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February 18, 2019

Ms. Debra Hembree
Actuarial Services Coordinator
Oregon PERS

Re: Request Number 2018-007: Updated Projected School District Estimates

Dear Debra:

As requested, this letter provides updated estimates for the School District Pool that build upon previous work done under this work order and Request Number 2018-004. The information requested was to provide simplified estimates of the School District Pool collared base pension contribution rate for the 2021-23 biennium under a number of specific scenarios. These scenarios were based on a variety of different potential scenarios for both actual asset return and the assumed rate used in the actuarial valuation, as follows:

- Assumed rate for the 12/31/19 rate-setting actuarial valuation (conducted in 2020):
  - Board selects assumed rate of 7.20% (same as current assumption)
  - Board selects assumed rate of 7.00%
  - Board selects assumed rate of 6.90%
- Actual asset return:
  - +7.20% compounded average return for calendar years 2018 and 2019 (consistent with 12/31/2017 actuarial valuation report calculations that established adopted 2019-2021 rates; given the +0.48% published return in 2018 this would equate to a +14.37% return in 2019)
  - +0.48% return in 2018 (OIC published return), then +7.20% in 2019
  - -4.00% return in 2018, then +7.20% in 2019
    - The private equity portion of OPERF is reported on a three-month lag, so any losses from the market downturn in the fourth quarter of 2018 are not yet reflected in the published 2018 return of +0.48%. The 2018 return for the portfolio excluding private equity was approximately -4.00%, and that return is used to illustrate sensitivity for the projections in this letter.

The simplified projections rely on School District Pool results from the December 31, 2017 actuarial valuation, which are then projected forward to the December 31, 2019 rate-setting valuation that will develop proposed employer contributions rates for the 2021-2023 biennium. Adjustments for potential changes in the assumed rate are based on estimated discount rate sensitivity measures for the plan. Similarly, the effect of asset returns was estimated on a high-level basis, and did not reflect certain aspects of the PERS asset crediting process (such as benefits in force (BIF) reserve transfers, or earnings related to the Tier 1/Tier 2 Rate Guarantee Reserve or the Contingency Reserve) that would affect actual final valuation assets for the School District Pool.

The estimated July 2021 increase in the School District Pool collared base rate in this letter is calculated based on the modeled actual asset return and PERS Board assumed rate scenarios described above, and also on demographic experience during 2018 and 2019 matching current actuarial valuation assumptions. **To the extent that actual experience differs from assumptions and/or the PERS Board changes other assumptions or methods, contributions rates will differ, potentially significantly, from the estimates shown in this letter.**

BACKGROUND

In October 2018 the PERS Board adopted contribution rates for all PERS employers based on the December 31, 2017 rate-setting actuarial valuation. These rates will be effective for the biennium July 1, 2019 through June 30, 2021. Our August and October presentations to the Board showed the effect of these rates for the School District Pool. The table below summarizes these results in terms of the estimated weighted average rates (i.e. a weighted average of rates paid on Tier 1/Tier 2 and OPSRP payroll) for school districts in the 2019-2021 biennium compared to the current biennium. Note that these are “base” rates, which are rates calculated prior to offsets for side accounts that individual school districts may have.

School District Pool Weighted Average	2017-2019 Biennium	2019-2021 Biennium
Uncollared Base Rate (Pension Only)	31.63%	30.86%
Collared Base Rate (Pension Only)	24.15%	28.93%

The average collared base rate for the School District Pool will increase from the 2017-2019 biennium to the 2019-2021 biennium by 4.78% of payroll, from 24.15% to 28.93%. An additional projected rate increase is currently deferred by the rate collar methodology, which is shown in the table by the 1.93% difference between the collared and uncollared rates for the 2019-2021 biennium. This means that if future experience is near assumption through the December 31, 2019 rate-setting valuation date, the contribution rate for school districts is projected to increase further in July 2021.

ESTIMATED SCHOOL DISTRICT POOL COLLARED BASE RATES FOR 2021-2023

We were asked to analyze what the collared base rate of 28.93% for the School District Pool might increase to effective for the 2021-2023 biennium under the various scenarios described above. As noted, these are simplified estimates, and actual rates proposed for adoption will be based on results from the 12/31/2019 actuarial valuation.

The estimated July 2021 increase in the collared base rate is sensitive to actual investment returns and demographic experience during 2018 and 2019. In addition, it is also sensitive to any changes in actuarial assumptions and methods – most prominently, any changes to the current 7.20% assumed rate of average annual future long-term investment return. According to its typical calendar the PERS Board would adopt any such assumption change at its July 26, 2019 public meeting.

Estimates of weighted average 2021-2023 rates under the modeled scenarios are shown in the table below.

School Districts – Estimated 2021-2023 Weighted Average Collared Base Pension Rate			
	Actual 2018 & 2019 Asset Return		
Assumed rate for 12/31/2019 valuation	2018: +0.48% 2019: +14.37%*	2018: +0.48% 2019: +7.20%	2018: -4.00% 2019: +7.20%
Current Board assumed rate of 7.2%	31.01%	34.26%	36.39%
Board selects 7.0% assumed rate	32.79%	35.97%	38.08%
Board selects 6.9% assumed rate	33.71%	36.85%	38.93%

*Equivalent to a compounded annual return of +7.20% across 2018 and 2019 (consistent with December 31. 2017 valuation assumption)

The scenarios shown above are not intended either to be predictive or to represent outer bounds of the 2019 actual asset return experience or the PERS's Board decision regarding the assumed rate. The assumed rate decision is scheduled to be made in the summer of 2019, and will be informed by analyses that have not yet been conducted. The final assumed rate could be lower than the assumptions illustrated above, or could be unchanged. In addition, the variation in actual asset return shown above is limited. Actual 2019 asset returns will differ from amounts illustrated here, and could easily fall outside the range shown. If significant asset return underperformance occurs during 2019, it could result in a contribution rate increase greater than the range shown above.

As shown in the upper left cell of the table, if the current Board assumed rate of 7.2% is maintained and actual compounded asset returns over 2018 and 2019 average +7.20%, the estimated weighted average collared based rate is expected to increase by 2.08% in July 2021 (from 28.93% to 31.01%). This is larger than the 1.93% difference between the collared and uncollared rates in the December 31, 2017 valuation, due to the additional "carrying cost" arising from employer contribution rates being less than the uncollared rate for multiple biennia. The remaining values in the table reflect additional collared base contribution rate increases due to actual asset returns below assumption and/or a reduction in the Board's assumed rate.

DATA, METHODS, ASSUMPTIONS, AND PROVISIONS

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

ACTUARIAL BASIS AND QUALIFICATIONS

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

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

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

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

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

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

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

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

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

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

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

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

Sincerely,

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

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

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encl.