



Cavanaugh Macdonald
CONSULTING, LLC

The experience and dedication you deserve



GASB STATEMENT NO. 67 REPORT

FOR THE

UNIVERSITY OF PUERTO RICO RETIREMENT SYSTEM

PREPARED AS OF JUNE 30, 2018





Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

July 13, 2019

Board of Trustees & Retirement Board
University of Puerto Rico
Retirement System
P.O. Box 21769
San Juan, Puerto Rico 00925

Ladies and Gentlemen:

Presented in this report is information to assist the University of Puerto Rico Retirement System in meeting the requirements of the Governmental Accounting Standards Board (GASB) Statement No. 67. The information is presented for the period ending June 30, 2018.

The annual actuarial valuation used as a basis for much of the information presented in this report was performed as of June 30, 2017. The valuation was based upon data furnished by the Executive Director and the University of Puerto Rico Retirement Systems staff, concerning active, inactive and retired members along with pertinent financial information.

To the best of our knowledge, this report is complete and accurate. The necessary calculations were performed by, and under the supervision of, independent actuaries who are members of the American Academy of Actuaries with experience in performing valuations for public retirement systems.

The calculations were prepared in accordance with the principles of practice prescribed by the Actuarial Standards Board, and, in our opinion, meet the requirements of GASB 67.

The actuarial calculations were performed by qualified actuaries according to generally accepted actuarial procedures and methods. The calculations are based on the current provisions of the System and on actuarial assumptions that are, individually and in the aggregate, internally consistent and reasonably based on the actual experience of the System. In addition, the calculations were completed in compliance with the laws governing the System. The undersigned is a member of the American Academy of Actuaries and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.



Board of Trustees
July 13, 2019
Page 2

Future actuarial results may differ significantly from the current results presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

Respectfully submitted,

A handwritten signature in blue ink that reads 'Todd B. Green' followed by a horizontal flourish.

Todd B. Green, ASA, FCA, MAAA
Principal and Consulting Actuary



TABLE OF CONTENTS

<u>Section</u>	<u>Item</u>	<u>Page No.</u>
I	Introduction	1
II	Financial Statement Notes	3
III	Required Supplementary Information	7
 <u>Schedule</u>		
A	Required Supplementary Information Tables	9
B	Summary of Main Benefit Provisions	12
C	Statement of Actuarial Assumptions and Methods	19



**REPORT OF THE ANNUAL GASB STATEMENT NO. 67
REQUIRED INFORMATION FOR THE
UNIVERSITY OF PUERTO RICO RETIREMENT SYSTEM
PREPARED AS OF JUNE 30, 2018**

SECTION I – INTRODUCTION

This report, prepared as of June 30, 2018 (the Measurement Date), presents information to assist the University of Puerto Rico Retirement System in meeting the requirements of Governmental Accounting Standards Board issued Statement No. 67 (GASB 67), “*Financial Reporting For Pension Plans.*” Much of the material provided in this report is based on the data, assumptions and results of the annual actuarial valuation of the University of Puerto Rico Retirement System as of June 30, 2017 and an experience study for the five-year period ending June 30, 2017. The Retirement System provided the financial information as of June 30, 2018.

GASB 67 basically divorces accounting and funding, creating disclosure and reporting requirements that may or may not be consistent with the basis used for funding the System.

GASB 67 requires the determination of the Total Pension Liability (TPL) utilizing the Entry Age Normal actuarial funding method. The Net Pension Liability (NPL) is then set equal to the TPL minus the System’s Fiduciary Net Position (FNP) (basically the market value of assets). The benefit provisions recognized in the calculation of the TPL are summarized in Schedule B.

Among the assumptions needed for the liability calculation is a Single Equivalent Interest Rate (SEIR). To determine the SEIR, the FNP must be projected into the future for as long as there are anticipated benefits payable under the plan’s provision applicable to the membership and beneficiaries of the System on the Measurement Date. If the FNP is projected to not be depleted at any point in the future, the long term expected rate of return on plan investments expected to be used to finance the benefit payments may be used as the SEIR.

If, however, the FNP is projected to be depleted, the SEIR is determined as the single rate that will generate a present value of benefit payments equal to the sum of the present value determined by discounting all projected benefit payments through the date of depletion by the long term expected rate of return, and the present value determined by discounting those benefits after the date of depletion by a 20-year tax-exempt municipal bond (rating AA/Aa or higher) rate. The rate used, if necessary, for this purpose is the S&P Municipal Bond 20-year High Grade Index Rate.



