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GASB STATEMENT NO. 68 REPORT
FOR THE
UNIVERSITY OF PUERTO RICO RETIREMENT SYSTEM
PREPARED AS OF JUNE 30, 2019





Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

January 20, 2021

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. 68 and to identify the information to be provided by the actuary, Cavanaugh Macdonald Consulting (CMC). The information is presented for the period ending June 30, 2019 (the Measurement Date).

GASB Statement No. 68 establishes accounting and financial reporting requirements for governmental employers who provide pension benefits to their employees through a trust.

The annual actuarial valuation used as a basis for much of the information presented in this report, including the Net Pension Liability, was performed as of June 30, 2018. The valuation was based upon data furnished by the Executive Director and the University of Puerto Rico Retirement System staff, concerning active, inactive and retired members along with pertinent financial information.

In order to prepare the results in this report we have utilized appropriate actuarial models that were developed for this purpose. These models use assumptions about future contingent events along with recognized actuarial approaches to develop the needed results.

Please note that we are preparing this report during a pandemic. We have considered available information, but do not believe that there is yet sufficient data to warrant the modification of any of our assumptions. We will continue to monitor the situation and advise the Board in the future of any adjustments that we believe would be appropriate.



Board of Trustees

January 20, 2021

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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.

These results are only for financial reporting and may not be appropriate for funding purposes or other types of analysis. Calculations for purposes other than satisfying the requirements of GASB 67 and GASB 68 may produce significantly different results. Future actuarial results may differ significantly from the current results presented in the report due to such factors as changes in plan experience or changes in economic or demographic assumptions.

Respectfully submitted,

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

Todd B. Green, ASA, FCA, MAAA
President



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**REPORT OF THE ANNUAL GASB STATEMENT NO. 68
REQUIRED INFORMATION FOR THE
UNIVERSITY OF PUERTO RICO RETIREMENT SYSTEM**

PREPARED AS OF JUNE 30, 2019

SECTION I – INTRODUCTION

The University of Puerto Rico Retirement System is a single-employer defined benefit pension plan. This report, prepared as of June 30, 2019 (the Measurement Date), presents information to assist the University of Puerto Rico Retirement System in meeting the requirements of Governmental Accounting Standards Board Statement No. 68 (GASB 68) for the fiscal year ending June 30, 2020 (Reporting Date). Much of the material provided in this report is based on the data, assumptions and results of the annual actuarial valuation of the System as of June 30, 2018 and an experience study for the five-year period ending June 30, 2017. The Retirement System provided the financial information as of June 30, 2019.

GASB 68 creates disclosure and reporting requirements that may or may not be consistent with the basis used for funding the System. GASB 68 requires the employer to include Net Pension Liability (NPL) and to recognize a Pension Expense (PE) on its balance sheet.

Pension Expense includes amounts for service cost (the Normal Cost under the Entry Age Normal actuarial cost method for the year), interest on the Total Pension Liability (TPL), changes in benefit structure, amortization of increases/decreases in liability due to actuarial experience and actuarial assumption changes, and amortization of investment gains/losses. The actuarial experience and assumption change impacts are amortized over the average expected remaining service life of the plan membership as of the Measurement Date, and investment gains/losses are amortized over five years. The development of the PE is shown in Section IV.

The unrecognized portions of each year's experience, assumption changes and investment gains/losses are used to develop deferred inflows and outflows, which also must be included on the employer's balance sheet. The development of the deferred inflows and outflows is shown in Section III.

Section II of this report is a summary of the principal results of the amounts under GASB 68. Section III provides the results of all the necessary calculations, presented in the order laid out in GASB 68 for note disclosure. Schedule A of this report shows the Required Supplementary Information (RSI).



