

PUERTO RICO GOVERNMENT EMPLOYEES RETIREMENT SYSTEM

June 30, 2018 Actuarial Valuation Report

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August 6, 2021

Mr. Luis M. Collazo Rodríguez, Esq.
Administrator
Puerto Rico Government Employees and
Judiciary Retirement System Administration
437 Ponce de León Avenue
Hato Rey, PR 00918

Dear Mr. Collazo:

This report presents the results of the actuarial valuation of the Puerto Rico Government Employees Retirement System (PRGERS), a cost-sharing multiple employer defined benefit pension plan, as of June 30, 2018. Section I contains highlights of the valuation including a general discussion. The subsequent Sections contain schedules summarizing the underlying calculations, participant data, plan benefits and actuarial assumptions and methods. The final section contains information about risks to the Plan, including considerations for pay-as-you-go financing.

Purpose

The main purposes of this report are:

- to present information pertaining to the operation of the plan for inclusion in financial statements based on relevant Statements of the Government Accounting Standards Board (GASB); and
- to review the experience under the plan since the previous valuation.

In particular, this valuation provides the change in total pension liability under GASB 73 and the change in total other postemployment benefits (“OPEB”) liability under GASB 75. This valuation does not include the GASB 73 pension expense nor the GASB 75 OPEB expense.

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The use of this report for purposes other than those stated above may not be appropriate and should be reviewed with Milliman.

The report was prepared solely to provide assistance to the Commonwealth of Puerto Rico Government Employees Retirement System for a specific and limited purpose. It is a complex, technical analysis that assumes a high level of knowledge concerning PRGERS' operations, and uses PRGERS' data, which Milliman has not audited. Milliman and PRGERS do not intend to benefit and assume no duty or liability to other parties who receive this report. Milliman and PRGERS recommend that any third party recipient of this report be aided by its own actuary or other qualified professional when reviewing the Milliman report. Any distribution of this report should be made in its entirety.

Data Reliance

In performing this analysis, we relied on the census data, benefit payment information, and other information (both written and oral) provided by the System. We have not audited or verified the census data, benefit payment information, or other information. To the extent that any of these are inaccurate or incomplete, the results of this valuation may likewise be inaccurate or incomplete.

We did not audit the data used in our analysis, but did review it for reasonableness and consistency and have not found material defects in the data. It is possible that material defects in the data would be uncovered by a detailed, systematic review and comparison of the data to search for data values that are questionable or for relationships that are materially inconsistent. Such a review was beyond the scope of our assignment.

Future Measurements

This valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits. 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.

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Future actuarial measurements may differ significantly from the current measurements presented in this report due to factors such as the following:

- Plan experience differing from the actuarial assumptions;
- Future changes in the actuarial assumptions;
- Increases or decreases expected as part of the natural operation of the methodology used for these measurements; and,
- Changes in the plan provisions or accounting standards.

Due to the limited scope of our assignment, we did not perform an analysis of the potential range of such measurements.

Certification

We hereby certify that, to the best of our knowledge, this report is complete and accurate and all costs and liabilities were determined in conformance with generally 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 and are based on actuarial assumptions and methods adopted by the System. All of the actuarial assumptions were developed by Milliman in consultation with PRGERS. We believe that the actuarial assumptions and methods used in this actuarial valuation are reasonable for the main purposes of this report as stated herein.

Actuarial computations presented in this report are for purposes of fulfilling financial accounting requirements under the GASB Statements 73 and 75. The calculations in the enclosed report have been made on a basis consistent with our understanding of the plan provisions described in Section VI of this report, and of the applicable GASB Statements. 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.

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

This valuation reflects the law in effect as of June 30, 2018, as required by GASB accounting. The impact of any prospective legislative changes impacting the System are not yet fully known.

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Qualifications

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.

We are members of the Society of Actuaries and meet the qualification standards of the American Academy of Actuaries to render this actuarial opinion.

Respectfully submitted,



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Member American Academy of Actuaries



Timothy J. Nugent, F.S.A.
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PUERTO RICO GOVERNMENT EMPLOYEES RETIREMENT SYSTEM

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PUERTO RICO GOVERNMENT EMPLOYEES RETIREMENT SYSTEM

SECTION I – SUMMARY

A. Summary of Principal Results of June 30, 2018 Actuarial Valuation

GASB 73 Accounting (\$ amounts in thousands)

	June 30, 2017 <u>Valuation</u>	June 30, 2018 <u>Valuation</u>
Total Pension Liability ¹	\$32,109,294	\$27,607,418

GASB 75 Accounting (\$ amounts in thousands)

	June 30, 2017 <u>Valuation</u>	June 30, 2018 <u>Valuation</u>
Total OPEB Liability ¹	\$1,067,503 ²	\$975,444

Both the pension benefits accounted for under GASB 73 and the OPEB benefits accounted for under GASB 75 are administered on a pay-as-you-go basis.

¹ A discussion of the benefits included in the Total Pension Liability and Total OPEB Liability begins on page 3 of this section.

² The Total OPEB Liability as of June 30, 2017 is that shown in the report dated December 16, 2020 containing the GASB 75 Expense for the measurement year ending June 30, 2017.

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SECTION I – SUMMARY

	July 1, 2016 Census Data <u>Collection</u>	July 1, 2017 Census Data <u>Collection</u>
<i>Participant Data</i>		
<u>Active Members</u>		
Number	118,657	112,615
Average Salary	\$28,184	\$27,847
Total Annual Salary	\$3,344,197,000	\$3,136,022,608
 <u>Retirees</u>		
Number	94,071	93,657
Average Monthly Basic System Benefit	\$1,096	\$1,098
Average Monthly System Administered Benefit	\$64	\$75
 <u>Disabled Members</u>		
Number	14,722	14,126
Average Monthly Basic System Benefit	\$498	\$429
Average Monthly System Administered Benefit	\$123	\$206
 <u>Beneficiaries</u>		
Number	13,964	12,658
Average Monthly Basic System Benefit	\$393	\$324
Average Monthly System Administered Benefit	\$55	\$116

Basic System Benefit and System Administered Benefit amounts shown above are for pension benefits, including minimum benefits, COLAs, and future benefits to Act 211 retirees, and excludes benefits payable at a later date to Law 70 Section 4B retirees. Special Law "bonus" benefits are not reflected.

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B. General Discussion

Basic System Benefits

As summarized in Section VI, the Puerto Rico Government Employees Retirement System (PRGERS) provides benefits to members, or their beneficiaries, upon:

- Retirement
- Disability
- Vested withdrawal
- Death
- Nonvested withdrawal (return of contributions)

These benefits will be referred to as the “Basic System Benefits” throughout this report. Prior to Act 106-2017, these benefits were paid from System assets.

For members who retired prior to July 1, 2013 annuity benefits are subject to a \$500 monthly minimum. The amount in excess of \$200 and less than \$300 is a System Administered Benefit (see below) for all employees. The amount in excess of \$300 and less than \$400 is a System Administered Benefit for Public Corporation and Municipality employees.

System Administered Benefits

Also summarized in Section VI are benefits granted under a series of special laws that are administered by PRGERS, including:

- Additional minimum pension benefits (if retired prior to July 1, 2013)
- Ad-hoc cost-of-living adjustments (COLAs) provided in past years
- Additional benefits due to death or disability for reasons specified in Act 127-1958
- Medical insurance plan contribution (if retired prior to July 1, 2013)
- Christmas bonus (if retired prior to July 1, 2013)
- Medication bonus (if retired prior to July 1, 2013)

System 2000 and Act 3 participants, other than those members receiving a disability annuity or receiving benefits under Act 127-1958, do not receive any System Administered Benefits.

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These benefits will be referred to as “System Administered Benefits” throughout this report. Prior to Act 106-2017, these benefits were generally paid from the Commonwealth’s General Fund or by the respective public corporation or municipality on a pay-as-you-go basis.

Benefits included in Total Pension Liability and Total OPEB Liability

The Total OPEB Liability is for the medical insurance plan contribution benefit. The Total Pension Liability is for the Basic System Benefits and all other System Administered Benefits. Note that the Medication Bonus has been included in the Total Pension Liability because members can receive the bonus without submitting documentation to substantiate medication expenses.

System Experience since Prior Valuation

Our analysis of System experience from June 30, 2017 to June 30, 2018 resulted in a liability gain of \$1.1 billion (e.g. – the original June 30, 2017 Total Pension Liability of \$32.1 billion was expected to decrease to \$31.7 billion as of June 30, 2018, and instead decreased to \$30.6 billion, prior to the changes in assumptions and provisions).

Major sources of gains and losses from the June 30, 2017 valuation to the June 30, 2018 valuation are as follows:

1. \$35 million loss on active members who were not included in the June 30, 2017 valuation.
2. \$90 million loss on roughly 550 “pop-up” retirees who were not in the prior year census data.
3. \$390 million gain on roughly 8,300 deaths among retirees and beneficiaries.
4. \$50 million loss on roughly 3,600 active members who retired during the one-year period.
5. \$250 million gain on roughly 7,300 active members terminating employment.
6. \$540 million gain resulting from use of the System-provided frozen accrued benefit as of June 30, 2013 for Act 447 and Act 1 active members.

Further discussion is warranted on items 2 and 6.

For Item 2, the entire \$90 million is not a loss to the extent that these new retirees were previously included in the deferred vested liability. However, we cannot determine what

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portion of the 550 retirees emerged from deferred vested status since deferred vested census data is not complete and the deferred vested liability is developed by placing a loading assumption on System liabilities to account for deferred vested members.

For item 6, this is the first year that frozen accrued benefits as of June 30, 2013 were provided by the System for Act 447 and Act 1 active members. Prior valuations reflected estimated benefit amounts based on the census data provided for use in earlier valuations. In general, the new System-provided frozen accrued benefits were lower than the previously used estimates, resulting in a liability gain.

Change in Assumptions since Prior Valuation

In accordance with GASB 73 and GASB 75, the discount rate is based on a bond market index. PRGERS has selected the Bond Buyer General Obligation 20-Bond Municipal Bond Index for this purpose. The index rate and resulting discount rate increased from 3.58% as of June 30, 2017 to 3.87% as of June 30, 2018.

The projected mortality improvement scale was updated from Scale MP-2017 to Scale MP-2018 to reflect the projected mortality improvement scale issued in the valuation year.

Changes in Plan Provisions since Prior Valuation

Act 106-2017

Act 106-2017 was enacted on August 23, 2017 and impacts the benefits provided to PRGERS members as follows:

- New employees hired July 1, 2017 or later will be participants in a separate defined contribution plan and will not be PRGERS members.
- Effective July 1, 2017, current PRGERS members will no longer make any contributions to PRGERS. Prospectively, active members will participate in a separate defined contribution plan.