The sections that follow provide the results of all the necessary calculations, presented in the order laid out in GASB 67 for note disclosure and Required Supplementary Information (RSI).

DRAFT



SECTION II – FINANCIAL STATEMENT NOTES

The material presented herein will follow the order presented in GASB 67. Paragraph numbers are provided for ease of reference.

Paragraphs 30(a) (1)-(3): The information required is to be supplied by the System.

Paragraph 30(a) (4): The data required regarding the membership of the University of Puerto Rico Retirement System were furnished by the System office. The following table summarizes the membership of the System as of June 30, 2017, the Valuation Date.

Membership

	Number
Inactive Members or Their Beneficiaries Currently Receiving Benefits	8,598
Inactive Members Entitled To But Not Yet Receiving Benefits	8,829
Active Members	10,204
Total	27,631

Paragraphs 30(a) (5)-(6) and Paragraphs 30(b)-(f): The information required is to be supplied by the System.



Paragraphs 31(a) (1)-(4): The information is provided in the following table. As stated above, the NPL is equal to the TPL minus the FNP. That result as of June 30, 2018 is presented in the table below (\$ thousands).

Fiscal Year End June 30, 2018

Total Pension Liability	\$4,460,824
Fiduciary Net Position	<u>1,407,763</u>
Net Pension Liability	\$3,053,061
Ratio of Fiduciary Net Position to Total Pension Liability	31.56%

Paragraph 31(b) (1)(a)-(f): This paragraph requires information regarding the actuarial assumptions used to measure the TPL. The actuarial assumptions utilized in developing the TPL are outlined in Schedule C. The total pension liability was determined by an actuarial valuation as of June 30, 2017, using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	2.5 percent
Salary increases	2.5 percent and wage growth rate of 0.25%
Discount rate	3.81 percent net of investment expenses per annum, compounded annually

The rates of mortality for the period after service retirement are according to the RP-2014 White Collar Headcount-weighted Mortality Table with rates adjusted by 103.8% for males and by 98.2% for females, projected generationally using scale MP-2017 for retired healthy pensioners. Rates of mortality for the period after disability retirement are according to the RP-2014 Disabled Retiree Mortality Table with rates adjusted by 93.4% for males and by 94.3% for females, projected to 2019 using scale MP-2017.



The long-term expected rate of return on pension plan investments was determined using a log-normal distribution analysis in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. The target asset allocation and best estimates of arithmetic real rates of return for each major asset class provided by the System’s investment consultant Callan are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Broad U.S. equity	32.0%	6.27%
Global ex U.S. equity	24.0%	6.96%
Domestic fixed	30.0%	0.82%
High Yield	7.5%	3.04%
Real Estate	5.0%	4.84%
Private Equity	1.5%	10.51%
Total	100%	

Discount rate. The discount rate used to measure the total pension liability was 3.81 percent. The projection of cash flows used to determine the discount rate assumed that plan member contributions will be made at the current contribution rates and that employer contributions will be made according to the Financial Oversight and Management Board’s new fiscal plan for fiscal years through 2024, and the five-year average of those contributions thereafter. Based on those assumptions, the pension plan’s fiduciary net position was projected to be available to make all projected future benefit payments of current plan members until the plan year ending June 30, 2033. Therefore, the long-term expected rate of return on pension plan investments of 6.75% was applied to all periods of projected benefit payments through June 30, 2033 and the applicable municipal bond index rate of 2.98%, based on the S&P Municipal Bond 20-year High Grade Index Rate as of June 30, 2018, was applied to all periods of projected benefit payments after June 30, 2033. The Single Equivalent Interest Rate (SEIR) of 3.81% that discounts the entire projected benefit stream to the same amount as the sum of the present values of the two separate benefit payments streams was used to determine the total pension liability as of June 30, 2018. The SEIR at the beginning of the measurement period was 3.92%.