SECTION II – SUMMARY OF PRINCIPAL RESULTS
(\$ in Thousands)

Valuation Date (VD)	June 30, 2018
Measurement Date (MD)	June 30, 2019
Reporting Date (RD)	June 30, 2020
Single Equivalent Interest Rate (SEIR):	
Long-Term Expected Rate of Return	6.75%
Municipal Bond Index Rate	2.79%
Fiscal year in which Plan's Fiduciary net position is projected to be depleted from future benefit payments for current members	2034
Single Equivalent Interest Rate	3.56%
Net Pension Liability:	
Total Pension Liability (TPL)	\$4,722,160
Fiduciary Net Position (FNP)	<u>1,403,702</u>
Net Pension Liability (NPL = TPL - FNP)	\$3,318,458
FNP as a percentage of TPL	29.73%
Pension Expense (PE)	\$466,160
Deferred Outflows of Resources	\$455,296
Deferred Inflows of Resources	\$37,986



SECTION III – NOTES TO FINANCIAL STATEMENTS

The material presented herein will follow the order presented in GASB 68. Paragraph numbers are provided for ease of reference.

Paragraph 40(c): The data required regarding the membership of the University of Puerto Rico Retirement System were furnished by the System. The following table summarizes the membership of the System as of June 30, 2018, the Valuation Date.

Membership

	Number
Inactive Members or Their Beneficiaries Currently Receiving Benefits	8,816
Inactive Members Entitled To But Not Yet Receiving Benefits	8,217
Active Members	9,635
Total	26,668

Paragraph 41: This paragraph requires information regarding the actuarial assumptions used to measure the TPL. The TPL as of June 30, 2019 was determined based on the annual actuarial funding valuation report prepared as of June 30, 2018. The complete actuarial assumptions utilized in developing the TPL are outlined in Schedule C. The key actuarial assumptions are summarized below:

- Inflation 2.4 percent
- Salary increases 2.4 percent and wage growth rate of 0.35%
- Discount rate 3.56 percent net of investment expenses per annum, compounded annually

The rates of mortality for the period after service retirement are according to the Pub 2010 Teachers Retirees Amount-Weighted Mortality Table, projected generationally using scale MP-2020 for retired healthy pensioners. Rates of mortality for the period after disability retirement are according to the Pub 2010 Teachers Disabled Retirees Amount-Weighted Mortality Table, projected generationally using scale MP-2020.



Paragraph 42 (a)-(f): The discount rate used to measure the total pension liability was 3.56 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, 2034. 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, 2034 and the applicable municipal bond index rate of 2.79%, based on the S&P Municipal Bond 20-year High Grade Index Rate as of June 30, 2019, was applied to all periods of projected benefit payments after June 30, 2034. The Single Equivalent Interest Rate (SEIR) of 3.56% 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, 2019. The SEIR at the beginning of the measurement period was 3.81%.

The long-term expected rate of return on System 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 System 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%	6.30%
Global ex U.S. equity	24.0%	6.45%
Domestic fixed	30.0%	0.55%
High Yield	7.5%	2.85%
Real Estate	5.0%	4.80%
Private Equity	1.5%	9.75%
Total	100%	

Paragraph 42 (g): This paragraph requires disclosure of the sensitivity of the NPL to changes in the discount rate. The following presents the NPL of the System, calculated using the discount rate of 3.56 percent, as well as what the System’s NPL would be if it were calculated using a discount rate that is 1-percentage-point lower (2.56 percent) or 1-percentage-point higher (4.56 percent) than the current rate:

(\$ in Thousands)

	1% Decrease (2.56%)	Current Assumption (3.56%)	1% Increase (4.56%)
System's Net Pension Liability	\$3,956,383	\$3,318,458	\$2,789,604



Paragraph 44: This paragraph requires a schedule of changes in the NPL. The needed information is provided in the table below.

CHANGES IN THE NET PENSION LIABILITY
(\$ in Thousands)

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) – (b)
Balances at June 30, 2018	\$4,432,509	\$1,408,376	\$3,024,133
Changes for the year:			
Service cost	72,823		72,823
Interest	164,920		164,920
Benefit changes	0		0
Difference between expected and actual experience	(11,902)		(11,902)
Changes in assumptions	271,633		271,633
Contributions - employer		75,263	(75,263)
Contributions - employee		32,849	(32,849)
Net investment income		98,788	(98,788)
Benefit payments, including refunds of employee contributions	(207,823)	(207,823)	
Administrative expense		(3,751)	3,751
Other changes	<u>0</u>	<u>0</u>	<u>0</u>
Net changes	<u>289,651</u>	<u>(4,674)</u>	<u>294,325</u>
Balances at June 30, 2019	<u>\$4,722,160</u>	<u>\$1,403,702</u>	<u>\$3,318,458</u>



Paragraph 45 (a): June 30, 2018 is the actuarial valuation date upon which the TPL is based. The result was rolled forward using standard roll forward techniques to the Measurement Date of June 30, 2019.

