would be helpful. Whether people's negative feedback is due to being used to the old website or refers to the Online Member Services member portal, which was not updated in the transition, needs to be clarified in the future.

2. Call wait times

Call wait time was mentioned in a number of survey comments. Over the past year, call volume has increased dramatically because of potential legislative changes to PERS, as well as technical account issues throughout the year.

Resolution:

The Member Information Center is actively working to mitigate the increase in wait time. Implementation of new technology allowing members to request a 'callback' versus waiting on hold has helped. Creating a comprehensive knowledge database for call agents to use has allowed for more timely, accurate, and consistent call resolutions. We are recruiting to fill vacant positions, but the on-boarding process is lengthy given the broad, detailed knowledge required to respond to member calls. Lastly, we are evaluating other tools and methods to allow more effective member participation as well as enhance member self-service opportunities.

3. Timeliness for estimate requests and benefit adjustments

Some respondents reported that the wait time for an estimate or benefit adjustment is too long.

Resolution:

Staffing levels this past year were challenged by the hiring freeze and diverting resources to the *Moro* project, as well as unusually high staff turn-over impacting the Calculations team in particular, who provide the content for estimate requests and benefit adjustments. These staff challenges were coupled with unusually high retirement volume through the first part of this year as well. Recruitments have resumed and we have identified some immediate work force improvements to mitigate the backlogs that developed.

SURVEY METHODOLOGIES

To maximize member response, PERS posted the survey online in a prominent position on our home page. We also publicized access to the survey in our member newsletters. The online survey ran throughout August 2017. Further, hard copies of the survey were included in newsletters for retired members. This survey report combines the online and hard copy responses.

EMPLOYER SATISFACTION SURVEY

This was the eleventh year we have surveyed employers on a variety of topics. An employer satisfaction survey was posted online throughout August 2017. Employers received an e-mail inviting their participation; 274 responses were received including some individual comments. For comparison, we received 188 responses in 2016.

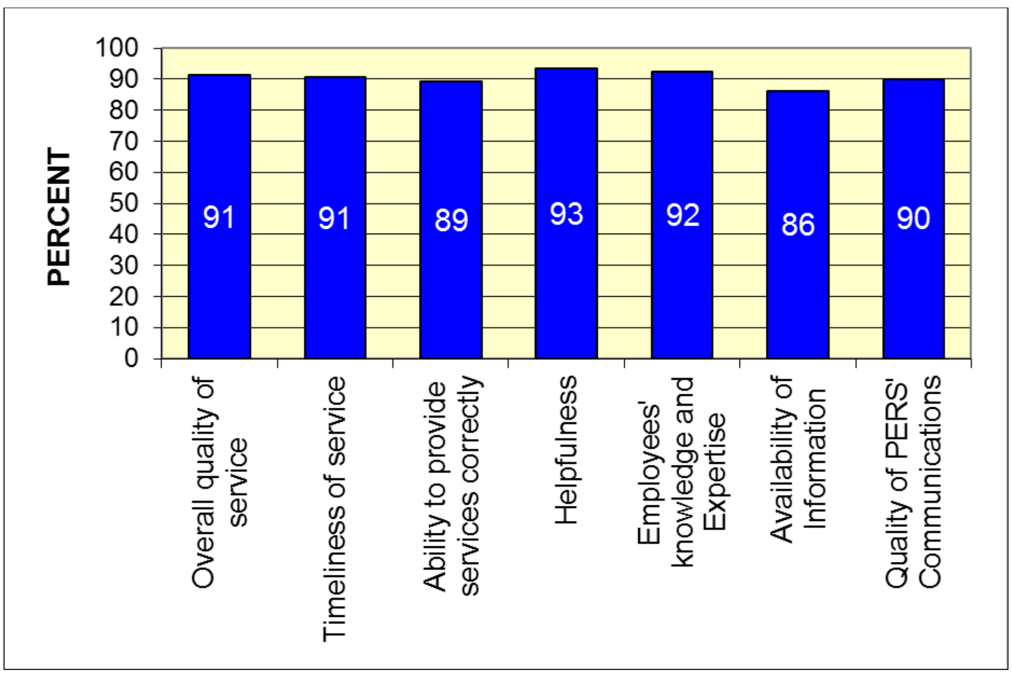
This year, we asked one question regarding the PERS employer website:

- How easy is it for you to find information on the PERS employer information website?

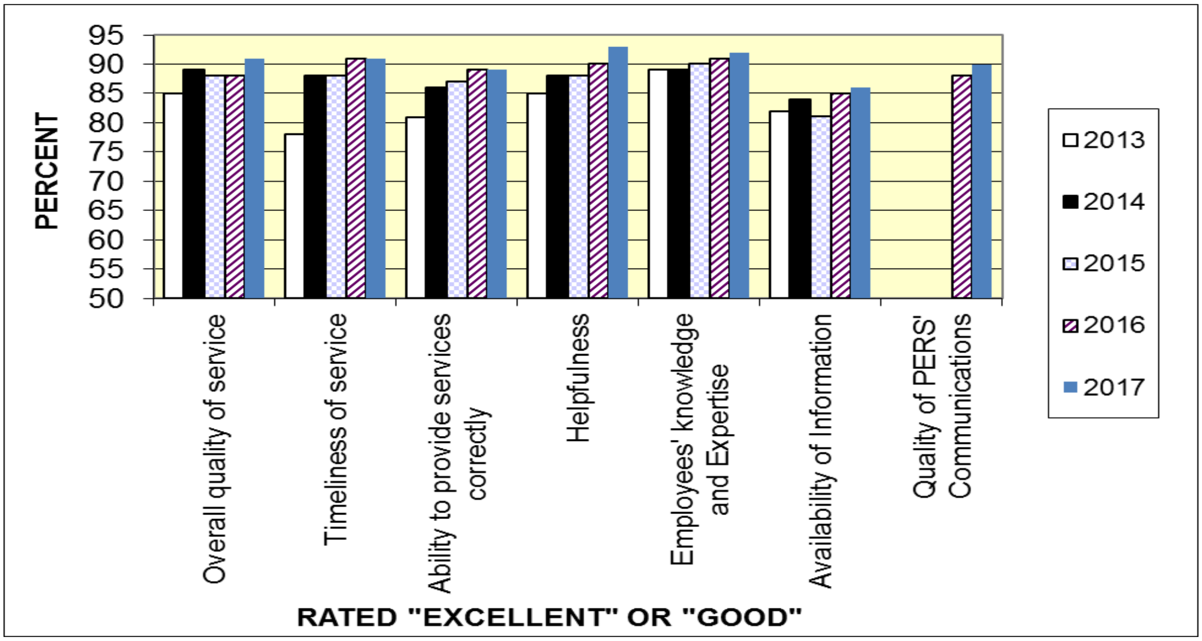
More than 91% of employer respondents said the employer website is "very easy" or "somewhat easy" to navigate. Even though we received positive ratings, there were comments on how hard it was to find specific information that employers were searching for.