Paragraph 31(b) (1) (g): This paragraph requires disclosure of the sensitivity of the net pension liability to changes in the discount rate. The following presents the net pension liability of the System, calculated using the SEIR discount rate of 3.81 percent, as well as what the System's net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (2.81 percent) or 1-percentage-point higher (4.81 percent) than the current rate (\$ thousands):

	1% Decrease (2.81%)	Current Assumption (3.81%)	1% Increase (4.81%)
System's Net Pension Liability	\$3,270,808	\$3,053,061	\$2,883,498

Paragraph 31(c): June 30, 2017 is the actuarial valuation date upon which the TPL is based. The result was rolled forward using standard actuarial techniques to the Measurement Date, June 30, 2018.

TPL Roll Forward	(1)	(2)	(3)
(a) Valuation Date for Measurement	6/30/2016	6/30/2017	6/30/2017
(b) Interest Rate (SEIR)	3.92%	3.92%	3.81%
(c) TPL as of June 30, 2017	4,359,733	4,357,156	4,416,751
(d) Normal Cost	72,004	72,004	74,122
(e) Actual Benefit Payments	197,391	197,391	197,391
(f) TPL as of June 30, 2018 = [(c+d) * (1+b)] - [e * (1+b*0.5)]	\$4,404,201	\$4,401,523	\$4,460,824
(g) Experience Actuarial (Gain)/Loss: (2f) - (1f)		(\$2,678)	
(h) SEIR Change (Gain)/Loss: (3f) - (2f)			\$59,301



SECTION III – REQUIRED SUPPLEMENTARY INFORMATION

There are several tables of Required Supplementary Information (RSI) that need to be included in the System’s financial statements:

Paragraphs 32(a)-(c): The required tables are provided in Schedule A.

Paragraph 32(d): The money-weighted rates of return required are to be supplied by the System.

Paragraph 34: In addition the following should be noted regarding the RSI:

Changes of benefit terms:

- None

Changes of Assumptions:

2017

- Rates of mortality were changed to the RP-2014 White Collar Headcount-weighted Mortality Table with rates adjusted by 103.8% for males and by 98.2% for females, projected generationally using scale MP-2017 for retired healthy pensioners. Rates of mortality for the period after disability retirement are according to the RP-2014 Disabled Retiree Mortality Table with rates adjusted by 93.4% for males and by 94.3% for females, projected to 2019 using scale MP-2017.
- Rates of withdrawal, retirement, disability and salary increase were adjusted to more closely reflect actual experience.

2018

- Discount rate was changed from 3.92% to 3.81%.

Method and assumptions used in calculations of actuarially determined contributions. The actuarially determined contribution rates are calculated as of June 30 for the fiscal year beginning on that date. The following actuarial methods and assumptions were used to determine contribution rates reported in that schedule:

Actuarial cost method	Entry age
Amortization method	Level percentage of payroll, closed
Remaining amortization period	27 years
Asset valuation method	5-year smoothed market
Inflation	3.0 percent
Salary increase	3.75 percent including inflation
Investment rate of return	7.75 net of investment expenses per annum, compounded annually



The actuarially determined contribution rate in the June 30, 2017 actuarial valuation was determined based on a 30-year closed amortization of the System's unfunded accrued liability beginning on June 30, 2014 as adopted by the System's Retirement Board. However, as discussed in the determination of the Discount rate section, the University has adopted a policy to make actual contributions based on a 40-year closed amortization of the System's unfunded accrued liability beginning on June 30, 2015.

