



PUERTO RICO TEACHERS RETIREMENT SYSTEM

GASB 73 PENSION EXPENSE

Measurement Year: July 1, 2018 to June 30, 2019

Reporting Year: July 1, 2019 to June 30, 2020

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August 5, 2022

This work product was prepared solely for the Puerto Rico Teachers Retirement System ("PRTRS") for the purposes described herein and may not be appropriate to use for other purposes. Milliman and PRTRS do not intend to benefit and assume no duty or liability to other parties who receive this work. Milliman and PRTRS recommend that any third party recipient be aided by its own actuary or other qualified professional when reviewing the Milliman work product.

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GASB 73 Expense for Measurement Year Ending June 30, 2019 for Reporting Year Ending June 30, 2020

Puerto Rico Teachers Retirement System

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Certification

Actuarial computations presented in this report under Statement No. 73 of the Governmental Accounting Standards Board are for purposes of assisting the Puerto Rico Teachers Retirement System ("PRTRS") in fulfilling its financial accounting requirements. No attempt is being made to offer any accounting opinion or advice. This report is for measurement year July 1, 2018 to June 30, 2019 for reporting periods ending June 30, 2019 through June 30, 2020. The measurement date for determining plan obligations is June 30, 2019. The calculations enclosed in this report have been made on a basis consistent with our understanding of the plan provisions. Determinations for purposes other than meeting financial reporting requirements may be significantly different than the results contained in this report. Accordingly, additional determinations may be needed for other purposes, such as judging benefit security or meeting employer funding requirements.

In preparing this report, we relied, without audit, on information as of July 1, 2018 as well as benefit payment information as of June 30, 2019 furnished by PRTRS. This information includes, but is not limited to, statutory provisions, member census data, and financial information. Please refer to Milliman's June 30, 2019 valuation report dated August 5, 2022 for more information on the plan's participants as of July 1, 2018, summaries of the plan provisions and actuarial methods and assumptions, and calculations under GASB 73.

We performed a limited review of the census and financial information used directly in our analysis and have found them 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.

We hereby certify that, to the best of our knowledge, this report, including all costs and liabilities based on actuarial assumptions developed by Milliman in conjunction with PRTRS, is complete and accurate and determined in conformance with generally recognized and accepted actuarial principles and practices, which are consistent with the Actuarial Standards of Practice promulgated by the Actuarial Standards Board and the applicable Guides to Professional Conduct, amplifying Opinions and supporting Recommendations of the American Academy of Actuaries.

This valuation report is only an estimate of the Plan's financial condition as of a single date. It can neither predict the Plan's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of Plan benefits, only the timing of Plan 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. Determining results using alternative assumptions is outside the scope of our engagement.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to factors such as, but not limited to, 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 the actuarial assignment, we did not perform an analysis of the potential range of such future measurements.

Certification

Milliman's work is prepared solely for the use and benefit of the PRTRS. 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 exceptions: (a) the Plan Sponsor may provide a copy of Milliman's work, in its entirety, to the Plan Sponsor'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; and (b) the Plan Sponsor 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 specific needs.

The results shown in this report were developed using models intended for valuations that use standard actuarial techniques.

The consultants who worked on this assignment are retirement 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 has been prepared in accordance with generally recognized 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.



Glenn D. Bowen, FSA, EA, MAAA
Principal and Consulting Actuary



Richard L. Gordon, FSA, EA, MAAA
Principal and Consulting Actuary

Executive Summary

PRTRS is a single employer pension plan for purposes of GASB 73 reporting. This report presents the results of the actuarial valuation in accordance with GASB 73 as of June 30, 2019 for PRTRS to be used for reporting periods ending June 30, 2019 through June 30, 2020.

The Total Pension Liability increased from \$15.9 billion as of July 1, 2018 to \$16.8 billion as of June 30, 2019. The pension expense for PRTRS for the measurement year ending June 30, 2019 is \$0.86 billion.

Deferred inflows total \$0.34 billion due to changes in actuarial assumptions. Changes in actuarial assumptions are amortized over the expected working lifetime of active and inactive participants. A portion of this item is recognized beginning with the current measurement year in accordance with GASB 73.

Deferred outflows total \$0.75 billion due to demographic losses and changes in actuarial assumptions (including the market-rate change in the GASB 73 discount rate from 3.87% as of June 30, 2018 to 3.50% as of June 30, 2019). Demographic losses are amortized over the expected working lifetime of active and inactive participants. A portion of this item is recognized beginning with the current measurement year in accordance with GASB 73.

Benefit payments made subsequent to the measurement date should be reported as deferred outflows of resources. These contributions for the fiscal year ending June 30, 2020 will then be reflected in the GASB 73 expense development for the following measurement year.