2017 EMPLOYER SURVEY RESULTS

Percent of employers rating PERS "excellent" or "good." State measures do not include "Don't Know" responses and data have been rebaslined to exclude those responses.



COMPARISON OF 2013-2017 EMPLOYER RESULTS



KEY EMPLOYER ISSUES AND SUGGESTIONS (in order of number of responses)

1. Employer reporting system

Employers noted again this year that access to information and navigation in the employer reporting system (EDX) could be improved.

Resolution:

We will continue to look for enhancements that simplify and improve reporting for employers. The technology modernization plan could address some underlying system functionality in EDX that causes system delays in loading information.

2. PERS Website

Employers also had numerous comments about the new website. We will solicit input from employers about what changes would be helpful, but need to clarify whether this negative feedback is due to lack of familiarity with the new website.

SURVEY METHODOLOGIES

To maximize employer responses, we created this survey online and sent an email to all employers inviting them to participate. We set the survey so more than one employee per employer could respond since we often interact with more than one employer contact. The survey included a comments section, the most common of which are addressed earlier in this report.

Milliman

PERS Board Meeting

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

Presented by:
Matt Larrabee, FSA, EA
Scott Preppernau, FSA, EA

September 29, 2017

Introduction

- Today we will review summary valuation results for:
  - Tier 1/Tier 2 & OPSRP retirement programs
  - Retiree Health Insurance Account (RHIA), and
  - Retiree Health Insurance Premium Account (RHIPA)
- Formal, detailed results will be presented in our forthcoming December 31, 2016 System-Wide Actuarial Valuation Report
- Results are advisory in nature
  - Indicate where 2019 – 2021 contribution rates would be if set today
  - Assess program funded status and unfunded actuarial liability (UAL)
- All work is based on:
  - Asset levels and member demographics at year-end 2016
  - Updates to methods and assumptions from the 2016 Experience Study
- PERS will deliver employer-specific advisory reports this fall

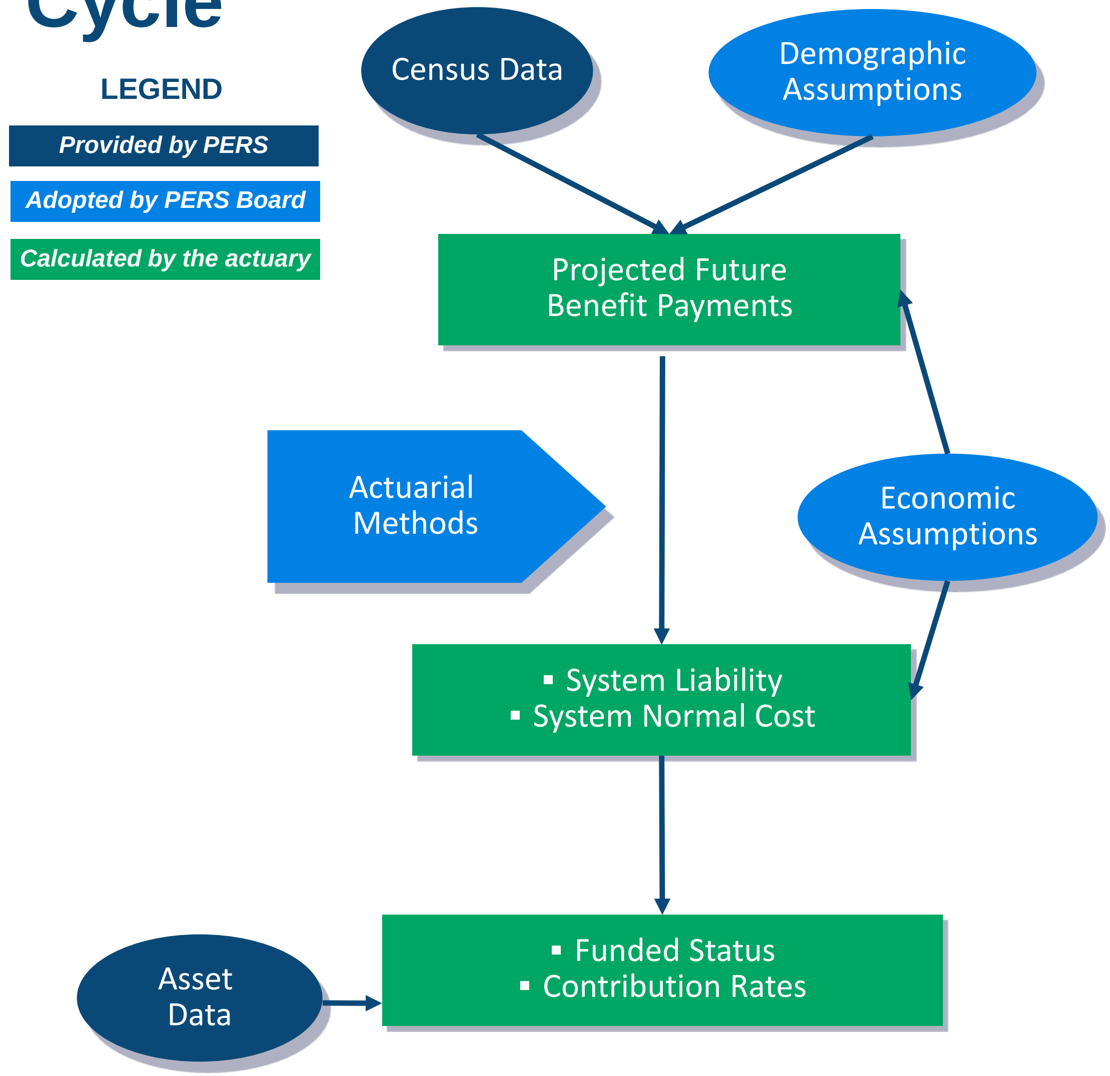
Valuation Process and Timeline

- Actuarial valuations are conducted annually
  - Alternate between "rate-setting" and "advisory" valuations
  - The 12/31/2016 valuation is advisory
- The Board adopts employer contribution rates developed in rate-setting valuations, and those rates go into effect 18 months subsequent to the valuation date

Valuation Date	Employer Contribution Rates
12/31/2015 →	July 2017 – June 2019
12/31/2017 →	July 2019 – June 2021
12/31/2019 →	July 2021 – June 2023