In addition to the benefit changes, Act 106-2017 provides that PRGERS will be funded on a pay-as-you-go basis. The following contributions are eliminated by Act 106-2017:

- Act 116-2011 employer contributions – was 15.525% of payroll in 2016-2017 and was scheduled to increase by 1.25% of payroll per year to an ultimate rate of 20.525% of payroll in 2020-2021 and later

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- Act 32-2013 Additional Uniform Contribution – was \$776 million in 2016-2017 and projected as \$685 million from 2017-2018 to 2032-2033, with annual recalculations (only of portion of the annual amounts were collected in prior years)
- Act 3-2013 Supplemental Contributions – was \$2,000 for each pensioner (including beneficiaries receiving survivor benefits) who was previously benefitting as an Act 447 or Act 1 member while an active employee. The contribution paid for the Medical Insurance Plan Contribution (up to \$1,200 per member), the Christmas Bonus (\$200 per member), and Medication Bonus (\$100 per member) payable to members who retired prior to July 1, 2013. The excess of these Supplemental Contributions remained in the System to pay down the unfunded actuarial accrued liability.

Prior to July 1, 2017, credits to the notional Defined Contribution Hybrid Contribution Account included member contributions and interest credits based on the investment yield of the System's assets as determined by the Board. As discussed above, under Act 106-2017 members will no longer be contributing to PRGERS. In addition, with the switch to a pay-as-you-go basis for funding benefits, there will be no System assets to generate investment returns, and we have been informed that no future interest credits will be applied to members' Defined Contribution Hybrid Contribution Accounts beginning July 1, 2017 and later.

As directed by the Commonwealth and PRGERS, the changes due to Act 106-2017, including the transition to GASB 73, are to be reflected as of July 1, 2017. The Total Pension Liability is reduced by \$2.02 billion effective July 1, 2017 due to the Act 106-2017 changes, including the related method change.

Act 211-2015

As the electing members are now known, this valuation reflects the impact of the early retirement incentive provided under Act 211-2015 (enacted December 8, 2015) as amended by Act 170-2016. (Please see the overview of recent significant changes in plan provisions section for more information.) The Total Pension Liability as of June 30, 2018 increased by \$78 million due to enhanced benefits provided to the 1,713 members who elected to retire from the approved agencies under Act 211-2015. Although the System commences paying benefits at age 61, these members are included as retirees in the census data.

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Changes in Methods since the Prior Valuation

Because of Act 106-2017, no future benefits (except for the additional benefits due to death or disability for reasons specified in Act 127-1958) will be earned by PRGERS members. As a result, the GASB 67 Total Pension Liability equals the present value of all projected benefits, exclusive of the additional Act 127-1958 benefits. Going forward, the service cost will only reflect the anticipated future additional Act 127-1958 benefits.

Overview of Recent Significant Changes in Plan Provisions

Act 3-2017

Act 66-2014 originally implemented a salary freeze for FY 2014-15 through FY 2016-17 for Central Government employees. The recent extension in Act 3-2017 freezes salaries for four additional years, through FY 2020-21.

Due to the Act 66-2014 required savings for public corporations and the current economic conditions in Puerto Rico, the extension of the salary freeze until July 1, 2021 was also assumed for public corporation and municipal employees. (This same assumption was used for the original Act 66-2014 salary freeze.)

Act 211-2015

Act 211-2015 is an early retirement incentive program that was passed on December 8, 2015. All employers participating in PRGERS (Central Government, Municipalities and Public Corporations) were eligible to apply to participate in Act 211-2015. Qualification was conditioned upon approval by the Office of Management and Budget (“OMB”) of the agency’s plan to implement such program and its impact on the agency.

Act 211-2015 states that employers who have outstanding debt with PRGERS must enter into a payment plan that includes using a portion of the employer’s savings from Act 211-2015 in order to pay the outstanding debt.

Eligible employees are Act 447 members in PRGERS who have at least 20 years of service at the time of enrollment in the program, and who, except for Police, are not already eligible to retire under Act 447.

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Under Act 211-2015, employees who elect to participate in the program will receive a variety of benefits, some of which do not impact PRGERS. The benefits which impact PRGERS are as follows:

1. Contributions to the Defined Contribution Hybrid Program while enrolled in the program equal to 10% of the average compensation as of December 31, 2015, paid in full by the employer until the member reaches age 61. Note that employer contributions will also be paid to the System on this basis. However, all such contributions ceased July 1, 2017 due to Act 106-2017.
2. Upon death while enrolled in the program prior to age 61, participation in the program will end and the death benefits payable to survivors if any will be the same as for an active Act 447 member.
3. Upon attainment of age 61, the employee will begin collecting retirement benefits from PRGERS, with a guarantee at the time of retirement that the retirement benefit will be at least 50% of average compensation as of June 30, 2013 (60% for Puerto Rico Police provided the agency pays for the increase from 50% to 60%). Benefits for Coordination Plan members (which decrease upon attainment of Social Security Retirement Age) can never be less than 50% of average compensation as of June 30, 2013. The agency shall pay an additional contribution to PRGERS to cover the cost of providing this additional minimum benefit.

Act 170-2016

Act 170-2016 amended Act 211-2015 by expanding the eligible group of members to include additional eligible agencies and additional eligible members in all eligible agencies. Act 170-2016 did not change the benefits provided to the member nor does it change the methodology to calculate the cost for the participating employers.

Fiscal Plan

The *2020 Fiscal Plan for Puerto Rico* was submitted on May 3, 2020 to the Financial Oversight and Management Board (“FOMB”), a body created by the enactment of the Puerto Rico Oversight, Management, and Economic Stability Act (“PROMESA”). The liabilities presented in this valuation are based on existing law only.

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GASB Pension Accounting Information

Pension accounting results in Section III of this report have been prepared under GASB 73 parameters to determine a Total Pension Liability at the end of the fiscal year. The Total Pension Liability reflects the full amount of the liability, and thus can be significantly volatile from year to year.

GASB OPEB Accounting Information

OPEB accounting results in Section IV of this report have been prepared under GASB 75 parameters to determine a Total OPEB Liability at the end of the fiscal year. The Total OPEB Liability reflects the full amount of the liability, and thus can be significantly volatile from year to year.

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SECTION II - MANAGEMENT INFORMATION

A. Allocation of Liability by Pension Law and System Entity as of June 30, 2018

	<u>GASB 73 Total Pension Liability for:</u>			GASB 75
	<u>Basic System Benefits</u>	<u>System Administered Benefits</u>	<u>Basic System and System Administered Benefits</u>	<u>Total OPEB Liability</u>
Government				
Act 447	\$11,802,026,912	\$1,313,367,390	\$13,115,394,302	\$576,294,055
Act 1	2,710,538,014	289,249,776	2,999,787,790	76,648,015
System 2000 / Act 3	<u>938,684,254</u>	<u>451,578,254</u>	<u>1,390,262,508</u>	<u>1,945,712</u>
	15,451,249,180	2,054,195,420	17,505,444,600	654,887,782
Public Corporations				
Act 447	5,497,754,593	463,476,224	5,961,230,817	171,394,221
Act 1	862,666,876	48,063,156	910,730,032	21,284,045
System 2000 / Act 3	<u>358,520,294</u>	<u>3,824,186</u>	<u>362,344,480</u>	<u>556,439</u>
	6,718,941,763	515,363,566	7,234,305,329	193,234,705
Municipalities				
Act 447	1,690,422,353	184,784,399	1,875,206,752	105,273,956
Act 1	594,195,246	55,978,367	650,173,613	21,606,546
System 2000 / Act 3	<u>298,391,442</u>	<u>43,896,021</u>	<u>342,287,463</u>	<u>440,643</u>
	2,583,009,041	284,658,787	2,867,667,828	127,321,145
Total				
Act 447	18,990,203,858	1,961,628,013	20,951,831,871	852,962,232
Act 1	4,167,400,136	393,291,299	4,560,691,435	119,538,606
System 2000 / Act 3	<u>1,595,595,990</u>	<u>499,298,461</u>	<u>2,094,894,451</u>	<u>2,942,794</u>
	\$24,753,199,984	\$2,854,217,773	\$27,607,417,757	\$975,443,632

System Administered Benefits for System 2000 and Act 3 members are enhanced death and disability benefits for hazardous duty employees covered by Act 127 and the related bonus benefits for these members. GASB 75 benefits are the medical insurance plan contributions for these members.

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SECTION III - GASB 73 ACCOUNTING INFORMATION

A. Total Pension Liability

	<u>June 30, 2017</u>	<u>June 30, 2018</u>
Total Pension Liability		
Total pension liability	\$32,109,294,000	\$27,607,417,757
Covered payroll	3,344,197,000	3,136,022,608
Total pension liability as a % of covered payroll	960.15%	880.33%

The total pension liability was determined by an actuarial valuation as of July 1, 2017, calculated based on the discount rate and actuarial assumptions as shown in Section VII and was then projected forward to June 30, 2018. There have been no significant changes between the valuation date of July 1, 2017 and the fiscal year end. Any significant changes during this period must be reflected as prescribed by GASB 73. Covered Payroll is as of July 1, 2017.

Discount Rate

Discount rate	3.58%	3.87%
Municipal bond rate *	3.58%	3.87%

The discount rate was based on the Bond Buyer General Obligation 20-Bond Municipal Index.

Other Key Actuarial Assumptions

Please refer to Section VII of this report for the other actuarial assumptions used.

Valuation date	July 1, 2016	July 1, 2017
Measurement date	June 30, 2017	June 30, 2018
Actuarial cost method	Entry Age Normal	Entry Age Normal

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SECTION III - GASB 73 ACCOUNTING INFORMATION

B. GASB 73 Benefit Obligations as of June 30, 2018

	<u>Basic System Benefits</u>	<u>System Administered Benefits</u>	<u>Total</u>
1. Projected Benefits Payable to Retirees and Beneficiaries			
Retirees	\$16,436,986,488	\$1,366,179,375	\$17,803,165,863
Disabled Members	902,219,928	458,738,517	1,360,958,445
Beneficiaries	<u>481,843,510</u>	<u>178,209,434</u>	<u>660,052,944</u>
Total	17,821,049,926	2,003,127,326	19,824,177,252
2. Projected Benefits Payable to Vested Terminated Members	601,231,387	67,753,060	668,984,447
3. Actuarial Accrued Liability for Active Members	6,228,205,590	783,337,387	7,011,542,977
4. Return of Contributions due to former Members	102,713,081	0	102,713,081
5. Total Pension Liability as of June 30, 2018: (1) + (2) + (3) + (4)	\$24,753,199,984	\$2,854,217,773	\$27,607,417,757

The above liabilities are for Basic System Benefits and selected System Administered Benefits. See Section I for more information.