DRAFT



SCHEDULE A
REQUIRED SUPPLEMENTARY INFORMATION
SCHEDULE OF CHANGES IN THE NET PENSION LIABILITY
GASB 67 Paragraph 32(a)
(\$ in Thousands)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total pension liability										
Service Cost	\$49,499	\$48,107	\$46,571	\$52,000	\$74,827					
Interest	173,630	177,334	194,184	191,144	167,032					
Benefit changes	0	(45,209)	(14,671)	0	0					
Difference between expected and actual experience	0	(323,974)	(4,733)	(24,376)	(2,678)					
Changes of assumptions or other inputs	(24,034)	32,269	160,911	989,905	59,301					
Benefit payments	(169,163)	(176,872)	(182,614)	(188,311)	(197,391)					
Refunds of contributions	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>					
Net change in total pension liability	\$29,932	(\$288,345)	\$199,648	\$1,020,362	\$101,091					
Total pension liability - beginning	\$3,398,136	\$3,428,068	\$3,139,723	\$3,339,371	\$4,359,733					
Total pension liability - ending (a)	\$3,428,068	\$3,139,723	\$3,339,371	\$4,359,733	\$4,460,824					
Plan net position										
Contributions - employer	\$91,689	\$88,251	\$78,004	\$79,491	\$73,360					
Contributions - member	37,900	35,594	38,640	39,042	35,864					
Net investment income	206,595	75,373	59,009	132,950	109,325					
Benefit payments	(169,163)	(176,872)	(182,614)	(188,311)	(197,391)					
Administrative expense	(4,566)	(3,378)	(3,363)	(4,340)	(4,895)					
Other	0	0	(4)	0	0					
Net change in plan net position	\$162,455	\$18,968	(\$10,328)	\$58,832	\$16,263					
Plan net position - beginning	\$1,161,573	\$1,324,028	\$1,342,996	\$1,332,668	\$1,391,500					
Plan net position - ending (b)	\$1,324,028	\$1,342,996	\$1,332,668	\$1,391,500	\$1,407,763					
Net pension liability - ending (a) - (b)	\$2,104,040	\$1,796,727	\$2,006,703	\$2,968,233	\$3,053,061					



SCHEDULE OF THE NET PENSION LIABILITY
GASB 67 Paragraph 32(b)
(\$ in Thousands)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total pension liability	\$3,428,068	\$3,139,723	\$3,339,371	\$4,359,733	\$4,460,824					
Plan net position	\$1,324,028	\$1,342,996	\$1,332,668	\$1,391,500	\$1,407,763					
Net pension liability	\$2,104,040	\$1,796,727	\$2,006,703	\$2,968,233	\$3,053,061					
Ratio of plan net position to total pension liability	38.62%	42.77%	39.91%	31.92%	31.56%					
Covered-employee payroll	\$515,856	\$516,226	\$515,994	\$488,775	\$478,529					
Net pension liability as a percentage of covered-employee payroll	407.87%	348.05%	388.90%	607.28%	638.01%					



SCHEDULE OF EMPLOYER CONTRIBUTIONS
GASB 67 Paragraph 32(c)
(\$ in Thousands)

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Actuarially determined employer contribution	\$96,089	\$85,829	\$86,635	\$89,255	\$78,204	\$77,772	\$72,186	\$68,487	\$63,722	\$64,072
Actual employer contributions	<u>73,360</u>	<u>79,491</u>	<u>78,004</u>	<u>88,251</u>	<u>91,689</u>	<u>78,481</u>	<u>75,140</u>	<u>70,761</u>	<u>71,177</u>	<u>72,605</u>
Annual contribution deficiency (excess)	<u>\$22,729</u>	<u>\$6,338</u>	<u>\$8,631</u>	<u>\$1,004</u>	<u>(\$13,485)</u>	<u>(\$709)</u>	<u>(\$2,954)</u>	<u>(\$2,274)</u>	<u>(\$7,455)</u>	<u>(\$8,533)</u>
Covered-employee payroll	\$478,529	\$488,775	\$515,994	\$516,226	\$515,856	\$491,291	\$491,063	\$526,820	\$558,961	\$577,227
Actual contributions as a percentage of covered-employee payroll	15.33%	16.26%	15.12%	17.10%	17.77%	15.97%	15.30%	13.43%	12.73%	12.58%



SCHEDULE B

SUMMARY OF MAIN BENEFIT AND CONTRIBUTION PROVISIONS

1. Provisions applicable to those members who had completed 20 years of service by July 1, 1979 (Certification 7/7 Supplemented)

- a) Service retirement annuity payable:
- i. After 30 years of service; or
 - ii. At age 58 after 10 years of service; or
 - iii. At age 55 after 25 years of service.
- b) Amount of service retirement annuity:
- i. Before age 65 – member with at least 30 years of service: 75% of average compensation if age 55 at beginning date; 65% if under age 55. If member completed 30 years of service before July 1973, annuity is increased by 2% of average compensation for each year of service beyond 30 and before July 1973, but to not more than 85% of average compensation.
 - ii. Before age 65 – member with less than 30 years of service: 1.50% of average compensation per year of service for member with 20 or fewer years. Percentage increased by 0.05% for each year in excess of 20 years up to a maximum of 1.95% of average compensation per year of service. Amount reduced by ½% for each month member is under age 58 at time annuity begins.
 - iii. After age 65 – same as before age 65.
 - iv. Minimum annuity: \$250 per month.
 - v. Average compensation means the average for the highest-paid 36 months of service without limit on compensation.
 - vi. Employee contributions:
 - Complete supplementation: 7.00% of compensation.
 - Coordinated: 4.00% up to \$4,200 of compensation plus 6.50% of compensation in excess of \$4,200.