Two-Year Rate-Setting Cycle

- July 2017: Assumptions & methods adopted by Board in consultation with the actuary
- September 2017: System-wide 12/31/16 actuarial valuation results
- November 2017: Advisory 2019-2021 employer-specific contribution rates
- July 2018: System-wide 12/31/17 actuarial valuation results
- September 2018: Disclosure & adoption of employer-specific **2019-2021** contribution rates



Board Objectives - Methods & Assumptions

- Transparent
- Predictable and stable rates
- Protect funded status
- Equitable across generations
- Actuarially sound
- GASB compliant

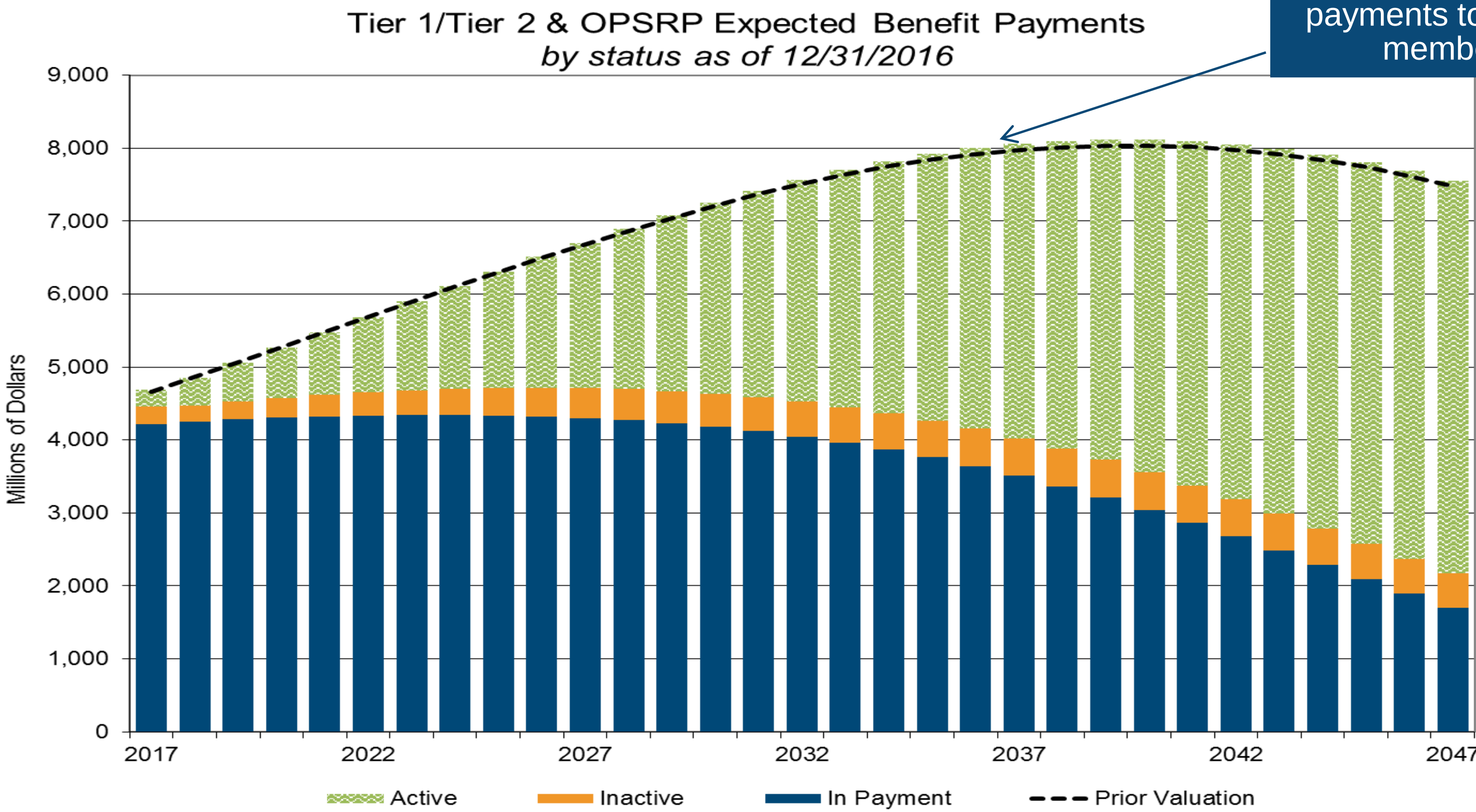
Some of the objectives can conflict, particularly in periods with significant volatility in investment return or projected benefit levels. Overall system funding policies should seek an appropriate balance between conflicting objectives.

Changes Since the Last Valuation

- The 12/31/2015 rate-setting actuarial valuation developed 2017-2019 contribution rates
- Since the 12/31/2015 rate-setting valuation:
  - The PERS Board adopted new assumptions and methods from the 2016 Experience Study, including lowering the investment return assumption from 7.50% to 7.20%
  - 2016 asset returns were modestly less than assumed, with an actual single-year return of approximately +7.1%