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PUERTO RICO GOVERNMENT EMPLOYEES RETIREMENT SYSTEM

SECTION III - GASB 73 ACCOUNTING INFORMATION

C. Changes in Total Pension Liability

Changes in Total Pension Liability	Increase (Decrease) Total Pension Liability
Balance as of June 30, 2017	\$32,109,294,000
Changes for the year:	
Service cost	78,919,042
Interest on total pension liability	1,053,382,086
Effect of plan changes	(1,939,029,530)
Effect of economic/demographic (gains) or losses	(1,102,123,203)
Effect of assumptions changes or inputs	(1,086,447,988)
Benefit payments	(1,506,576,650)
Balance as of June 30, 2018	\$27,607,417,757

D. Sensitivity Analysis

The following presents the total pension liability of PRGERS, calculated using the discount rate of 3.87%, as well as what the System's total pension liability would be if it were calculated using a discount rate that is 1 percentage point lower (2.87%) or 1 percentage point higher (4.87%) than the current rate.

	1% Decrease 2.87%	Current Discount Rate 3.87%	1% Increase 4.87%
Total pension liability	\$31,414,889,611	\$27,607,417,757	\$24,518,493,966

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PUERTO RICO GOVERNMENT EMPLOYEES RETIREMENT SYSTEM

SECTION IV - GASB 75 ACCOUNTING INFORMATION

A. Total OPEB Liability

	<u>June 30, 2017</u>	<u>June 30, 2018</u>
Total OPEB Liability		
Total OPEB liability	\$1,067,502,659	\$975,443,632
Covered payroll	N/A	N/A
Total OPEB liability as a % of covered payroll	N/A	N/A

The total OPEB liability was determined by an actuarial valuation as of July 1, 2017, calculated based on the discount rate and actuarial assumptions as shown in Section VII and was then projected forward to June 30, 2018. There have not been significant changes between the valuation date of July 1, 2017 and the fiscal year end. Any significant changes during this period must be reflected as prescribed by GASB 75.

Discount Rate

Discount rate	3.58%	3.87%
Municipal bond rate	3.58%	3.87%

The discount rate was based on the Bond Buyer General Obligation 20-Bond Municipal Index.

Other Key Actuarial Assumptions

Please refer to Section VII of this report for the other actuarial assumptions used.

Valuation date	July 1, 2016	July 1, 2017
Measurement date	June 30, 2017	June 30, 2018
Actuarial cost method	Entry Age Normal	Entry Age Normal
Medical trend rate	not applicable	not applicable

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PUERTO RICO GOVERNMENT EMPLOYEES RETIREMENT SYSTEM

SECTION IV - GASB 75 ACCOUNTING INFORMATION

B. GASB 75 Benefit Obligations as of June 30, 2018

1. Projected Benefits Payable to Retirees and Beneficiaries:	
Retirees	\$854,387,532
Disabled Members	121,056,100
Beneficiaries	<u>0</u>
Total	975,443,632
2. Projected Benefits Payable to Vested Terminated Members:	0
3. Actuarial Accrued Liability for Active Members:	0
4. Total OPEB Liability as of June 30, 2018:	
(1) + (2) + (3)	975,443,632

The above liabilities are for the Medical Insurance Plan Contribution portion of the System Administered Benefits. See Section I for more information.

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PUERTO RICO GOVERNMENT EMPLOYEES RETIREMENT SYSTEM

SECTION IV - GASB 75 ACCOUNTING INFORMATION

C. Changes in Total OPEB Liability

Changes in Total OPEB Liability	Increase (Decrease) Total OPEB Liability
Balance as of June 30, 2017	\$1,067,502,659
Changes for the year:	
Service cost	0
Interest on total OPEB liability	36,770,372
Effect of plan changes	0
Effect of economic/demographic (gains) or losses	(18,936,649)
Effect of assumptions changes or inputs	(28,381,399)
Benefit payments	(81,511,351)
Balance as of June 30, 2018	\$975,443,632

D. Sensitivity Analysis

The following presents the total OPEB liability of PRGERS, calculated using the discount rate of 3.87%, as well as what the System's total OPEB liability would be if it were calculated using a discount rate that is 1 percentage point lower (2.87%) or 1 percentage point higher (4.87%) than the current rate.

	1% Decrease 2.87%	Current Discount Rate 3.87%	1% Increase 4.87%
Total OPEB liability	\$1,069,069,439	\$975,443,632	\$895,843,177

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PUERTO RICO GOVERNMENT EMPLOYEES RETIREMENT SYSTEM

SECTION V - CENSUS DATA

A. Summary of Member Data as of July 1, 2017

	Act 447	Act 1	System 2000 / Act 3	Total
Active Members				
Count	13,056	36,161	63,398	112,615
Average Age	56.5	51.7	44.0	47.9
Average Salary	\$33,057	\$31,021	\$24,964	\$27,847
Average Creditable Service	30.0	22.3	11.4	17.1
Average Accumulated Member Contributions	\$59,828	\$49,843	\$24,125	\$36,523
Retired Members				
Count	81,225	9,632	2,800	93,657
Average Age	70.8	67.5	65.5	70.3
Average Monthly Basic System Benefit	\$1,191	\$401	\$806	\$1,098
Average Monthly System Administered Benefit	\$79	\$59	\$2	\$75
Disabled Members				
Count	11,672	2,242	212	14,126
Average Age	72.0	66.0	57.5	70.8
Average Monthly Basic System Benefit	\$415	\$458	\$902	\$429
Average Monthly System Administered Benefit	\$221	\$151	\$6	\$206
Beneficiaries in payment				
Count	12,399	155	104	12,658
Average Age	76.3	69.6	63.0	76.1
Average Monthly Basic System Benefit	\$319	\$414	\$724	\$324
Average Monthly System Administered Benefit	\$117	\$96	\$76	\$116

Basic System Benefit and System Administered Benefit amounts shown above are for pension benefits, including minimum benefits up to \$500 per month, COLAs, and future benefits to Act 211 retirees, and excludes benefits payable at a later date to Law 70 Section 4B retirees. Special Law "bonus" benefits are not reflected.

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PUERTO RICO GOVERNMENT EMPLOYEES RETIREMENT SYSTEM

SECTION VI – SUMMARY OF PRINCIPAL PLAN PROVISIONS **AS OF JUNE 30, 2018**

This summary of plan provisions is intended only to describe the essential features of the plan for valuation purposes. All eligibility requirements and benefit amounts shall be determined in strict accordance with the plan document itself.

Act 106-2017 closed participation in PRGERS to new members effective July 1, 2017, and moved prospective accruals for all current active members to a separate defined contribution plan outside of PRGERS. This summary details the provisions under Act 3 of 2013, which was effective July 1, 2013 and under which the benefits to be paid to PRGERS members are determined. Certain provisions are different for the three groups of members who entered PRGERS prior to July 1, 2013 as described below.

- Act 447 members are generally those members hired before April 1, 1990.
- Act 1 members are generally those members hired on or after April 1, 1990 and on or before December 31, 1999.
- System 2000 members are generally those members hired on or after January 1, 2000 and on or before June 30, 2013.

Act 106-2017 eliminated the prior statutory employer contributions and changed the funding of Systems benefits to pay-as-you-go by the Commonwealth, public corporation or municipality. Prior to July 1, 2017, most benefits were paid from system assets while some benefits were paid by the General Fund, public corporation or municipality.

1. Type of Plan

The System is a contributory, hybrid defined benefit plan.

2. Effective Date

The System was established in 1951 by Act 447 to be effective January 1, 1952. The plan was last amended under Act 106-2017, approved August 23, 2017.

3. Eligibility for Membership

Members of the Employees Retirement System of the Government of Puerto Rico and its Instrumentalities include all regular full-time and non-municipal temporary employees who are not contributing to other Retirement Systems (Articles 1-104 and 1-105) and were hired before July 1, 2017 (Act 106-2017). Employees include those in the following categories:

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PUERTO RICO GOVERNMENT EMPLOYEES RETIREMENT SYSTEM

SECTION VI – SUMMARY OF PRINCIPAL PLAN PROVISIONS AS OF JUNE 30, 2018

- Police of Puerto Rico,
- Firefighters of Puerto Rico,
- Elective officers of the People of Puerto Rico and the employees of the Legislature,
- Officers and employees of the Government of Puerto Rico,
- Officers and employees of public enterprises,
- Officers and employees, including mayors, of the municipalities, and
- Irregular personnel fulfilling the requirements of regular employee.

Membership is mandatory, except for the Governor of Puerto Rico, Government Secretaries, heads of public agencies and instrumentalities, the Governor's aides, gubernatorial appointees of commissions and boards, members of the Legislature, the Controller of Puerto Rico, the employees of the Agricultural Extension Service of the U.P.R., the Ombudsman and the Commonwealth Election Board employees (Article 1-105). In addition, membership is optional for eligible employees while working and residing outside the territorial limits of the Commonwealth of Puerto Rico (Act 112 of 2004).

4. Definitions

- a. Fiscal Year: A Fiscal Year is a 12-month period beginning on July 1 and ending on June 30 (Article 1-104).
- b. General Fund: The General Expenses Budget of the Government of the Commonwealth of Puerto Rico.
- c. Government of Puerto Rico or Government: The Government of the Commonwealth of Puerto Rico, its departments, divisions, bureaus, offices, agencies and dependencies (Article 1-104).
- d. Public Enterprise: Any government instrumentality of the People of Puerto Rico (Article 1-104).
- e. Municipality: The Municipality of San Juan (Article 1-104).

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PUERTO RICO GOVERNMENT EMPLOYEES RETIREMENT SYSTEM

SECTION VI – SUMMARY OF PRINCIPAL PLAN PROVISIONS
AS OF JUNE 30, 2018

- f. Employer: The Government of Puerto Rico, any public enterprise that has elected to participate in the System, or any municipality that has elected to participate in the System (Articles 1-104 and 1-110).
- g. Employee: Any officer or employee of the Employer regularly employed on a full time basis (Article 1-104).
- h. Creditable Service for Act 447 members: The years and months of plan participation, during which contributions have been made, beginning on the later of date of hire or January 1, 1952 and ending on date of separation from service. For purposes of calculating Creditable Service, the following schedule shall apply:

Service During a Fiscal Year	Creditable Service Earned
15 days during the same month	1 month
2 months and 15 days to 5 months and 14 days	½ year
5 months and 15 days to 8 months and 14 days	¾ year
8 months and 15 days to 12 months	1 year

Note: All of the days have to be during the same month.

Months in which less than 15 days of service are rendered do not count towards Creditable Service. (Article 1-106)

In general, Creditable Service may be earned for any period of employment during which no contributions were made if Accumulated Contributions for such periods are paid to the System. The same rules hold for rehired employees who previously received a refund of Accumulated Contributions at separation. (Article 1-106)

Creditable Service also includes purchased service, if any (Article 1-106).

- i. Creditable Service for Act 1 members: The years and completed months of plan participation, during which contributions have been made, beginning on date of

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PUERTO RICO GOVERNMENT EMPLOYEES RETIREMENT SYSTEM

SECTION VI – SUMMARY OF PRINCIPAL PLAN PROVISIONS
AS OF JUNE 30, 2018

hire and ending on date of separation from service. (Articles 1-106 and 2-109) For purposes of calculating Creditable Service, the following schedule shall apply:

Service During a Fiscal Year	Creditable Service Earned
Less than 3 months	None
3 to 5 months	½ year
6 to 8 months	¾ year
9 months or more	1 year

In general, Creditable Service may be earned for any period of employment during which no contributions were made if Accumulated Contributions for such periods are paid to the System. The same rules hold for rehired employees who previously received a refund of Accumulated Contributions at separation. (Article 1-106)

Creditable Service also includes purchased service, if any (Article 1-106).