- 2. Provisions applicable to all members who were affected under Certification 37 and who had not completed 20 years of service by July 1, 1979 plus those members who entered the system on or after July 1, 1978 and who did not elect Certification 55 or 94 and did not elect full supplementation under Certification 54 (Certification 37/37 Coordinated)**
- a) Service retirement annuity payable:
 - i. After 30 years of service and age 55; or
 - ii. At age 58 after 10 years of service; or
 - iii. At age 55 after 25 years of service.

 - b) Amount of service retirement annuity:
 - i. Before age 65 – member with at least 30 years of service: 75% of average compensation. Amount reduced by ½% for each month member is under age 58 at time annuity begins.
 - ii. Before age 65 – member with less than 30 years of service: 1.50% of average compensation per year of service for member with 20 or fewer years. Percentage increased by 0.05% for each year in excess of 20 years up to a maximum of 1.95% of average compensation per year of service. Amount reduced by ½% for each month member is under age 58 at time annuity begins.
 - iii. After age 65 – Benefit is coordinated. Annuity is reduced by ½% of average compensation not in excess of the Social Security wage base in effect at retirement for each year of service up to 30 years. If member was under age 58 at beginning date, the coordination adjustment is made before application of ½% reduction per month under 58.
 - iv. Minimum annuity: \$250 per month.
 - v. Average compensation means the average for the highest-paid 36 months of service, excluding that portion of compensation in any year which is in excess of \$35,000.
 - vi. Employee contributions for coordinated benefit: 5.00% of compensation up to maximum salary of \$35,000 for members with 25 or more years of service as of July 1, 2015, and 6.00% of compensation up to maximum



salary of \$35,000 for members with less than 25 years of service as of July 1, 2015.

3. Provision applicable to all members who were affected by Certification 37 and who had not completed 20 years of service by July 1, 1979 as well as those members who entered the system on or after July 1, 1978 and later elected Certification 55 or those who elected full supplementation under Certification 54 (but not Certification 94) (Certification 55/55 Coordinated)

- a) Service retirement annuity payable:
 - i. After 30 years of service; or
 - ii. At age 58 after 10 years of service; or
 - iii. At age 55 after 25 years of service.

- b) Amount of service retirement annuity:
 - i. Before age 65 – member with at least 30 years of service: 75% of average compensation. Amount reduced by $\frac{1}{3}\%$ for each month member is under age 58 at time annuity begins if member had less than 25 years of service as of July 1, 2015 and reduced from age 55 for members with 25 or more years of service as of July 1, 2015.
 - ii. Before age 65 – member with less than 30 years of service: 1.50% of average compensation per year of service for member with 20 or fewer years. Percentage increased by 0.05% for each year in excess of 20 years up to a maximum of 1.95% of average compensation per year of service. Amount reduced by $\frac{1}{3}\%$ for each month member is under age 58 at time annuity begins if member had less than 25 years of service as of July 1, 2015 and reduced from age 55 for members with 25 or more years of service as of July 1, 2015.
 - iii. After age 65 – if member elected full supplementation, annuity is the same as before age 65. Otherwise, annuity is reduced by $\frac{1}{2}\%$ of average compensation at time of retirement multiplied by years of service up to 30 years.
 - iv. Minimum annuity: \$250 per month.
 - v. Average compensation means the average for the highest-paid 36 months of service, excluding that portion of compensation in any year which is in excess of \$35,000.
 - vi. Employee contributions:



1. Complete supplementation: 7.00% of compensation up to \$35,000 for members with 25 or more years of service as of July 1, 2015.
2. Complete supplementation: 8.00% of compensation up to \$35,000 for members with less than 25 years of service as of July 1, 2015.
3. Coordinated: For members with 25 or more years of service as of July 1, 2015, 4% up to \$4,200 of compensation plus 6.50% of the excess up to the compensation limit of \$35,000. For members with less than 25 years of service as of July 1, 2015, 5% up to \$4,200 of compensation plus 6.50% of the excess up to the compensation limit of \$35,000.