Projected Benefit Payments

By 2036, projected to be $8 billion in benefit payments to current members



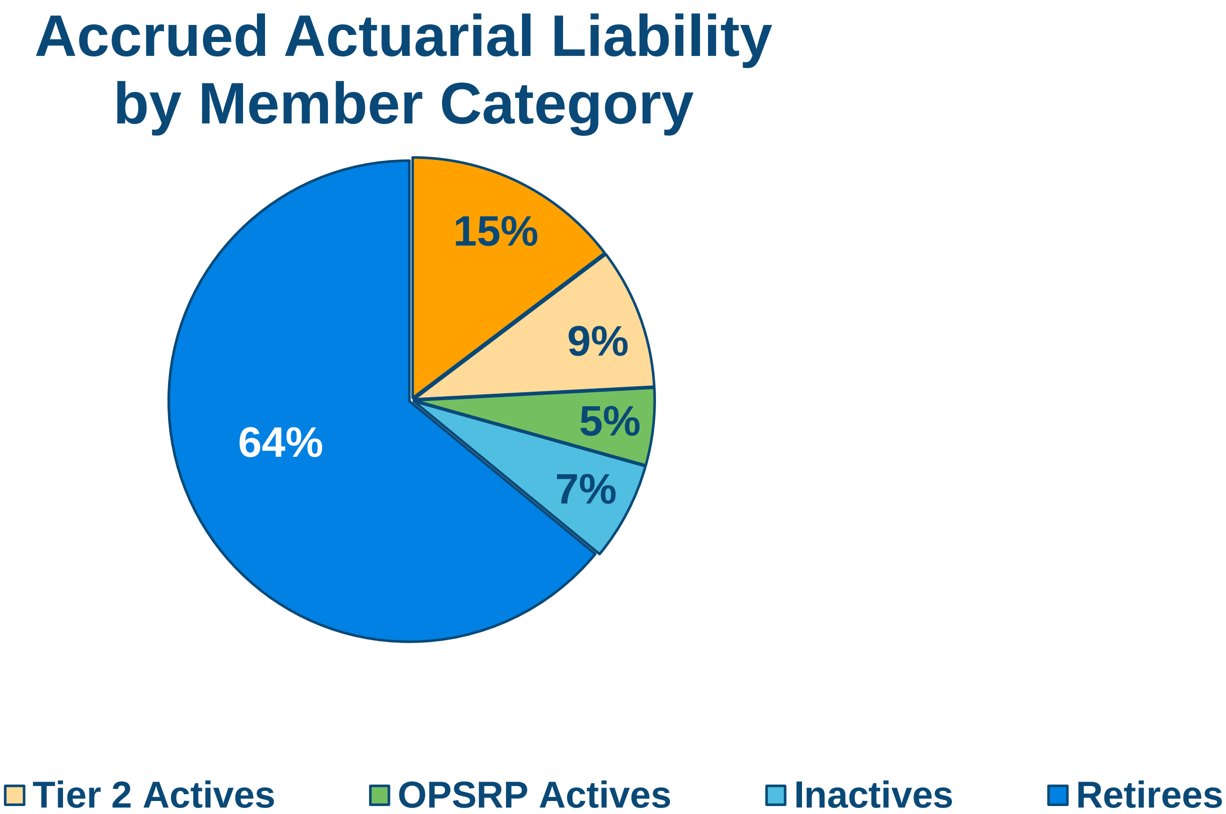
As illustrated by the dotted line, projected benefit payments did not change significantly between the prior and current actuarial valuation

Funded Status & Unfunded Actuarial Liability (UAL)

System-total Pension Funded Status ($ billions)		
Valuation date:	**12/31/2015**	**12/31/2016**
Assumed return:	*7.50%*	*7.20%*
Actuarial liability	$ 76.2	$ 81.0
Assets (excluding side accounts)	54.4	55.7
UAL (excluding side accounts)	$ 21.8	$ 25.3
Funded status (excluding side accounts)	71%	69%
Side account assets	$ 5.6	$ 5.4
UAL (including side accounts)	$ 16.2	$ 19.9
Funded status (including side accounts)	79%	75%

Division of Actuarial Liability by Category

12/31/2016 Tier 1/Tier 2 and OPSRP Actuarial Liability



Accrued Actuarial Liability represents the present value of projected future benefits allocated to service performed through December 31, 2016

Sources of 2016 UAL (Excl. Side Account) Increase

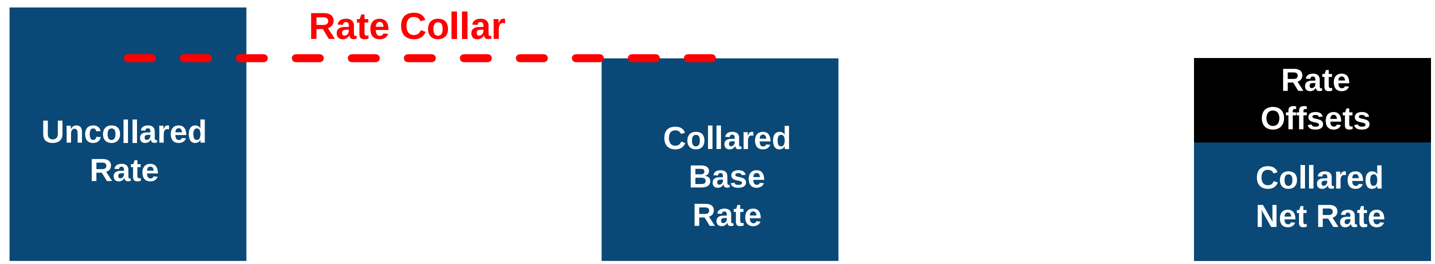
($ billions)	UAL Increase
Expected UAL increase/(decrease) during 2016	$ 1.1
2016 actual investment performance	0.0
Decrease in assumed return from 7.50% to 7.20%	2.3
All other assumption changes	0.0
Actual demographic experience different than assumed	0.1
Total	$ 3.5

- The *expected UAL increase/(decrease)* is the change, based on 12/31/2015 valuation results, that was projected to occur during 2016 due to the effects of the rate collar and other constraints on employer rate increases if all actual 2016 experience followed that valuation's assumptions
- Reported 2016 actual returns and crediting were sufficiently close to the assumed return such that the UAL increase effect rounds to $0.0 billion in the table

Tier 1/Tier 2 Rate Pool Funded Status and UAL

($ billions) ***totals may not add due to rounding***	**SLGRP**	**School Districts**
Actuarial liability	$ 40.4	$ 29.2
Assets (excluding side accounts)	28.0	20.0
UAL (excluding side accounts)	$ 12.3	$ 9.2
Funded status (excluding side accounts)	69%	68%
Projected 2017 payroll	$ 5.7	$ 3.2
Ratio of UAL to payroll	216%	284%
Side account assets	$ 2.4	$ 2.9
UAL (including side accounts)	$ 9.9	$ 6.3
Funded status (including side accounts)	75%	78%

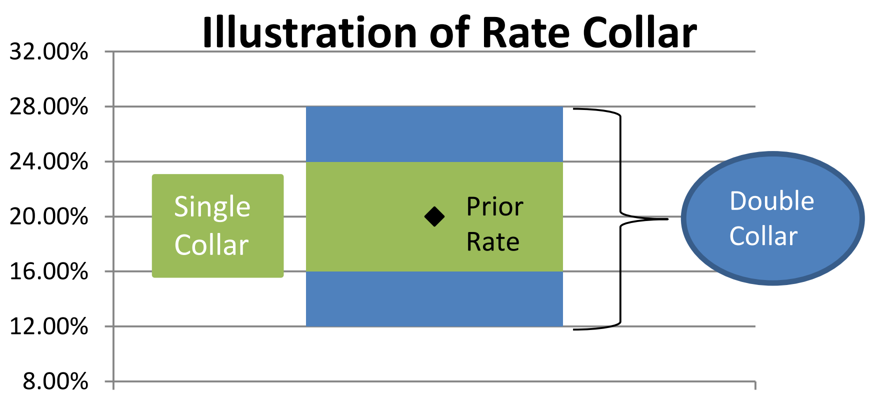
Overview of Rate Calculation Structure



- The *uncollared rate* is the theoretical contribution rate to reach 100% funded status over a specified amortization period if:
  - Contributions at that rate started on the actuarial valuation date, and
  - Actual future experience mirrors the actuarial valuation's assumptions
  - The normal cost rate does not change in subsequent years
- The rate collar sets a biennium's *base rate*, limiting the base rate change when there is a large change in the uncollared rate
- Employers pay the *net rate*, which can differ from the base rate due to adjustments that fall into two major categories
  - Side account rate offsets for employers with side accounts
  - SLGRP charges/offsets (e.g., Transition Liability/Surplus)