Liability changes due to demographic gains and losses and changes in actuarial assumptions are amortized over the expected working lifetime of active and inactive participants in the plan as of the beginning of the measurement year. The period is 5 years and equals the total expected working lifetime of active members of 0.35 million divided by the number of plan participants of 74,479.

Pension Expense

Measured as of June 30, 2019 for Fiscal Year Ending June 30, 2020

Pension Expense	July 1, 2018 to June 30, 2019
Service cost	\$176,718,146
Interest on total pension liability	608,211,500
Effect of plan changes	0
Recognition of Deferred Inflows/Outflows of Resources	
Recognition of economic/demographic gains or losses	51,221,299
Recognition of assumption changes or inputs	<u>27,500,533</u>
Pension Expense	863,651,478

As of June 30, 2019, the deferred inflows and outflows of resources are as follows:

Deferred Inflows / Outflows of Resources	Deferred Inflows of Resources	Deferred Outflows of Resources
Differences between expected and actual experience	\$0	\$191,326,195
Changes of assumptions	<u>(335,407,972)</u>	<u>557,212,759</u>
Total	(335,407,972)	748,538,954

Other amounts currently reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense as follows:

Year ended June 30:	
2020	\$78,721,832
2021	78,721,832
2022	78,721,832
2023	176,965,486
2024	0
Thereafter*	0

In addition benefit payments made subsequent to the measurement date should be reported under deferred outflows of resources and recognized as a reduction of the total pension liability in the year ended June 30, 2020. This amount is not included above.

* Note that additional future deferred inflows and outflows of resources may impact these numbers.

Schedule of Deferred Inflows and Outflows of Resources

	Original Amount	Date Established	Original Recognition Period*	Amount Recognized in Expense for MYE 6/30/2019	Amount Recognized in Expense through 6/30/2019	Balance of Deferred Inflows 6/30/2019	Balance of Deferred Outflows 6/30/2019
Economic/demographic (gains) or losses	67,795,001	6/30/2018	5.0	13,559,000	27,118,000	0	40,677,001
	188,311,493	6/30/2019	5.0	<u>37,662,299</u>	<u>37,662,299</u>	<u>0</u>	<u>150,649,194</u>
				51,221,299	64,780,299	0	191,326,195
Assumption changes or inputs	(559,013,286)	6/30/2018	5.0	(111,802,657)	(223,605,314)	(335,407,972)	0
	696,515,949	6/30/2019	5.0	<u>139,303,190</u>	<u>139,303,190</u>	<u>0</u>	<u>557,212,759</u>
				27,500,533	(84,302,124)	(335,407,972)	557,212,759

* Economic/demographic (gains)/losses and assumption changes or inputs are recognized over the average remaining service life for all active and inactive members.

Milliman Financial Reporting Valuation

	Total Pension Liability	Deferred (Inflows)	Deferred Outflows	Net Deferrals	Net/Total Pension Liability plus Net Deferrals	Annual Expense
Balances as of July 1, 2018	(15,939,245,054)	(447,210,629)	54,236,001	(\$392,974,628)	(16,332,219,682)	
Service cost	(176,718,146)					176,718,146
Interest on total pension liability	(608,211,500)					608,211,500
Effect of plan changes	0					0
Effect of liability gains or losses	(188,311,493)		188,311,493	188,311,493		
Effect of assumption changes or inputs	(696,515,949)		696,515,949	696,515,949		
Benefit payments	807,472,240				807,472,240	
Recognition of liability gains or losses			(51,221,299)	(51,221,299)		51,221,299
Recognition of assumption changes or inputs		111,802,657	(139,303,190)	(27,500,533)		27,500,533
Annual expense					(863,651,478)	863,651,478
Balances as of June 30, 2019	(16,801,529,902)	(335,407,972)	748,538,954	413,130,982	(16,388,398,920)	

Schedule of Changes in Total Pension Liability and Related Ratios
(in 1,000,000s)

	Measurement Year Ending June 30									
	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Total Pension Liability										
Service cost	\$177	\$240	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Interest on total pension liability	608	582	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Effect of plan changes	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Effect of economic/demographic gains or losses	188	68	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Effect of assumption changes or inputs	697	(559)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benefit payments	(807)	(786)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Net change in total pension liability	862	(455)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total pension liability, beginning	15,939	16,395	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total pension liability, ending	16,802	15,939	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Covered payroll	771	933	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total pension liability as a % of covered payroll	2178.40%	1707.78%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

This schedule is presented to illustrate the requirement to show information for 10 years. However, recalculations of prior years are not required, and if prior years are not reported in accordance with the current GASB standards, they should not be reported.

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