- j. Compensation: The gross cash compensation, excluding bonuses and overtime, upon which contributions by a Member to the Fund are based (Article 1-104).
- k. Average Compensation for Act 447 members: The average of the 3 highest years (36 highest months) of compensation that the participant has received for Creditable Service (Article 1-104).
- l. Average Compensation for Act 1 members: The average of the last 5 years of compensation that the participant has received for Creditable Service. If annual compensation in the averaging period exceeds by more than 10% the annual compensation in the immediately preceding year, the compensation in excess of said 10% shall not be included in the calculation of Average Compensation. (Article 2-108)
- m. Contributions: The amount deducted from the compensation of a Member and the employer (Section 781).
- n. Regular Interest: The interest rate as prescribed by the Board of Trustees (Article 1-104). The rate of 2.50% has always been in effect.

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PUERTO RICO GOVERNMENT EMPLOYEES RETIREMENT SYSTEM

SECTION VI – SUMMARY OF PRINCIPAL PLAN PROVISIONS
AS OF JUNE 30, 2018

- o. Accumulated Contributions: The sum of all amounts deducted from the compensation of a Member prior to July 1, 2013 with Regular Interest (Article 1-104).
- p. Actuarial Equivalent: Equality in value such that the present value of the amount under any form of payment is essentially the same as the present value of the amount under the normal form of annuity payment for single participants. Actuarially Equivalent factors are determined based on annuity and mortality tables adopted by the Board of Trustees based on the system's experience and in accordance with the recommendations of the actuary.

For purposes of converting the Defined Contribution Hybrid Contribution Account to a lifetime annuity, the current factors adopted by the Board are the single life annuity factors using an interest rate of 4% and the RP-2000 Healthy Annuitant Mortality Table for ages 50 and over and the RP-2000 Employee Mortality Table for ages under 50, projected to 2025 using Scale AA and blended 50% male / 50% female.

- q. Public Officers in High-Risk Positions: The Commonwealth of Puerto Rico Police, the Municipal Police, the Commonwealth Firefighter Corps, the Municipal Firefighter Corps, and the Custody Officers Corps.
- r. Social Security Retirement Age (SSRA): The Social Security Retirement Age varies based on the year of birth as indicated in the table below.

Year of Birth	Social Security Retirement Age
1937 or earlier	65 years
1938	65 years and 2 months
1939	65 years and 4 months
1940	65 years and 6 months
1941	65 years and 8 months
1942	65 years and 10 months
1943 to 1954	66 years
1955	66 years and 2 months
1956	66 years and 4 months
1957	66 years and 6 months

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PUERTO RICO GOVERNMENT EMPLOYEES RETIREMENT SYSTEM

SECTION VI – SUMMARY OF PRINCIPAL PLAN PROVISIONS
AS OF JUNE 30, 2018

Year of Birth	Social Security Retirement Age
1958	66 years and 8 months
1959	66 years and 10 months
1960 and later	67 years

- s. Retirement Savings Account: The individual retirement account established for each member of System 2000 (Article 1-104). Each member has a nonforfeitable right to the value of his Retirement Savings Account (Article 3-107).
- t. Credits to Retirement Savings Account: The credits to the retirement savings account include (1) any initial transfer balance for transferred participants, (2) contributions of the members to System 2000, and (3) the investment yield for each semester of the fiscal year based on the investment alternatives elected by the member (Article 3-107).
- u. Investment Alternatives for Retirement Savings Account: System 2000 members could choose to allocate their Retirement Savings Account, in multiples of 10%, to the following investment options prior to July 1, 2013. Changes in allocation could have been made annually, effective each July 1.
 - i. Fixed income – The yield is equal to the average monthly yield of the Two-Year Constant Maturity Treasuries during each semester of the fiscal year.
 - ii. System’s investment portfolio – The yield is equal to 90% (75% prior to July 1, 2004) of the investment portfolio yield of the System during each semester of each fiscal year minus management fees such as fees payable to administrators of the portfolio.
 - iii. Other alternatives adopted by the Board of the System.
- v. Defined Contribution Hybrid Contribution Account: The individual account established for each active member as of July 1, 2013 and for each future member thereafter. Each member has a nonforfeitable right to their contributions to the Defined Contribution Hybrid Contribution Account and, for the System 2000 members, the initial transfer of their Retirement Savings Account as of June 30, 2013.
- w. Credits to Defined Contribution Hybrid Contribution Account: The credits to the retirement savings account include (1) the Retirement Savings Account as of June 30, 2013 for System 2000 members, (2) contributions by all members from July 1,

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PUERTO RICO GOVERNMENT EMPLOYEES RETIREMENT SYSTEM

SECTION VI – SUMMARY OF PRINCIPAL PLAN PROVISIONS AS OF JUNE 30, 2018

2013 to June 30, 2017 to PRGERS, and (3) the investment yield for each semester of the fiscal year as determined by the Board. The investment yield determined by the Board shall never be less than 80% of the investment portfolio yield of the System during each semester of each fiscal year minus management fees such as, but not limited to, fees payable to administrator of the portfolio, safekeeping of securities and investment counseling. With the move to pay-as-you-go funding under Act 106-2017, no credits are applied after June 30, 2017.

5. Coordination with Social Security for Act 447 members: Except for police, mayors and employees of the Agricultural Extension Service of the U.P.R., participants may elect to coordinate coverage under the System with Federal Social Security by selecting the lower of two contribution options. Those participants selecting Option (1), the Coordination Plan, are subject to a benefit recalculation upon attainment of Social Security Retirement Age. Those participants selecting Option (2), the Supplementation Plan, will continue to receive the same benefits for life, without any adjustments at SSRA. At any time up to retirement, participants may change from Option (1) to Option (2) by making a contribution including interest to the System, retroactive to the later of July 1, 1968 or the date of plan entry, that will bring their career Accumulated Contributions to the Option (2) level. All police, mayors and employees of the Agricultural Extension Service of the U.P.R. are covered under Option (2), the Supplementation Plan.

6. Retirement Benefits

- a. Eligibility for Act 447 members: Act 447 members who were eligible to retire as of June 30, 2013 would continue to be eligible to retire at any time. Prior to July 1, 2013, Act 447 members could retire upon (1) attainment of age 55 with 25 years of Creditable Service, (2) attainment of age 58 with 10 years of Credited Service, (3) any age with 30 years of Creditable Service, (4) for Public Officers in High Risk Positions, attainment of age 50 with 25 years of Creditable Service, and (5), for Mayors, attainment of age 50 with 8 years of Creditable Service as a Mayor. In addition, Act 447 members who would attain 30 years of Creditable Service by December 31, 2013 would be eligible to retire at any time.

Act 447 members who were not eligible to retire as of June 30, 2013 and did not attain 30 years of Creditable Service by December 31, 2013 would be eligible to

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PUERTO RICO GOVERNMENT EMPLOYEES RETIREMENT SYSTEM

SECTION VI – SUMMARY OF PRINCIPAL PLAN PROVISIONS
AS OF JUNE 30, 2018

retire upon attainment of the retirement eligibility age shown in the following table with 10 years of Creditable Service.

Date of Birth	Attained Age as of June 30, 2013	Retirement Eligibility Age
July 1, 1957 or later	55 or less	61
July 1, 1956 to June 30, 1957	56	60
Before July 1, 1956	57 and up	59

In addition to the requirements in the preceding table, Act 447 Public Officers in High Risk Positions who were not eligible to retire as of June 30, 2013 and did not attain 30 years of Creditable Service by December 31, 2013 are eligible to retire directly from active service upon the attainment of age 55 with 30 years of Creditable Service.

- b. Eligibility for Act 1 members: Act 1 members who were eligible to retire as of June 30, 2013 would continue to be eligible to retire at any time. Prior to July 1, 2013, Act 1 members could retire upon (1) attainment of age 55 with 25 years of Creditable Service, (2) attainment of age 65 with 10 years of Credited Service, (3) for Public Officers in High Risk Positions, any age with 30 years of Creditable Service, and (4) for Mayors, attainment of age 50 with 8 years of Creditable Service as a Mayor.

Act 1 members who were not eligible to retire as of June 30, 2013 would be eligible to retire upon attainment of age 65 with 10 years of Creditable Service. In addition, Act 1 Public Officers in High Risk Positions who were not eligible to retire as of June 30, 2013 are eligible to retire directly from active service upon the attainment of age 55 with 30 years of Creditable Service.

- c. Eligibility for System 2000 members: System 2000 members who were eligible to retire as of June 30, 2013 would continue to be eligible to retire at any time. Prior to July 1, 2013, System 2000 members could retire upon attainment of age 55 for Public Officers in High Risk Positions and attainment of age 60 otherwise.

System 2000 members who were not eligible to retire as of June 30, 2013 would be eligible to retire upon attainment of age 55 for Public Officers in High Risk

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PUERTO RICO GOVERNMENT EMPLOYEES RETIREMENT SYSTEM

SECTION VI – SUMMARY OF PRINCIPAL PLAN PROVISIONS
AS OF JUNE 30, 2018

Positions and upon attainment of the retirement eligibility age shown in the following table otherwise.

Date of Birth	Attained Age as of June 30, 2013	Retirement Eligibility Age
July 1, 1957 or later	55 or less	65
July 1, 1956 to June 30, 1957	56	64
July 1, 1955 to June 30, 1956	57	63
July 1, 1954 to June 30, 1955	58	62
Before July 1, 1954	59 and up	61

- d. Eligibility for members hired after June 30, 2013: Attainment of age 58 if a Public Officer in a High Risk Position and attainment of age 67 otherwise.
- e. Benefit: An annuity payable for the lifetime of the member equal to the annuitized value of the balance in the Defined Contribution Hybrid Contribution Account at the time of retirement, plus, for Act 447 and Act 1 members, the Accrued Benefit determined as of June 30, 2013. If the balance in the Defined Contribution Hybrid Contribution Account is \$10,000 or less, the balance in the Defined Contribution Hybrid Contribution Account shall be paid as a lump sum instead of as an annuity.
- f. Accrued Benefit as of June 30, 2013 for Act 447 members: The accrued benefit as of June 30, 2013 shall be determined based on the Average Compensation for Act 447 members, the years of Creditable Service, and the attained age of the member all as of June 30, 2013. For Act 447 Mayors, the Highest Compensation as a Mayor is determined as of June 30, 2013.