Current Rate Collar Design

- The maximum change typically permitted by the rate collar is:
  - 20% of the rate currently in effect (3% of payroll minimum collar width)
- If funded status is 60% or lower, the width of the rate collar doubles
  - 40% of rate currently in effect (6% of payroll minimum collar width)
- If the funded status is between 60% and 70%, the rate collar's width is pro-rated between the single-collar and double-collar widths



- Collars limit the biennium to biennium increase in the UAL Rate for each individual employer (or pool, if an employer participates in one)

Effect of 2017 Returns on Final 2019-21 Rates

- The advisory valuation uses 12/31/2016 assets and liabilities
  - Advisory 2019-21 rates show collared increases wider than a "single collar" for the large Tier 1/Tier 2 rate pools because funded status is below 70%

Tier 1/Tier 2 Rate Pool	12/31/2016 Funded Status	Collar Width in Advisory 2019-21 Contribution Rates
SLGRP	69%	1.1 x Single Collar
School Districts	68%	1.2 x Single Collar

- Final 2019-21 rates will be based on assets and liabilities as of 12/31/2017, including actual 2017 investment returns
- Through July 31, OPERF year-to-date regular accounts returns are +8.84%
  - If returns above the long-term average return assumption of 7.20% continue to year-end, actual 2019-21 increases for large pools likely will be "single collar" increases that will be lower than those shown in this year's advisory employer reports
  - If actual 2017 returns do not persist and end up near or below the assumed return at year-end, the collar width for actual 2019-2021 rate increases could be wider than those shown in this year's advisory employer reports; significantly so in the event of a major downturn prior to year-end

Comments on Advisory 2019 – 2021 Rates

- No single employer pays the system-wide average rate
  - School district base rates are above the average
  - Most SLGRP employers' base rates are below the average
- Employers in a rate pool do not pay the pool average rate
  - Actual rates reflect employer-specific side account rate offsets and/or any remaining SLGRP charges/offsets
  - SLGRP normal cost rates are specific to an employer's workforce mix of member tier and job classification
- Rates shown do not include the effects of:
  - Individual Account Plan (IAP) contributions
  - Rates for the RHIA & RHIPA retiree healthcare programs
  - Debt service payments on pension obligation bonds

Uncollared Pension Rates – School Districts

Excludes Retiree Health Care, IAP Contributions, Rate Collar, Side Accounts

	12/31/2015 2017 - 2019 Final			12/31/2016 2019 - 2021 Advisory		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average[1]	Tier 1 / Tier 2	OPSRP	Weighted Average[1]
Normal Cost	13.28%	8.02%	10.73%	14.04%	8.49%	11.11%
Tier 1/Tier 2 UAL	19.63%	19.63%	19.63%	21.45%	21.45%	21.45%
OPSRP UAL	1.27%	1.27%	1.27%	1.56%	1.56%	1.56%
Uncollared Rate	**34.18%**	**28.92%**	**31.63%**	**37.05%**	**31.50%**	**34.12%**
Increase				**2.87%**	**2.58%**	**2.49%**

The pool-average advisory collared base and net rates for which employers would be charged are shown on subsequent slides

[1] *Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date.*

Collared Pension Base Rates – School Districts

Excludes Retiree Health Care & IAP Contributions, Side Account Offsets

	12/31/2015 2017 - 2019 Final			12/31/2016 2019 - 2021 Advisory		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average[1]	Tier 1 / Tier 2	OPSRP	Weighted Average[1]
Uncollared Rate	**34.18%**	**28.92%**	**31.63%**	**37.05%**	**31.50%**	**34.12%**
Collar Limitation	(7.48%)	(7.48%)	(7.48%)	(3.95%)	(3.95%)	(3.95%)
Collared Base Rate	**26.70%**	**21.44%**	**24.15%**	**33.10%**	**27.55%**	**30.17%**
Increase				**6.40%**	**6.11%**	**6.02%**

Barring benefit modifications or actual 2017 investment returns differing materially from assumption, final 2019 – 2021 base rates will be similar to advisory 2019 – 2021 base rates shown in this presentation

[1] *Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date.*

Collared Pension Net Rates – School Districts

Excludes Retiree Health Care & IAP Contributions

	12/31/2015[1] 2017 - 2019 Final			12/31/2016[1] 2019 – 2021 Advisory		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average[2]	Tier 1 / Tier 2	OPSRP	Weighted Average[2]
Collared Base Rate	**26.70%**	**21.44%**	**24.15%**	**33.10%**	**27.55%**	**30.17%**
Side Account (Offset)	(10.26%)	(10.26%)	(10.26%)	(9.80%)	(9.80%)	(9.80%)
Collared Net Rate	**16.44%**	**11.18%**	**13.89%**	**23.30%**	**17.75%**	**20.37%**
Increase				**6.86%**	**6.57%**	**6.48%**

Rates vary by employer, as only some employers have side accounts

Changes in side account offsets are not collared; actual 2017 returns above assumption would increase the offset, decreasing the net rate

1 *For this exhibit, adjustments are assumed not to be limited due to an individual employer reaching a 0.00% contribution rate.*
2 *Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date*

School Districts Rate Summary

Weighted Average Rates (Tier 1/Tier 2 and OPSRP)

	Final 2017 - 2019	Advisory 2019 - 2021	Increase
Uncollared Base Rate	31.63%	34.12%	2.49%
Collared Base Rate	24.15%	30.17%	6.02%
Collared Net Rate	13.89%	20.37%	6.48%

- ***The collared base rate for School Districts is 3.95% of payroll below the uncollared base rate***
- ***The uncollared base rate increase was primarily due to the decrease in the assumed return***
- ***The collared rate increases are continuing systematic rate modifications to amortize the UAL over time if future experience follows assumptions***

Uncollared Pension Rates – SLGRP Average

Excludes Retiree Health Care, IAP Contributions, Rate Collar, Side Accounts

	12/31/2015 2017 - 2019 Final			12/31/2016 2019 – 2021 Advisory		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average[1]	Tier 1 / Tier 2	OPSRP	Weighted Average[1]
Normal Cost	15.78%	8.56%	12.03%	15.96%	9.03%	12.12%
Tier 1/Tier 2 UAL	14.45%	14.45%	14.45%	16.32%	16.32%	16.32%
OPSRP UAL	1.27%	1.27%	1.27%	1.56%	1.56%	1.56%
Uncollared Rate	**31.50%**	**24.28%**	**27.75%**	**33.84%**	**26.91%**	**30.00%**
Increase				**2.34%**	**2.63%**	**2.25%**