4. For those entering between January 1, 1990 and June 30, 1998 who did not elect Certification 94 (Certification 55/55 Supplemented)

a) Service retirement annuity payable:

- i. After 30 years of service; or
- ii. At age 58 after 10 years of service; or
- iii. At age 55 after 25 years of service.

b) Amount of service retirement annuity:

- i. Before age 65 – member with at least 30 years of service: 75% of average compensation. Amount reduced by $\frac{1}{3}\%$ for each month member is under age 58 at time annuity begins if member had less than 25 years of service as of July 1, 2015 and reduced from age 55 for members with 25 or more years of service as of July 1, 2015.
- ii. Before age 65 – member with less than 30 years of service: 1.50% of average compensation per year of service for member with 20 or fewer years. Percentage increased by 0.05% for each year in excess of 20 years up to a maximum of 1.95% of average compensation per year of service. Amount reduced by $\frac{1}{3}\%$ for each month member is under age 58 at time annuity begins if member had less than 25 years of service as of July 1, 2015 and reduced from age 55 for members with 25 or more years of service as of July 1, 2015.
- iii. After age 65 – Same as before age 65.
- iv. Minimum annuity: \$250 per month.
- v. Average compensation means the average for the highest-paid 36 months of service, excluding that portion of compensation in any year which is in excess of \$35,000.



- vi. Employee contributions:
 - All completely supplemented: 8.00% of compensation up to compensation limit of \$35,000 for members with 25 or more years of service as of July 1, 2015.
 - All completely supplemented: 9.00% of compensation up to compensation limit of \$35,000 for members with less than 25 years of service as of July 1, 2015.

5. Certification 94:

- a) Increase compensation up to \$50,000.
- b) Those electing coverage under the above certification agree to pay 9.00% of compensation up to \$50,000 for members with 25 or more years of service as of July 1, 2015, and 10.00% of compensation up to maximum salary of \$50,000 for members with less than 25 years of service as of July 1, 2015.

6. Certification 139:

- a) Increase compensation up to a \$60,000 maximum. The \$60,000 cap was increased by 3.00% every two years until 7/1/2014. Effective 7/1/2014, the maximum compensation is frozen at \$69,557.
- b) Those electing coverage under the above certification agree to pay 11.00% of compensation up to the applicable indexed maximum for members with 25 or more years of service as of July 1, 2015, and 12% of compensation up to the applicable indexed maximum for members with less than 25 years of service as of July 1, 2015 (see (a) above).
- c) Effective July 1, 2015, all new employees will be covered under this certification and will pay 12.00% of compensation up to the applicable indexed maximum (see (a) above).

7. Disability Benefits

- a) A disability retirement annuity is payable upon:
 - i. Disability due to occupational causes, regardless of service, or
 - ii. Disability due to non-occupational causes after 15 years of service. If member is also eligible for a service retirement annuity, benefit payable is the higher of the two.



b) Amount of disability retirement annuity:

- i. Before age 65 – If service connected, 50% of rate of salary (subject to applicable salary cap) at retirement. If not service connected, 90% of the member's regular retirement benefit payable by the applicable retirement benefit formula above.
- ii. After age 65 – Reduced to amount payable by the applicable retirement benefit formula above. However, if post 65 retirement benefit plus Primary Social Security benefit is less than pre 65 disability benefit, then post 65 benefit is adjusted (increased) by the amount necessary to match pre 65 disability benefit.
- iii. Minimum annuity: \$250 per month.

8. Vested Benefits

A member whose employment terminates after ten (10) years of service, and who does not withdraw his contributions, receives a retirement annuity payable beginning at age 60 based on the applicable retirement formula above.

9. Non-vested Termination Benefits

If termination of employment occurs prior to completing ten (10) years of service, member is entitled only to a refund of his/her own contributions. Refund of a member's own contributions can also be obtained after attainment of ten (10) years of service but in that event the vested benefit is forfeited.

10. Pre-retirement Death Benefits

a) A pre-retirement death benefit is payable upon:

- i. A service-connected death, or
- ii. A non-service connected death.

b) Amount of pre-retirement death benefit:

- i. The widow of a deceased member whose death is service-connected receives an annuity of 50% of final salary (subject to applicable salary cap), plus \$10 per month for each child under age 18 (21 if at school) or disabled. If no annuity is paid to widow, \$20 per month per eligible child. Widow



receives annuity until death or remarriage. Maximum family benefit is 75% of final salary (subject to applicable salary cap).