If the Act 447 member had at least 30 years of Creditable Service as of June 30, 2013, the accrued benefit equals 65% of Average Compensation if the member was under age 55 as of June 30, 2013 or 75% of Average Compensation if the member was at least age 55 as of June 30, 2013. For participants selecting the Coordination Plan, the benefit is re-calculated at SSRA as 1.5% of Average Compensation up to \$6,600 multiplied by years of Creditable Service, up to 30 years, plus 65% (75% if member was at least age 55 as of June 30, 2013) of Average Compensation in excess of \$6,600.

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PUERTO RICO GOVERNMENT EMPLOYEES RETIREMENT SYSTEM

SECTION VI – SUMMARY OF PRINCIPAL PLAN PROVISIONS **AS OF JUNE 30, 2018**

If the Act 447 member had less than 30 years of Creditable Service as of June 30, 2013, and attains 30 years of Creditable Service by December 31, 2013, the accrued benefit equals 55% of Average Compensation if the member was under age 55 as of June 30, 2013 or 60% of Average Compensation if the member was at least age 55 as of June 30, 2013. For participants selecting the Coordination Plan, the benefit is re-calculated at SSRA as 1.5% of Average Compensation up to \$6,600 multiplied by years of Creditable Service, up to 30 years, plus 55% (60% if member was at least age 55 as of June 30, 2013) of Average Compensation in excess of \$6,600. Member contributions received from Act 447 members eligible for this transitory benefit during the period beginning July 1, 2013 and ending upon the attainment of 30 years of Creditable Service are considered pre-July 1, 2013 contributions; the contributions to the Defined Contribution Hybrid Contribution Account begin after the member attains 30 years of Creditable Service.

If the Act 447 member had less than 30 years of Creditable Service as of December 31, 2013, the accrued benefit equals 1.5% of Average Compensation multiplied by years of Creditable Service up to 20 years, plus 2% of Average Compensation multiplied by years of Creditable Service in excess of 20 years. Maximum benefit is 75% of Average Compensation. Except for Commonwealth Police and Commonwealth Firefighters, the benefit is actuarially reduced for each year payment commences prior to age 58. For participants selecting the Coordination Plan, the basic benefit is re-calculated at SSRA as 1% of Average Compensation up to \$6,600 multiplied by years of Creditable Service up to 20 years, plus 1.5% of Average Compensation up to \$6,600 multiplied by years of Creditable Service in excess of 20 years, plus 1.5% of Average Compensation in excess of \$6,600 multiplied by years of Creditable Service up to 20 years, plus 2.0% of Average Compensation in excess of \$6,600 multiplied by years of Creditable Service in excess of 20 years. Except for Police and Firefighters, the benefit is actuarially reduced for each year payment commences prior to age 58.

For Act 447 Mayors with at least 8 years of Creditable Service as a mayor, the accrued benefit will not be less than 5% of Highest Compensation as a Mayor for each year of Creditable Service as a Mayor up to 10 years, plus 1.5% of Highest Compensation as Mayor for each year of non-Mayoral Creditable Service up to 20 years, plus 2.0% of Highest Compensation as Mayor for each year of non-Mayoral Creditable Service in excess of 20 years. Non-Mayoral Creditable Service

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includes service earned as a Mayor in excess of 10 years. Maximum benefit is 90% of Highest Compensation as a Mayor.

- g. Accrued Benefit as of June 30, 2013 for Act 1 members: The accrued benefit as of June 30, 2013 shall be determined based on the Average Compensation for Act 1 members, the years of Creditable Service, and the attained age of the member all as of June 30, 2013. For Act 1 Mayors, the Highest Compensation as a Mayor is determined as of June 30, 2013.

If the Act 1 Commonwealth Police or Commonwealth Firefighter had at least 30 years of Creditable Service as of June 30, 2013, the accrued benefit equals 65% of Average Compensation if the member was under age 55 as of June 30, 2013 or 75% of Average Compensation if the member was at least age 55 as of June 30, 2013.

For all other Act 1 members, the accrued benefit equals 1.5% of Average Compensation multiplied by years of Creditable Service. The benefit is actuarially reduced for each year payment commences prior to age 65.

For Act 1 Mayors with at least 8 years of Creditable Service as a mayor, the accrued benefit will not be less than 5% of Highest Compensation as a Mayor for each year of Creditable Service as a Mayor up to 10 years, plus 1.5% of Highest Compensation as Mayor for each year of non-Mayoral Creditable Service up to 20 years, plus 2.0% of Highest Compensation as Mayor for each year of non-Mayoral Creditable Service in excess of 20 years. Non-Mayoral Creditable Service includes service earned as a Mayor in excess of 10 years. Maximum benefit is 90% of Highest Compensation as a Mayor.

- h. Compulsory Retirement: All Act 447 and Act 1 Public Officers in High Risk Positions must retire upon attainment of age 58 and 30 years of creditable service. A two year extension may be requested by the member from the Superintendent of the Puerto Rico Police, the Chief of the Firefighter Corps, or supervising authority as applicable.

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7. Termination Benefits

a. Lump Sum Withdrawal

Eligibility: A Member is eligible upon termination of service prior to 5 years of service or if the balance in the Defined Contribution Hybrid Contribution Account is \$10,000 or less.

Benefit: The benefit equals a lump sum payment of the balance in the Defined Contribution Hybrid Contribution Account as of the date of the permanent separation of service.

b. Deferred Retirement

Eligibility: A Member is eligible upon termination of service with 5 or more years of service (10 years of Creditable Service for Act 447 and Act 1 members) prior to the applicable retirement eligibility, provided the member has not taken a lump sum withdrawal of the Accumulated Contributions and the Defined Contribution Hybrid Contribution Account.

Benefit: An annuity payable for the lifetime of the member commencing at the applicable retirement eligibility age equal to the annuitized value of the balance in the Defined Contribution Hybrid Contribution Account at the time of retirement, plus, for Act 447 and Act 1 members, the Accrued Benefit determined as of June 30, 2013.

8. Death Benefits

a. Pre-retirement Death Benefit

Eligibility: Any current non-retired member is eligible.

Benefit: A refund of the Defined Contribution Hybrid Contribution Account, plus the Accumulated Contributions for Act 447 and Act 1 members.

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b. High-Risk Death Benefit under Act 127

Eligibility: Police, firefighters, and other employees in specified high-risk positions who die in the line of work due to reasons specified in Act 127 of 1958 (as amended).

Spouse's Benefit: 50% of the participant's Compensation at date of death, payable as an annuity until death or remarriage (Act 127 of 1958 as amended).

Children's Benefit: 50% of the participant's Compensation at date of death, payable as an annuity, allocated pro-rata among eligible children. The annuity is payable for life for a disabled child, until age 18 for a non-disabled child not pursuing studies, and until age 25 for a non-disabled child who is pursuing studies. (Act 127 of 1958 as amended)

Benefit if no spouse or children: The parents of the member shall each receive 50% of the participant's Compensation at date of death, payable as an annuity for life. (Act 127 of 1958 as amended)

Post-death increases: Effective July 1, 1996 and subsequently every three years, the above death benefits are increased by 3% provided that the beneficiary(ies) had been receiving payments for at least three years. (Act 127 of 1958 as amended)

c. Post-retirement Death Benefit for Members who retired prior to July 1, 2013

Eligibility: Any retiree or disabled member receiving a monthly benefit who has not elected a reversionary annuity and whose benefits commenced prior to July 1, 2013.

Benefit: The benefit is as follows (Law 105 as amended by Law 4):

- (i) For those married or with dependent children at the time of death, the annual income to a widow, or widower or dependent children is equal to 60% (50% if in the Coordination Plan - 30% prior to January 1, 2004) of the retirement benefit payable for life for a surviving spouse and/or disabled children and payable until age 18 (age 25 if pursuing studies) for non-disabled children. If

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in the Coordination Plan, the benefit to the surviving spouse does not begin until the spouse's attainment of age 60 and the surviving spouse must have been married to the member for at least 10 years to be eligible for this benefit.

- (ii) The benefit, when there is no relation as stated above, is equal to the remaining balance of Accumulated Contributions at the time of retirement after the deduction of lifetime annual income paid and is payable to a beneficiary or to the Member's estate. In no case shall the benefit be less than \$1,000. (Article 2-113 and Act 524 of 2004)

d. Post-retirement Death Benefit for Members who retired after June 30, 2013

Eligibility: Any retiree or disabled member who began receiving a monthly benefit after June 30, 2013.

Benefit: If the member elected at the time of retirement to transfer a portion of the annuity to a beneficiary by selecting an actuarially equivalent optional form of payment, the applicable survivor benefit.

For all members, the excess, if any, of the Defined Contribution Hybrid Contribution Account, plus the Accumulated Contributions for Act 447 and Act 1 members, at the time of retirement over the total annuity payments paid to the member and any beneficiary per the terms of the optional form of payment shall be payable to a beneficiary or the Member's estate.

- e. Beneficiaries receiving occupational death benefits as of June 30, 2013 continue to be eligible to receive such benefits.

9. Disability Benefits

a. Disability

Eligibility: All members are eligible upon the occurrence of disability.

Benefit: The balance of the Defined Contribution Hybrid Contribution Account payable as lump sum distribution, an immediate annuity or a deferred annuity at the election of the participant. Act 447 and Act 1 members remain eligible to

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receive the accrued benefit as of June 30, 2013 commencing at the applicable retirement eligibility age.

b. High Risk Disability under Act 127

Eligibility: Police, firefighters, and other employees in specified high-risk positions who are disabled in the line of work due to reasons specified in Act 127 of 1958 (as amended).

Benefit: 80% (100% for Act 447 members) of Compensation as of date of disability, payable as an annuity. If the member dies while still disabled, this annuity benefit continues to his beneficiaries. Beneficiaries include the surviving spouse and/or disabled children (for life), non-disabled children until age 18 (age 25 if pursuing studies), and the parents if no other beneficiaries. Effective July 1, 1996 and subsequently every three years, the disability benefit is increased by 3% provided that the member (or beneficiary) had been receiving payments for at least three years. (Act 127 of 1958 as amended)

c. Members who qualified for occupational or non-occupational disability benefits as of June 30, 2013 continue to be eligible to receive such benefits.

10. Minimum Benefits

a. Past Ad hoc Increases: The legislature, from time to time, increases pensions for certain retirees as described in Act 124 approved on June 8, 1973 and Act 23 approved on September 23, 1983.

b. Minimum Benefit for members who retired before July 1, 2013: The minimum monthly lifetime income for members who retired or become disabled before July 1, 2013 is \$500 per month effective July 1, 2013 (\$400 per month effective July 1, 2007 and \$300 per month up to June 30, 2007). (Act 156 of 2003, Act 35 of 2007, and Act 3 of 2013.)

c. Coordination Plan Minimum Benefit: A minimum monthly benefit is payable upon attainment of SSRA such that the benefit, when added to the Social Security Benefit, is not less than the benefit payable prior to SSRA.