The pool-average advisory collared net rates which employers would be charged are shown on subsequent slides

Rates vary, sometimes widely, for employers in the SLGRP

1 *Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date.*

Collared Pension Base Rates – SLGRP Average

Excludes Retiree Health Care & IAP Contributions, Side Account Offsets

	12/31/2015 2017 - 2019 Final			12/31/2016 2019 – 2021 Advisory		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average[1]	Tier 1 / Tier 2	OPSRP	Weighted Average[1]
Uncollared Rate	**31.50%**	**24.28%**	**27.75%**	**33.84%**	**26.91%**	**30.00%**
Collar Limitation	(8.35%)	(8.35%)	(8.35%)	(5.58%)	(5.58%)	(5.58%)
Collared Base Rate	**23.15%**	**15.93%**	**19.40%**	**28.26%**	**21.33%**	**24.42%**
Increase				**5.11%**	**5.40%**	**5.02%**

Barring benefit modifications or actual 2017 investment returns differing materially from assumption, final 2019 – 2021 base rates will be similar to advisory 2019 – 2021 base rates shown in this presentation

1 *Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date*

Collared Pension Net Rates – SLGRP Average

Excludes Retiree Health Care & IAP Contributions

	12/31/2015[1] 2017 - 2019 Final			12/31/2016[1] 2019 – 2021 Advisory		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average[2]	Tier 1 / Tier 2	OPSRP	Weighted Average[2]
Collared Base Rate	**23.15%**	**15.93%**	**19.40%**	**28.26%**	**21.33%**	**24.42%**
Side Account (Offset)	(4.70%)	(4.70%)	(4.70%)	(4.63%)	(4.63%)	(4.63%)
SLGRP Charge/(Offset)	(0.82%)	(0.82%)	(0.82%)	(0.75%)	(0.75%)	(0.75%)
Collared Net Rate	**17.63%**	**10.41%**	**13.88%**	**22.88%**	**15.95%**	**19.04%**
Increase				**5.25%**	**5.54%**	**5.16%**

Rates vary by employer, sometimes significantly, as only some employers have side accounts and the SLGRP charge/(offset) varies by employer

Changes in side account offsets are not collared; actual 2017 returns above assumption would increase the offset, lowering the net rate

1 *For this exhibit, adjustments are assumed not to be limited due to an individual employer reaching a 0.00% contribution rate.*
2 *Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date*

SLGRP Rate Summary

Weighted Average Rates (Tier 1/Tier 2 and OPSRP)

	2017 - 2019	Advisory 2019 - 2021	Change
Uncollared Base Rate	27.75%	30.00%	2.25%
Collared Base Rate	19.40%	24.42%	5.02%
Collared Net Rate	13.88%	19.04%	5.16%

- ***The SLGRP's advisory collared base rate is 5.58% of payroll below the uncollared base rate***
- ***The uncollared base rate increase was primarily due to the decrease in the assumed return***
- ***The collared rate increases are continuing systematic rate modifications to amortize the UAL over time if future experience follows assumptions***

System-Wide Rate Summary
Weighted Average Rates (Tier 1/Tier 2 and OPSRP)

	2017 - 2019	Advisory 2019 - 2021	Change
Uncollared Base Rate	29.08%	31.46%	2.38%
Collared Base Rate	20.85%	26.17%	5.32%
Collared Net Rate	14.23%	19.75%	5.52%

- *System-wide rates are the payroll-weighted average of rates for School Districts, SLGRP, and independent employers*
- *The uncollared base rate increase was primarily due to the decrease in the assumed return*
- *The collared rate increases are continuing systematic rate modifications to amortize the UAL over time if future experience follows assumptions*

Projected 2019-2021 Contributions

($ millions)	Projected 2017-19 Payroll*	(A) Projected 2017-19 Contribution	Projected 2019-21 Payroll*	(B) Projected 2019-21 Contribution	(B - A) Projected Contribution Increase
State Agencies	$ 5,920	**$ 820**	$ 6,340	**$ 1,205**	**$ 385**
School Districts	6,710	**935**	7,190	**1,465**	**530**
All Others	7,815	**1,155**	8,370	**1,650**	**500**
Total	$ 20,440	**$ 2,910**	$ 21,900	**$ 4,325**	**$ 1,415**

- Collared net rates are used to project 2019-2021 contributions
  - Projections do not reflect the effects of 2017 investment returns

** Assumes payroll grows at 3.50% annually based on 12/31/2016 active member census, reflecting proportional payroll composition (Tier 1/Tier 2 vs. OPSRP) as of 12/31/2016*

Factors Driving the Projected Contribution Increase

- The projected 2019 - 2021 contribution increase of $1.4 billion consists of:
  - System-wide average collared net rate increase of 5.52% -- $1.2 billion
    - November 2016's financial modeling projected a 50th percentile 4.7% of payroll net rate increase for the 2019-2021 biennium. This was based on a single-collar width increase and continued use of a 7.50% return assumption. The increase in this advisory valuation further reflects:
      - Collar widening due to the funded status of two large Tier 1/Tier 2 rate pools falling below 70%, related to lowered investment return assumption
      - Decrease in level of side account rate offsets due to both the lowered return assumption and actual 2016 investment returns of 7.1%
  - Projected payroll growth between biennia -- $0.2 billion
    - Assumed system payroll growth of 3.5% per year / 7.1% per biennium means the rate increase is applied to a larger payroll base

12/31/2016 Retiree Health Care Valuation

- Two separate health care benefit subsidies are valued:
  - RHIA provides a $60 per month subsidy toward healthcare premiums for Medicare-eligible Tier 1/Tier 2 retirees
  - RHIPA provides Tier 1/Tier 2 state employees who retire prior to age 65 with an alternative to PEBB coverage until they reach Medicare eligibility
- OPSRP retirees are not eligible for either subsidy
- RHIA and RHIPA benefits historically have been less well funded than Tier 1/Tier 2 & OPSRP benefits
  - To help address that, in July 2009 the Board shortened the shortfall amortization period to ten years to improve funded status over less time
  - Rates reflecting the shorter amortization were first effective July 2011

12/31/2016 Retiree Health Care Valuation

- RHIA and RHIPA liabilities combined are less than 1% of the pension liability
- In recent experience studies, we recommended restructuring the RHIPA participation assumption for future state government retirements
  - Assume higher participation rates for retirees eligible for the largest employer-paid subsidies
  - Rates reflecting new structure first went into effect in July 2015
- RHIPA warrants continued monitoring, as funded status is very low and subsidy payments are sensitive to actual participation levels