TPL Roll Forward	(1)	(2)	(3)
(a) Valuation Date for Measurement	6/30/2017	6/30/2018	6/30/2018
(b) Interest Rate (SEIR)	3.81%	3.81%	3.56%
(c) TPL as of June 30, 2018	4,432,509	4,421,044	4,686,867
(d) Normal Cost	70,150	70,150	77,214
(e) Actual Benefit Payments	207,823	207,823	207,823
(f) TPL as of June 30, 2019 = [(c+d) * (1+b)]-[e * (1+b*0.5)]	\$4,462,429	\$4,450,527	\$4,722,160
(g) Experience Actuarial (Gain)/Loss: (2f) - (1f)		(\$11,902)	
(h) Assumption Change (Gain)/Loss: (3f) - (2f)			\$271,633

Paragraph 45 (c):

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%.
- Mortality projection scale was changed from MP-2017 to MP-2019.

2019

- Discount rate was changed from 3.81% to 3.56%.
- Assumed inflation was reduced from 2.50% to 2.40%
- Rates of mortality were changed to the Pub 2010 Teachers Retirees Amount-Weighted Mortality Table, projected generationally using scale MP-2020 for retired healthy pensioners. Rates of mortality for the period after disability retirement are according to the Pub 2010 Teachers Disabled Retirees Amount-Weighted Mortality Table, projected generationally using scale MP-2020.



Paragraph 45 (d): *Changes of benefit terms: None*

Paragraph 45 (g): See Section IV for the annual Pension Expense.

Paragraph 45 (h): Since certain expense items are amortized over closed periods each year, the deferred portions of these items must be tracked annually. If the amounts serve to reduce Pension Expense they are labeled deferred inflows. If they will increase Pension Expense they are labeled deferred outflows. The amortization of these amounts is accomplished on a level dollar basis, with no interest included in the deferred amounts. Experience gains/losses and the impact of changes in actuarial assumptions, if any, are amortized over the average expected remaining service life of the active and inactive System members at the beginning of the fiscal year. Investment gains and losses are amortized over a fixed five year period.

The table below provides a summary of the deferred inflows and outflows as of June 30, 2019.

(\$ in Thousands)

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	\$0	\$15,924
Changes of assumptions	455,296	0
Net difference between projected and actual earnings on plan investments	<u>0</u>	<u>22,062</u>
Total	<u>\$455,296</u>	<u>\$37,986</u>



Paragraph 45 (i): Amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in Pension Expense as follows:

**Deferred Amounts to be Recognized in Fiscal Years Following the Reporting Date
(\$ in Thousands)**

Year	
2020	\$ 311,265
2021	64,855
2022	42,633
2023	(1,443)
2024	0
Thereafter	0



SECTION IV – PENSION EXPENSE

As noted earlier, the Pension Expense (PE) consists of a number of different items. GASB 68 refers to the first as Service Cost which is the Normal Cost using the Entry Age Normal (EAN) actuarial funding method. The second item is interest on the beginning of year TPL and the cash flows during the year at the 3.81% discount rate in effect as of the previous measurement date.

The next three items refer to any changes that occurred in the TPL due to:

- benefit changes,
- actual versus expected experience or
- changes in actuarial assumptions.

Benefit changes, which are reflected immediately in PE, can be positive, if there is a benefit improvement for existing System members, or negative if there is a benefit reduction. For the year ended June 30, 2019 there were no benefit changes to be recognized.

The next item to be recognized is the portion of current year changes in TPL due to actual versus expected experience for the year. The portion to recognize in the current year is determined by spreading the total change over the average expected remaining service life of the entire System membership. The remaining service life of active members is the average number of years the active members are expected to remain active. For the year ended June 30, 2019 this number is 10.19. The remaining service life of the inactive members is zero. Therefore, the figure to use for the amortization is the weighted average of these two amounts, or 3.68.

The last item under changes in TPL is changes in actuarial assumptions or other inputs. The recognition of the change is spread over the remaining service life of the entire System membership.