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11. Cost-of-Living Adjustments (COLA) to Pension Benefits: The legislature, from time to time, increases pensions by 3% for retired and disabled members. Beneficiaries are not entitled to COLAs granted after the retiree's death. The first increase was granted by Act 10 of 1992. Subsequent 3% increases have been granted every third year since 1992, with the latest 3% increase established on April 24, 2007 and effective July 1, 2007 (retroactive to January 1, 2007) for retired and disabled members that were receiving a monthly benefit on or before January 1, 2004 (Act 35). In addition, effective July 1, 2008, any retired or disabled member that was receiving a monthly annuity on or before January 1, 2004 less than \$1,250 per month received an increase of up to 3% without exceeding the limit of \$1,250 per month (Act 35). (Various Acts)
12. Medical Insurance Plan Contribution: A payment of up to \$100 per month to the eligible medical insurance plan selected by the retiree or disabled member provided the member retired prior to July 1, 2013. (Act 483 as amended by Act 3)
13. Special "Bonus" Benefits:
 - a. Christmas Bonus: An annual bonus of \$200 for each retiree, beneficiary, and disabled member paid in December provided the member retired prior to July 1, 2013. (Act 144 as amended by Act 3)
 - b. Medication Bonus: An annual bonus of \$100 for each retiree, beneficiary, and disabled member to cover health costs paid in July provided the member retired prior to July 1, 2013. Evidence of coverage is not required. The amount is prorated if there are multiple beneficiaries. (Act 155 as amended by Act 3)
14. Member Contributions: Not applicable. Eliminated July 1, 2017 by Act 106-2017.

From July 1, 2013 to June 30, 2017, contributions by members were 10% of Compensation. However, for Act 447 Members who selected the Coordination Plan, the member contributions were 7% of Compensation up to \$6,600 plus 10% of Compensation in excess of \$6,600 during the 2013-2014 fiscal year and 8.5% of Compensation up to \$6,600 plus 10% of Compensation in excess of \$6,600 during the 2014-2015 fiscal year. Members may also have made voluntary additional contributions to their Defined Contribution Hybrid Contribution Account.

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Prior to July 1, 2013, contributions by Act 447 Members selecting the Coordination Plan were 5.775% of Compensation up to \$6,600 plus 8.275% of Compensation in excess of \$6,600. Contributions by all other Members were 8.275% of Compensation. System 2000 members may also have made voluntary contributions of up to 1.725% of compensation prior to July 1, 2013.

15. Service Purchase: Prior to July 1, 2013, active members with eligible service from prior employment may elect to purchase service in PRGERS. The cost of the purchase is calculated by applying the PRGERS statutory contribution rates to the member's salary during the years of service at the former employer. The amount due to member contributions is accumulated at 9.5% per year (6% prior to April 4, 2013) until 6 months after the time of the service purchase request. Any amount not covered by asset transfers from the member's prior pension fund is payable by the member (Law 10 of 1992, Law 14 of 1981, Law 122 of 2000, Laws 203 and 33 of 2007). Effective July 1, 2013, only veterans may purchase service for time spent under military leave prior to June 30, 2013. In addition, public employees in active military service were permitted to make voluntary contributions to the Defined Contribution Hybrid Contribution Account during the years of military leave prior to July 1, 2017.
16. Law 70 Retirement Incentive: During the 2010-2011 fiscal year, Law 70 provided for an early retirement incentive. Additional window periods occurred through December 31, 2012. Under Section 4A of Law 70, active members could terminate employment immediately and receive a bonus equal to one, three, or six months of salary (paid by the Commonwealth). Under Section 4B of Law 70, active members who had at least 15 years of service, but less than 30 years of service, were able to retire immediately with an enhanced benefit ranging from 37.5% to 50% of salary. This enhanced benefit is paid by the General Fund for government employees and Public Corporations for their employees until the member reaches the later of age 55 or the date the member would have completed 30 years of service had the member continued working. The System will pay the benefit after this time period. While the General Fund / Public Corporation is paying the pension benefit to the member or any surviving beneficiary, the General Fund / Public Corporation will also pay a contribution equal to the employer contribution rate (12.275% for the 2013-2014 fiscal year plus the employee contribution rate for Public Corporations (currently 10%)) of final salary to the System. The employer contribution rate applied to final salary increases as under Act 116-2011 to a rate of 20.525% of payroll in 2020-2021 and thereafter. Under Section 4C of Law 70, active members who had at least 30 years of service could retire immediately and

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receive a bonus equal to six months of salary (paid by the Commonwealth). For any active employee who retired under Section 4C, the Public Corporation will pay a contribution equal to the employer contribution rate (12.275% for the 2013-2014 fiscal year, increasing to 20.525% in 2020-2021 and thereafter) plus the employee contribution rate (currently 10%) of final salary to the System for five years after retirement.

17. Act 211-2015 Retirement Incentive: Act 211-2015 (enacted December 8, 2015) provided an early retirement incentive program. All employers participating in PRGERS (Central Government, Municipalities and Public Corporations) were eligible to apply to participate in Act 211-2015. Qualification was conditioned upon approval by the Office of Management and Budget (“OMB”) of the agency’s plan to implement such program and its impact on the agency.

Eligible employees are Act 447 members in PRGERS who have at least 20 years of service at the time of enrollment in the program, and who, except for Police, are not already eligible to retire under Act 447. Under Act 211-2015, employees who elect to participate in the program will receive a variety of benefits, some of which do not impact PRGERS. The benefits which impact PRGERS are as follows:

1. Contributions to the Defined Contribution Hybrid Program while enrolled in the program equal to 10% of the average compensation as of December 31, 2015, paid in full by the employer until the member reaches age 61. Note that employer contributions will also be paid to the System on this basis. However, all such contributions ceased July 1, 2017 due to Act 106-2017.
2. Upon death while enrolled in the program prior to age 61, participation in the program will end and the death benefits payable to survivors if any will be the same as for an active Act 447 member.
3. Upon attainment of age 61, the employee will begin collecting retirement benefits from PRGERS, with a guarantee at the time of retirement that the retirement benefit will be at least 50% of average compensation as of June 30, 2013 (60% for Puerto Rico Police provided the agency pays for the increase from 50% to 60%). Benefits for Coordination Plan members (which decrease upon attainment of Social Security Retirement Age) can never be less than 50% of average compensation as of June 30, 2013. The agency shall pay an additional contribution to PRGERS to cover the cost of providing this additional minimum benefit.

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Act 170-2016 amended Act 211-2015 by expanding the eligible group of members to include additional eligible agencies and additional eligible members in all eligible agencies.

18. Changes in Plan Provisions since Prior Valuation

Act 106-2017 closed participation in PRGERS to new members effective July 1, 2017, and moved prospective accruals for all current active members to a separate defined contribution plan outside of PRGERS. The following contributions were eliminated July 1, 2017 by Act 106-2017:

- Act 116-2011 Employer Contributions
- Act 32-2013 Additional Uniform Contribution
- Act 3-2013 Supplemental Contributions
- Member Contributions

The Act 211-2015 early retirement incentive was reflected in this valuation as the electing members are now known.

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SECTION VII – SUMMARY OF ACTUARIAL ASSUMPTIONS AS OF JUNE 30, 2018

Municipal Bond Rate: 3.87% per annum (Bond Buyer General Obligation 20-Bond Municipal Bond Index)

GASB 73 and GASB 75 discount rate: 3.87% per annum

Compensation Increases: 3.0% per year. No compensation increases are assumed until July 1, 2021 as a result of the Act 3-2017 four year extension of the Act 66-2014 salary freeze and the current general economy. Based on professional judgment and System input.

Defined Contribution Hybrid Contribution Account: No member contributions will be made to the Defined Contribution Hybrid Contribution Account after June 30, 2017. Based on the liquidation of System assets and move to pay-as-you-go funding under Act 106-2017, no future interest credits are assumed after June 30, 2017.

Basis for demographic assumptions: The post-retirement healthy and disabled mortality assumptions used in this valuation are based on a study of the plan's experience from 2007 to 2012 and updated expectations regarding future mortality improvement. Most other demographic assumptions used in this valuation are based on a 2009 experience study using data as of June 30, 2003, June 30, 2005, and June 30, 2007. Certain demographic assumptions (e.g. termination and retirement) were impacted by the Act 3 pension reforms and were revised based on the new retirement eligibility and expected future experience. All assumptions were reviewed with PRGERS staff for reasonableness and are documented in this Section.

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SECTION VII – SUMMARY OF ACTUARIAL ASSUMPTIONS AS OF JUNE 30, 2018

Termination: Withdrawal rates vary by employment category, age, and service.

Employment Category	Annual Rate of Termination
Act 447 General Employees under age 58 or less than 10 years of service	2.0%
Act 447 General Employees at least age 58 with at least 10 years of service	0.0
Act 447 Public Officers in High Risk Positions under age 50 or less than 10 years of service	1.6
Act 447 Public Officers in High Risk Positions ages 50 to 57 with less than 25 years of service	1.6
Act 447 Public Officers in High Risk Positions at least age 58 with at least 10 years of service or at least age 50 with at least 25 years of service	0.0
Act 1 General Employees	2.0
Act 1 Public Officers in High Risk Positions	1.6
System 2000 and Act 3 General Employees	2.0
System 2000 and Act 3 Public Officers in High Risk Positions	1.6

Commencement of benefits for terminated vested members: Future terminated members with a vested benefit are assumed to retire at the ages shown below, or at the attained age on the valuation date if later.

Employment Category	Act 447	Act 1	System 2000	Act 3
General Employees	61	65	65	67
Public Officers in High Risk Positions	61	65	55	58

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Retirement: Rates of retirement vary by employment category, Act, age and years of Creditable Service, and whether the member was eligible to retire as of June 30, 2013 for Act 447, Act 1, and System 2000 members.