12/31/2016 Retiree Health Care Valuation

UAL and Advisory Contribution Rates

	RHIA		RHIPA*	
	12/31/2015	12/31/2016	12/31/2015	12/31/2016
Actuarial Liability	$ 466	$ 464	$ 68	$ 68
Assets	419	465	11	19
UAL	$ 46	$ (1)	$ 57	$ 48
Funded Status	90%	100%	16%	28%
Normal Cost Rate	0.07%	0.07%	0.11%	0.12%
UAL Rate	0.43%	0.42%	0.38%	0.38%
Total Rate	0.50%	0.49%	0.49%	0.50%

* *State Agencies, OUS, and State Judiciary are the only employers who pay RHIPA rates*

RHIPA assets at year-end 2016 were about 4.5 times 2016 RHIPA benefit payments

Contribution Rate & Funded Status Projections

- In December, we will return with contribution rate and funded status projections based on this valuation
  - That analysis will use the latest year-to-date investment return information at the time the projections are made
- Projections will be developed using two types of models
  - Steady return
    - Straight lines reflecting steady future actual investment returns
  - Variable return
    - Probability distributions reflecting a wide variety of noisy scenarios for possible actual future investment returns
    - The modeling will include updates to the risk metrics we have used in projection studies conducted in previous years

Wrap Up / Next Steps

- Between now and the December meeting, we will:
  - Assist PERS in preparing financial reporting schedules
  - Develop updated actuarial equivalence factors for 2018
  - Issue system-wide and employer-specific valuation reports
- At the December meeting, we will:
  - Provide listings of employer-specific advisory 2019-2021 contribution rates
  - Present updated actuarial equivalence factors for adoption
  - Update long-term rate and funded status projections

Appendix

Certification

This presentation summarizes key preliminary results of an actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016, for the Plan Year ending December 31, 2016. The results are preliminary in nature and may not be relied upon to, for example, prepare the System's Consolidated Annual Financial Report (CAFR). The reliance document will be the forthcoming formal December 31, 2016 System-Wide Actuarial Valuation Report.

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

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

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

Actuarial computations presented in this report are for purposes of determining the recommended funding amounts for the System. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the plan provisions described in the appendix of this report. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Certification

Milliman's work is prepared solely for the internal business use of the Oregon Public Employees Retirement System. To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exception(s):

(a) The System may provide a copy of Milliman's work, in its entirety, to the System's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit the System.

(b) The System may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law.

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

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel. The actuaries are independent of the plan sponsors. We are not aware of any relationship that would impair the objectivity of our work.

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

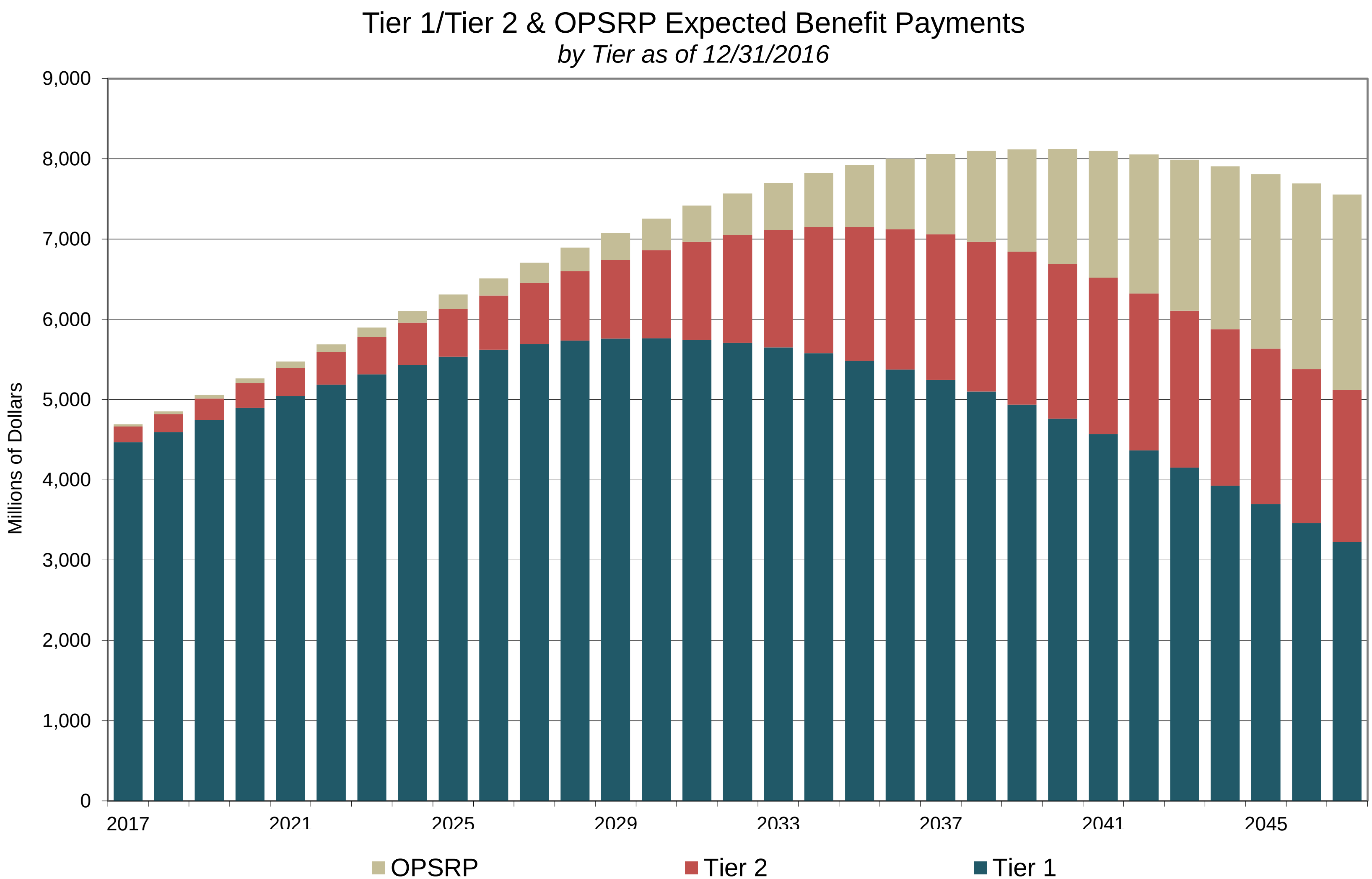
Data Exhibits

	December 31, 2016				December 31, 2015
	Tier 1	Tier 2	OPSRP	Total	Total
Active Members					
Count	26,964	38,257	107,262	172,483	168,177
Average age	55.9	50.7	42.5	46.4	46.6
Average total service	24.8	16.0	5.9	11.1	11.2
Average prior year covered salary	$75,704	$67,199	$47,278	$56,140	$55,637
Inactive Members[1]					
Count	14,965	15,534	14,822	45,321	42,849
Average age	59.1	53.2	48.0	53.4	52.8
Average monthly deferred benefit	$3,460	$1,018	$373	$1,613	$1,064
Retired Members and Beneficiaries[1]					
Count	124,171	11,648	2,964	138,783	136,298
Average age	72.1	67.0	66.6	71.6	71.3
Average monthly benefit[2]	$2,719	$937	$427	$2,521	$2,468
Total members	**166,100**	**65,439**	**125,048**	**356,587**	**347,324**