If there is no surviving widow or eligible children, a lump sum amount equal to the member's contributions plus one year's final salary (subject to applicable salary cap), but not less than \$6,000, will be payable to the employee's designated beneficiary.

- ii. Should the member's death be non-service connected then a lump sum amount is paid which is equal to the member's contributions plus one year's final salary (subject to applicable salary cap), but not less than \$6,000.

11. Post-retirement Death Benefits

Member contributions are refunded to the extent that they exceed retirement payments already made, unless a reversionary annuity was elected. Minimum payment is \$600. In addition, 50% of retirement annuity is payable to the surviving spouse until death, remarriage, or until the spouse begins to receive Social Security benefits. Minimum annuity, \$75 per month; maximum annuity, \$150 per month.

12. Reversionary Annuity

Member may elect to receive a reduced annuity in order to provide a lifetime benefit after death to a spouse or relative. The benefit to the spouse or relative may be as low as \$25 per month or as high as 100% of the member's reduced annuity. This option is not permitted if member retires on a disability annuity.

13. Christmas Bonus

A \$400 annual bonus is given to all retired participants.



SCHEDULE C

STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

INVESTMENT RATE OF RETURN: 6.75% net of investment expenses per annum, compounded annually.

DISCOUNT RATE: 3.81% net of investment expenses per annum, compounded annually.

INFLATION ASSUMPTION: 2.5% per year.

PAYROLL GROWTH ASSUMPTION: 0% per year.

ADMINISTRATIVE EXPENSE ASSUMPTION: 0.90% of total payroll of covered employees

PERCENT MARRIED: 80% of employees are assumed to be married, and wives are assumed to be the same age as their husbands.

ACTUARIAL METHOD: Individual Entry Age Normal cost method. Actuarial gains and losses are reflected in the unfunded actuarial accrued liability. The unfunded actuarial accrued liability is amortized over a closed 30-year period beginning June 30, 2014. This amortization assumes future payroll increases of 0% per annum.

DECREMENTS:

PRE-RETIREMENT MORTALITY: RP-2014 White Collar Headcount-weighted Mortality Table with rates adjusted by 103.8% for males and by 98.2% for females, projected generationally using scale MP-2017.

POST-RETIREMENT HEALTHY MORTALITY: RP-2014 White Collar Headcount-weighted Mortality Table with rates adjusted by 103.8% for males and by 98.2% for females, projected generationally using scale MP-2017.

POST-RETIREMENT DISABLED MORTALITY: RP-2014 Disabled Retiree Mortality Table with rates adjusted by 93.4% for males and by 94.3% for females, projected to 2019 using scale MP-2017.



DISABILITY: Representative values are presented below (65% of the projected disabilities are assumed to be due to occupational causes).

Age	Rate
22	0.010%
27	0.027
32	0.043
37	0.060
42	0.084
47	0.119
52	0.168
57	0.182
60	0.140
63	0.228

TERMINATION: Assumed rates are presented below.

Years of Service	Rate
0	25.0%
1	22.0
2	16.0
3	11.5
4	9.0
5	7.0
6	4.5
7	4.0
8	3.5
9	3.0
10	2.5
11 – 15	2.0
16+	1.0



RETIREMENT: Representative values are presented below.

Members with Less than 25 Years of Service as of July 1, 2015			
Age	Retiring with Less than 30 Years of Service	Retiring with 30 Years of Service	Retiring with 31 or More Years of Service
45		9.5%	9.5%
50		9.5	9.5
55	5.0%	15.0	15.0
60	5.0	45.0	25.0
65	20.0	50.0	30.0
70	100.0%	100.0%	100.0%

Members with 25 or More Years of Service as of July 1, 2015		
Age	Retiring with Less than 30 Years of Service	Retiring with 30 or More Years of Service
45		9.5%
50		9.5
55	5.0%	42.0
60	5.0	26.0
65	18.0	25.2
70	100.0%	100.0%

ASSETS: Market Value.

SALARY INCREASES: 2.50% per year and wage growth rate of 0.25%