Act 447 General Employees who were eligible to retire as of June 30, 2013 or attained 30 years of Creditable Service by December 31, 2013			
Age	Service condition		
	10 years	25 years	30 years
45 to 49			10.0%
50 to 53			15.0
54			20.0
55 to 57		10.0%	20.0
58	5.0%	10.0	20.0
59 to 64	10.0	15.0	20.0
65 to 69	15.0	15.0	20.0
70	100.0	100.0	100.0

Act 447 General Employees who were not eligible to retire as of June 30, 2013 and did not attain 30 years of Creditable Service by December 31, 2013		
Age	Year of Retirement Eligibility	
	First	Second and Later
59	20.0%	15.0%
60	25.0	15.0
61 to 69	30.0	15.0
70	100.0	100.0

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Act 447 Public Officers in High Risk Positions who were eligible to retire as of June 30, 2013			
Age	Service condition		
	10 years	25 years	30 years
45 to 48			10.0%
49			15.0
50		7.0%	15.0
51 to 56		15.0	20.0
57		20.0	30.0
58	2.5%	20.0	100.0
59 to 64	10.0	25.0	100.0
65 to 69	10.0	30.0	100.0
70	100.0	100.0	100.0

Act 447 Public Officers in High Risk Positions who were not eligible to retire as of June 30, 2013		
Age	Service condition	
	10 years	30 years
55		50.0%
56		15.0
57		15.0
58		100.0
59 to 64	25.0%	100.0
65	100.0	100.0

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Act 1 General Employees who were eligible to retire as of June 30, 2013		
Age	Service condition	
	10 years	25 years
55 to 57		4.5%
58		4.5
59		8.0
60		9.0
61		10.0
62		13.0
63 to 64		14.0
65	15.0%	50.0
66	15.0	15.0
67	100.0	100.0

Act 1 General Employees who were not eligible to retire as of June 30, 2013	
Age	Any Service
65	50.0%
66	20.0
67	100.0

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Act 1 Public Officers in High Risk Positions who were eligible to retire as of June 30, 2013			
Age	Service condition		
	10 years	25 years	30 years
45 to 48			10.0%
49 to 50			15.0
51 to 54			20.0
55 to 56		5.0%	20.0
57		5.0	30.0
58		5.0	100.0
59 to 60		5.0	
61 to 64		10.0	
65	10.0%	50.0	
66 to 69	10.0	10.0	
70	100.0	100.0	

Act 1 Public Officers in High Risk Positions who were not eligible to retire as of June 30, 2013		
Age	Service condition	
	10 years	30 years
55		40.0%
56		15.0
57		15.0
58 to 64		100.0
65	100.0	100.0

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SECTION VII – SUMMARY OF ACTUARIAL ASSUMPTIONS AS OF JUNE 30, 2018

System 2000 General Employees		
Age	Eligible to Retire as of June 30, 2013	Not Eligible to Retire as of June 30, 2013
60	15.0%	
61 to 64	15.0	10.0%
65	15.0	40.0
66	15.0	20.0
67	100.0	100.0

System 2000 Public Officers in High Risk Positions	
Age	Any Service
55	25.0%
56 to 64	20.0
65 to 66	25.0
67	100.0

Act 3 Employees		
Age	General Employees	Public Officers in High Risk Positions
58		30.0%
59 to 64		20.0
65 to 66		25.0
67	100.0%	100.0

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PUERTO RICO GOVERNMENT EMPLOYEES RETIREMENT SYSTEM

SECTION VII – SUMMARY OF ACTUARIAL ASSUMPTIONS AS OF JUNE 30, 2018

Disability: Rates are based on the six month elimination period rates in the 1987 Commissioners Group Disability Table, adjusted as set forth in the table below.

Act	Adjustment to 1987 CGDT	
	Members Covered under Act 127	Other Members
447	100%	75%
1	100%	75%
2000 and 3 General Employees	<ul style="list-style-type: none"> • 100% for ages 50 and younger • 300% for ages 60 and older • Interpolated from 100% to 300% in the 10 years between age 50 and age 60 	75%
2000 and 3 Public Officers in High Risk Positions	<ul style="list-style-type: none"> • 100% for ages 40 and younger • 300% for ages 50 and older • Interpolated from 100% to 300% in the 10 years between age 40 and age 50 	n/a

100% of disabilities occurring while in active service are assumed to be occupational for members covered under Act 127.

Pre-retirement Mortality: For general employees not covered under Act 127, RP-2014 Employee Mortality Rates for males and females adjusted to reflect Mortality Improvement Scale MP-2018 from the 2006 base year, and projected forward using MP-2018 on a generational basis. For members covered under Act 127, RP-2014 Employee Mortality Rates with blue collar adjustments for males and females adjusted to reflect Mortality Improvement Scale MP-2018 from the 2006 base year, and projected forward using MP-2018 on a generational basis. As generational tables, they reflect mortality improvements both before and after the measurement date.

100% of deaths while in active service are assumed to be occupational for members covered under Act 127.

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Post-retirement Healthy Mortality: Rates which vary by gender are assumed for healthy retirees and beneficiaries based on a study of the plan's experience from 2007 to 2012 and updated expectations regarding future mortality improvement. The 2010 base rates are equal to 92% of the rates from the UP-1994 Mortality Table for Males and 95% of the rates from the UP-1994 Mortality Table for Females, both projected from 1994 to 2010 using Scale AA. These base rates are projected using Mortality Improvement Scale MP-2018 on a generational basis. As a generational table, it reflects mortality improvements both before and after the measurement date.

Post-retirement Disabled Mortality: Rates which vary by gender are assumed for disabled retirees based on a study of the plan's experience from 2007 to 2012 and updated expectations regarding future mortality improvement. The 2010 base rates are equal to 105% of the rates from the UP-1994 Mortality Table for Males and 115% of the rates from the UP-1994 Mortality Table for Females. These base rates are projected using Mortality Improvement Scale MP-2018 on a generational basis. As a generational table, it reflects mortality improvements both before and after the measurement date.

Marriage: 100% of current active members covered under Act 127 who die in service or become disabled are assumed to have qualifying beneficiaries receiving the maximum benefits possible, which are approximated by a spouse with males 4 years older than females.

Form of Payment: For members retiring after June 30, 2013 (other than under Law 127), upon disability an immediate lump sum distribution of the Defined Contribution Hybrid Contribution Account plus, for Act 447 and Act 1 members, a modified cash refund of the accrued benefit as of June 30, 2013 commencing at retirement eligibility; otherwise, a modified cash refund.

For members retiring after June 30, 2013 under Law 127, a Joint & 100% Survivor benefit of the Law 127 Disability benefit.

Marital status was provided as of July 1, 2016 but was not provided as of July 1, 2017 for retired and disabled members who retired prior to July 1, 2013. With the exception of annuitants with future benefits payable as a result of Act 211, for those indicated as married as of July 1, 2016, and any new retirees as of July 1, 2017, a joint and survivor annuity was assumed (as shown in the following table), with an adjustment for the probability the spouse has pre-deceased the retiree as of the valuation date. Annuitants

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SECTION VII – SUMMARY OF ACTUARIAL ASSUMPTIONS AS OF JUNE 30, 2018

with future benefits payable as a result of Act 211 and those not married were assumed to have a modified cash refund (as shown in the following table). The spouse’s date of birth was imputed based on an assumed age difference of 4 years with males older than females.

Assumed Form of Payment for Members retired before July 1, 2013		
Act	Marital Status	Form of Payment
447	Married at retirement	Joint and 60% survivor benefit – Supplementation Joint and 50% survivor benefit – Coordinated (30% is Basic System Benefit) (20% is System Administered Benefit)
447	Not married at retirement	Modified cash refund (approximated by single life annuity with 3 years certain)
1	Married at retirement	Joint and 60% survivor benefit
1	Not married at retirement	Modified cash refund (approximated by single life annuity with 3 years certain for Mayors, Police & Fire and 5 years certain for other members)
305 (System 2000) - Disabled	Married at retirement	Joint and 60% survivor benefit
305 (System 2000) - Disabled	Not married at retirement	Modified cash refund (approximated by single life annuity with 5 years certain)

All Act 127 retirees were assumed to have a joint and 100% survivor benefit regardless of marital status. The survivor was approximated by a spouse with an assumed age difference of 4 years with males older than females. An adjustment was made for the probability the survivor has pre-deceased the retiree as of the valuation date.

Members who terminate employment with a vested benefit are assumed to elect to receive a deferred pension benefit in lieu of a refund of contributions.

No future dependent children were assumed to become beneficiaries.

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PUERTO RICO GOVERNMENT EMPLOYEES RETIREMENT SYSTEM

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No surviving spouse is assumed to become re-married.

Medical Insurance Plan Contribution: 75% of current service and disability retirees who retired before July 1, 2013 are assumed to receive a monthly medical insurance continuation benefit of \$100 per month.

Deferred Vested Participants: Complete census data on deferred vested participants was not available. The GASB 67 actuarial accrued liabilities for the System have been increased by 2.5% to approximate the value of the liability on behalf of deferred vested participants.

Service Purchase and Data Reporting Issues: Active liabilities for benefits earned prior to June 30, 2013 are increased by 20% for members of Act 447 to approximate the value of service purchases not yet reflected in the census data, true-ups in the frozen accrued benefit upon retirement, and data reporting issues, including members who are reported as participating in Act 1, System 2000, or Act 3 while active but who retire under Act 447.

Return of Contributions to Former Members: As of June 30, 2018, the actual amount is \$102,713,081 as provided by the System.

Census Data Collection Date: July 1, 2017. When information is provided by participant category in this report, the category is determined as of the census data collection date.

Special Data Adjustments: Upon review of the July 1, 2017 census data submitted by PRGERS, we observed several areas where data was missing, inconsistent, or invalid. Based on solutions implemented in prior years as approved by PRGERS, we applied data edits and assumptions to the census data in order to prepare the data for use in the valuation. The majority of the data edits and assumptions were applied to the following data items:

- Date of birth
- Date of hire
- Gender
- Benefit amounts
- Allocation of Basic System Benefits and System Administered Benefits
- Accumulated Employee Contributions
- Defined Contribution Hybrid Contribution Account Balances
- Employment Category Code (Police / Fire Code)

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SECTION VII – SUMMARY OF ACTUARIAL ASSUMPTIONS AS OF JUNE 30, 2018

- Plan Code (Coordinated / Supplementation option)
- Form of payment and beneficiary characteristics, if applicable
- Benefit commencement date
- Annuitant status
- Retirement Law
- Identification of employees covered by Act 127
- Salary

Employee contribution account balances were identified in the census data as either pre or post Act 3 balances. For most System 2000 members, the post Act 3 employee contribution balances contained the sum of pre and post Act 3 employee contributions. Adjustments were made to differentiate between pre and post Act 3 account balances as of July 1, 2017.

Credited service is based on the greater of “Years Worked” reported in the valuation census data and the elapsed time from date of hire to the valuation date.

For Act 447 and Act 1 active members for whom the System did not provide frozen accrued benefits, accrued benefits as of June 30, 2013 were estimated for Act 447 and Act 1 active members primarily based on the data submitted for the June 30, 2013 and earlier valuations.

The data provided did not include a status to differentiate annuitants between healthy and disabled. Annuitants were assumed to have the same status as the prior year. New annuitants were determined to be disabled if they were reported as retired prior to first eligibility for retirement. New disabled annuitants that were previously identified as eligible for Act 127 benefits were assumed to have retired under Act 127.

The data provided does not provide a method to identify whether a beneficiary is receiving payments due to a participant who retired before or after the enactment of Act 3. All beneficiaries are assumed to be the survivor of a participant who retired prior to the enactment of Act 3.

The census data provided for the participants in pay status as of July 1, 2017 did not consistently reflect the increase in the minimum benefit to \$500 per month under Act 3 for participants in pay status prior to July 1, 2013. Pension benefits were increased as necessary to bring the total pension benefits for pre July 1, 2013 retirees and disabled

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PUERTO RICO GOVERNMENT EMPLOYEES RETIREMENT SYSTEM

SECTION VII – SUMMARY OF ACTUARIAL ASSUMPTIONS AS OF JUNE 30, 2018

retirees as of July 1, 2017 to \$500 per month and the total pension benefits for pre July 1, 2013 beneficiaries as of July 1, 2017 to \$250 per month. The increase was assumed to be a Basic System Benefit.