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

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

Projected Benefit Payments by Tier



Funded Status and UAL by Program

Pension Funded Status ($ billions) at 12/31/2016			
	Tier 1/Tier 2	OPSRP	Combined
Actuarial liability	$76.3	$4.7	$81.0
Assets (excluding side accounts)	$52.7	$3.0	$55.7
UAL (excluding side accounts)	$23.6	$1.7	$25.3
Funded status (excluding side accounts)	69%	64%	69%
Side account assets			$5.4
UAL (including side accounts)			$19.9
Funded status (including side accounts)			75%

OPRSP funded status is lower than Tier 1/Tier 2 due primarily to the changing the cost allocation method from projected unit credit to entry age normal to comply with GASB mandates. OPSRP has a shorter amortization period than Tier 1/Tier 2, and OPSRP UAL amortization rates are not currently limited by the rate collar.

Uncollared Pension Rates – System-Wide

Excludes Retiree Health Care, IAP Contributions, Rate Collar, Side Accounts

	12/31/2015 2017 - 2019 Final			12/31/2016 2019 - 2021 Advisory		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average[1]	Tier 1 / Tier 2	OPSRP	Weighted Average[1]
Normal Cost	15.07%	8.56%	11.79%	15.44%	9.03%	11.96%
Tier 1/Tier 2 UAL	16.02%	16.02%	16.02%	17.94%	17.94%	17.94%
OPSRP UAL	1.27%	1.27%	1.27%	1.56%	1.56%	1.56%
Uncollared Rate	**32.36%**	**25.85%**	**29.08%**	**34.94%**	**28.53%**	**31.46%**
Increase				**2.58%**	**2.68%**	**2.38%**

[1] *Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date.*

Collared Pension Base Rates – System-Wide

Excludes Retiree Health Care & IAP Contributions, Side Account Offsets

	12/31/2015 2017 - 2019 Final			12/31/2016 2019 - 2021 Advisory		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average[1]	Tier 1 / Tier 2	OPSRP	Weighted Average[1]
Uncollared Rate	**32.36%**	**25.85%**	**29.08%**	**34.94%**	**28.53%**	**31.46%**
Collar Limitation	(8.23%)	(8.23%)	(8.23%)	(5.29%)	(5.29%)	(5.29%)
Collared Base Rate	**24.13%**	**17.62%**	**20.85%**	**29.65%**	**23.24%**	**26.17%**
Increase				**5.52%**	**5.62%**	**5.32%**

Increases that will be effective July 2019 (based on the 12/31/2017 rate-setting valuation) are limited by the collar

[1] *Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date.*

This work product was prepared for discussion purposes only and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Any recipient of this work product who desires professional guidance should engage qualified professionals for advice appropriate to its own specific needs.

Collared Pension Net Rates – System-Wide

Excludes Retiree Health Care & IAP Contributions

	12/31/2015[1] 2017 - 2019 Final			12/31/2016[1] 2019 – 2021 Advisory		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average[2]	Tier 1 / Tier 2	OPSRP	Weighted Average[2]
Collared Base Rate	**24.13%**	**17.62%**	**20.85%**	**29.65%**	**23.24%**	**26.17%**
Side Account (Offset)	(6.14%)	(6.14%)	(6.14%)	(5.99%)	(5.99%)	(5.99%)
SLGRP Charge/(Offset)	(0.48%)	(0.48%)	(0.48%)	(0.43%)	(0.43%)	(0.43%)
Collared Net Rate	**17.51%**	**11.00%**	**14.23%**	**23.23%**	**16.82%**	**19.75%**
Increase				**5.72%**	**5.82%**	**5.52%**

Rates vary by employer, as only some employers have side accounts

Changes in side account offsets are not collared

1 *For this exhibit, adjustments are assumed not to be limited due to an individual employer reaching a 0.00% contribution rate.*
2 *Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date*

Actuarial Basis

Data

We have based our calculation of the liabilities on the data supplied by the Oregon Public Employees Retirement System and summarized in the data exhibits on the preceding slides.

Assets as of December 31, 2016, were based on values provided by Oregon PERS reflecting the Board's earnings crediting decisions for 2016.

Methods / Policies

Actuarial Cost Method: Entry Age Normal, adopted effective December 31, 2012.

UAL Amortization: The UAL for OPSRP, and Retiree Health Care as of December 31, 2007 are amortized as a level percentage of combined valuation payroll over a closed period 20 year period for OPSRP and a closed 10 year period for Retiree Health Care. For the Tier 1/Tier 2 UAL, the amortization period was reset at 20 years as of December 31, 2013. Gains and losses between subsequent odd-year valuations are amortized as a level percentage of combined valuation payroll over the amortization period (20 years for Tier/Tier 1, 16 years for OPSRP, 10 years for Retiree Health Care) from the odd-year valuation in which they are first recognized.

Actuarial Basis

Methods / Policies (cont'd)

Contribution rate stabilization method: Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) are confined to a collar based on the prior contribution rate (prior to application of side accounts, pre-SLGRP liabilities, and 6 percent Independent Employer minimum). The new contribution rate will generally not increase or decrease from the prior contribution rate by more than the greater of 3 percentage points or 20 percent of the prior contribution rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funded percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Expenses: Tier 1/Tier 2 administration expenses are assumed to be equal to $37.5M, while OPSRP administration expenses are assumed to be equal to $6.5M. The assumed expenses are added to the respective normal costs.

Actuarial Value of Assets: Equal to Market Value of Assets excluding Contingency and Tier 1 Rate Guarantee Reserves. The Tier 1 Rate Guarantee Reserve is not excluded from assets if it is negative (i.e. in deficit status).

Assumptions

Assumptions for valuation calculations are as described in the 2016 Experience Study for Oregon PERS and presented to the PERS Board in July 2017.

Provisions

Provisions valued are as detailed in the 2015 Valuation Report.