For previously reported disabled retirees and beneficiaries receiving benefits under Act 127, the pension benefits formerly paid by System assets (e.g. the Basic System Benefit) was assumed to be 30% of the total reported pension benefit in instances where the Basic System Benefit was not provided.

Benefits were not provided for new annuitants and beneficiaries identified as receiving benefits under Act 127. Basic System Benefits were estimated based on the frozen accrued benefit as of June 30, 2013 plus the annuitized Defined Contribution Hybrid Contribution Account Balance. The total benefit payable was estimated as a percentage of prior year salary (80% or 100% as applicable).

Benefits for current beneficiaries who are under age 23 as of the valuation date were assumed to cease at age 23. Benefits for current beneficiaries who are age 23 or older as of the valuation date were assumed to be payable for life. In addition, the current level of benefit for all beneficiaries was assumed to remain constant.

Benefits not valued: The minimum post-retirement death benefit of \$1,000 for retirees without surviving beneficiaries who retired prior to July 1, 2013 is not explicitly valued. The additional liability associated with this benefit is expected to be de minimis.

The special mayor retirement age for Act 447 and Act 1 mayors is not valued. The additional liability due to this reduced retirement age is expected to be de minimis.

Changes in actuarial assumptions since the prior valuation:

The GASB 73 and GASB 75 discount rate has increased from 3.58% as of June 30, 2017 to 3.87% as of June 30, 2018.

The projected mortality improvement scale was updated from Scale MP-2017 to Scale MP-2018 to reflect the projected mortality improvement scale issued in the valuation year.

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PUERTO RICO TEACHERS RETIREMENT SYSTEM

SECTION VIII – SUMMARY OF ACTUARIAL METHODS AS OF JUNE 30, 2018

The ultimate cost of a pension plan is the excess of actual benefits and administrative expenses paid over actual net investment return on plan assets during the plan's existence until the last payment has been made to the last participant. The plan's "actuarial cost method" determines the expected incidence of actuarial costs by allocating portions of the ultimate cost to each plan year. The cost method is thus a budgeting tool to help to ensure that the plan will be adequately and systematically funded and accounted for. There are several commonly-used cost methods which differ in how much of the ultimate cost is assigned to each prior and future year. Therefore, the pattern of annual contributions and accounting expense varies with the choice of cost method. Annual contributions and accounting expense are also affected by the "asset valuation method" (as well as the plan provisions, actuarial assumptions, and actual plan demographic and investment experience each year).

Actuarial Cost Method

The plan's actuarial cost method is the entry age normal method. Under this method, a projected benefit is determined at each active participant's assumed retirement age assuming future compensation increases. The plan's normal cost is the sum of each active participant's annual cost for the current year of service determined such that, if it were calculated as a level percentage of his compensation each year, it would accumulate at the valuation interest rate over his total prior and future years of service to his assumed retirement date into an amount sufficient to fund his projected benefit. The plan's accrued liability is the sum of (a) the accumulation of each active participant's normal costs attributable to all prior years of service plus (b) the present value of each inactive participant's future benefits.

Because of Act 106-2017, no future benefits (except for the additional benefits due to death or disability for reasons specified in Act 127-1958) will be earned by PRGERS members. As a result, the GASB 73 Total Pension Liability equals the present value of all non-Act 127-1958 projected benefits. The normal cost only reflects the anticipated future Act 127-1958 benefits.

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PUERTO RICO TEACHERS RETIREMENT SYSTEM

SECTION VIII – SUMMARY OF ACTUARIAL METHODS AS OF JUNE 30, 2018

Liability Determination

The results as of June 30, 2018 are based on projecting the System obligations determined as of the census data collection date of July 1, 2017 for one year using roll-forward methods, assuming no liability gains or losses.

Changes in actuarial methods since the prior valuation

Due to Act 106-2017, the non-Act 127-1958 benefits are considered fully accrued and the only normal cost going forward will be due to Act 127-1958 benefits.

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PUERTO RICO GOVERNMENT EMPLOYEES RETIREMENT SYSTEM

SECTION IX – RISK DISCLOSURE

The purpose of this section is to identify, assess, and provide illustrations of risks that are significant to the Plan, and in some cases to the Plan's participants.

The results of the actuarial valuation are based on one set of reasonable assumptions. However, it is almost certain that future experience will not exactly match the assumptions. It is therefore important to consider the potential impacts of these likely differences when making decisions that may affect the future financial health of the Plan, or of the Plan's participants.

In addition, as plans mature they typically grow in size and become more material compared to the plan sponsor's overall operations. This increases the potential risk inherent in the long-term financing of the plan. Since pension plans make long-term promises and rely on long-term financing, it is important to consider how mature the Plan is today, and how mature it may become in the future.

Actuarial Standard of Practice No. 51 (ASOP 51) addresses these issues by providing actuaries with guidance for assessing and disclosing the risk associated with measuring pension liabilities and the determination of pension plan contributions. Specifically, it directs the actuary to:

- Identify risks that may be significant to the Plan.
- Assess the risks identified as significant to the Plan. The assessment does not need to include numerical calculations.
- Disclose plan maturity measures and historical information that are significant to understanding the Plan's risks.

ASOP 51 states that if in the actuary's professional judgment, a more detailed assessment would be significantly beneficial in helping the individuals responsible for the Plan to understand the risks identified by the actuary, then the actuary should recommend that such an assessment be performed.

This section uses the framework of ASOP 51 to communicate important information about: significant risks to the Plan and the Plan's maturity.

Potential Pay-as-you-go (“paygo”) financing risks

Operating a retirement system on a paygo basis may be conceptually simple, but can be very difficult in practice when reserves are limited or non-existent. While the valuation of

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liabilities for financial reporting purposes is conducted on an annual basis in arrears, benefit payments vary continuously and respond instantaneously to emerging events. There are also administrative expenses incurred continuously.

Disbursements will experience natural variation due to emerging demographic experience and can also be greatly impacted by specific management decisions, such as an early retirement incentive program or other workforce reduction.

A major issue that needs to be addressed is determining what the process of budgeting for paygo funding will be. While an expected paygo amount can be set at the time of budgeting for an upcoming fiscal year, disbursements can vary from expectations during the fiscal year.

- If the budget is set based on expected disbursements, in the event of adverse experience during the fiscal year, will additional funds be available?
- Alternately, would the budget request include a margin to provide a buffer against adverse experience?
 - If so, consideration will need to be given to what level of margin should be included. Scenarios such as higher retirement activity and/or lower mortality rates could be modeled to provide a range of potential adverse outcomes.
 - Increased security comes at increased cost, and no specific margin guarantees protection against all circumstances.
- How would the impacts of specific management decisions be handled?
 - For instance, assume that the fiscal year paygo amount appears to be sufficient as of mid-year.
 - Then a reduction in workforce is announced, with an effective date of March 31.
 - In the final three months of the fiscal year, disbursements will be higher than expected as some members will take a refund of contributions upon termination, and other members who are retirement eligible will commence their annuity earlier than they had been expected to do so.

There are certainly many more operational details to be considered. We provide this limited commentary in order to point out that paygo operation is a complex issue that requires careful thought and planning, constant monitoring, and the ability to respond to emerging events quickly.

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SECTION IX – RISK DISCLOSURE

Benefit Payment Risk

Definition: This is the potential that members will not receive the full benefit payments promised under current law.

Identification: The system is operated on a pay-as-you-go basis with benefits funded by the Commonwealth, public corporations, and municipalities. The Commonwealth's finances are under the control of the FOMB, a body created by PROMESA.

Assessment: Uncertain. Future revenue sources will be needed in order to finance the benefit payments. Reductions in benefits have been proposed in prior fiscal plans.

Inflation Risk

Definition: This is the potential of a pension to lose purchasing power over time due to inflation.

Identification: The participants of pension plans without fully inflation-indexed benefits are subject to the risk that their purchasing power will be reduced over time due to inflation.

Assessment: Members in this Plan bear all of the inflation risk occurring after retirement that is not offset by the 3% cost-of-living adjustments provided every three years to Law 127 retirees and beneficiaries.

Maturity Risk

Definition: This is the potential for total plan liabilities to become more heavily weighted toward inactive liabilities over time.

Identification: As a plan matures, benefits accumulate, and the plan membership ages, the plan's liabilities become large relative to its source of contributions. A decline in the sponsor's finances can exacerbate economic shocks to an older, bigger plan. The more mature a plan, the shorter the plan's time horizon, which leads to less time to recover from liability losses.

Assessment: The following table displays certain maturity risk metrics. Over the past 10 years, the percent of the liability attributable to retirees has increased as shown in the

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SECTION IX – RISK DISCLOSURE

table below, due primarily to the ratio of active to retired members decreasing. Further, since the plan is closed to new entrants, it is expected that the maturity level will continue to increase over time.

<u>Valuation Year</u>	<u>Percent of Liability Attributable to Retirees</u>	<u>Ratio of Actives to Retirees</u>
2018	71.8%	0.94
2017	64.6%	0.97
2016	64.1%	0.96
2015	67.2%	0.95
2014	66.8%	1.01
2013	71.9%	1.01
2012	58.2%	1.14
2011	57.2%	1.20
2010	56.5%	1.32
2009	61.9%	1.52

Retirement Risk

Definition: This is the potential for participants to retire and receive subsidized benefits more valuable than expected.

Identification: This plan provides for valuable early retirement benefits.

Assessment: If participants retire at earlier ages than anticipated by the actuarial assumptions, it is expected that additional financing will be required.

Interest Rate Risk

Definition: The potential that interest rates will be different than expected.

Identification: The pension liabilities reported herein have been calculated by computing the present value of expected future benefit payments using the interest rate(s) described in Section VII. If interest rates in future valuations differ from this valuation, future pension liabilities may differ significantly from those presented in this valuation. As a general rule,

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SECTION IX – RISK DISCLOSURE

using a higher interest rate to compute the present value of future benefit payments will result in a lower pension liability, and vice versa.

Assessment: Section III Exhibit D “Sensitivity Analysis” presents the results of re-measuring the Total Pension Liability at discount rates 100 basis points lower and higher than that used in the development of the Total Pension Liability

Demographic Risks

Definition: The potential that mortality or other demographic experience will be different than expected.

Identification: The pension liabilities reported herein have been calculated by assuming that participants will follow patterns of demographic experience (e.g., mortality, withdrawal, disability, retirement, form of payment election, etc.) as described in Section VII. If actual demographic experience or future demographic assumptions are different from what is assumed to occur in this valuation, future pension liabilities may differ significantly from those presented in this valuation.

Assessment: Demographic gain/loss is measured each year as part of the annual valuation process and reported in the GASB 73 reconciliation. Demographic assumptions are updated as needed each year to reflect significant known deviations occurring in the fiscal year in order to minimize short term gains/losses. Demographic assumptions are also updated when periodic experience studies are conducted, with a goal of minimizing gains/losses over the long term.

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