Member contributions for the year and projected earnings on the FNP, again at the rate used to calculate the liabilities, are subtracted from the amount determined thus far. One-fifth of current period differences between actual and projected earnings on the FNP is recognized in the pension expense.

The current year portions of previously determined experience, assumption, and earnings amounts, recognized as deferred inflows and outflows are included next. Deferred inflows are subtracted from the PE while deferred outflows are added to the PE. Finally, administrative expenses and other miscellaneous items are included.

The calculation of the Pension Expense is shown in the following table.



Pension Expense
Determined as of the Measurement Date
(\$ in Thousands)

Service Cost	\$ 72,823
Interest on the total pension liability and cash flow	164,920
Current-period benefit changes	-
Expensed portion of current-period difference between expected and actual experience in the total pension liability	(3,234)
Expensed portion of current-period changes of assumptions	73,813
Member contributions	(32,849)
Projected earnings on plan investments	(91,573)
Expensed portion of current-period differences between actual and projected earnings on plan investments	(1,443)
Administrative expense	3,751
Other	0
Recognition of beginning deferred outflows of resources as pension expense	302,670
Recognition of beginning deferred inflows of resources as pension expense	<u>(22,718)</u>
Pension expense	\$ <u>466,160</u>

SCHEDULE A
REQUIRED SUPPLEMENTARY INFORMATION
SCHEDULE OF CHANGES IN THE NET PENSION LIABILITY
(\$ in Thousands)



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Total pension liability											
Service Cost	\$49,499	\$48,107	\$46,571	\$52,000	\$74,827	\$72,823					
Interest	173,630	177,334	194,184	191,144	167,015	164,920					
Benefit changes	0	(45,209)	(14,671)	0	0	0					
Difference between expected and actual experience	0	(323,974)	(4,733)	(24,376)	(2,678)	(11,902)					
Changes of assumptions or other inputs	(24,034)	32,269	160,911	989,905	31,859	271,633					
Benefit payments	(169,163)	(176,872)	(182,614)	(188,311)	(198,247)	(207,823)					
Refunds of contributions	<u>0</u>	<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	\$72,776	\$289,651					
Total pension liability - beginning	\$3,398,136	\$3,428,068	\$3,139,723	\$3,339,371	\$4,359,733	\$4,432,509					
Total pension liability - ending (a)	\$3,428,068	\$3,139,723	\$3,339,371	\$4,359,733	\$4,432,509	\$4,722,160					
Plan net position											
Contributions - employer	\$91,689	\$88,251	\$78,004	\$79,491	\$73,360	\$75,263					
Contributions - member	37,900	35,594	38,640	39,042	35,864	32,849					
Net investment income	206,595	75,373	59,009	132,950	110,357	98,788					
Benefit payments	(169,163)	(176,872)	(182,614)	(188,311)	(198,247)	(207,823)					
Administrative expense	(4,566)	(3,378)	(3,363)	(4,340)	(4,458)	(3,751)					
Other	<u>0</u>	<u>0</u>	(4)	<u>0</u>	<u>0</u>	<u>0</u>					
Net change in plan net position	\$162,455	\$18,968	(\$10,328)	\$58,832	\$16,876	(\$4,674)					
Plan net position - beginning	\$1,161,573	\$1,324,028	\$1,342,996	\$1,332,668	\$1,391,500	\$1,408,376					
Plan net position - ending (b)	\$1,324,028	\$1,342,996	\$1,332,668	\$1,391,500	\$1,408,376	\$1,403,702					
Net pension liability - ending (a) - (b)	\$2,104,040	\$1,796,727	\$2,006,703	\$2,968,233	\$3,024,133	\$3,318,458					



SCHEDULE OF EMPLOYER CONTRIBUTIONS
(\$ in Thousands)

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Actuarially determined employer contribution	\$127,609	\$96,089	\$85,829	\$86,635	\$89,255	\$78,204	\$77,772	\$72,186	\$68,487	\$63,722
Actual employer contributions	<u>75,263</u>	<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>
Annual contribution deficiency (excess)	<u>\$52,346</u>	<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>
Covered-employee payroll	\$453,802	\$478,529	\$488,775	\$515,994	\$516,226	\$515,856	\$491,291	\$491,063	\$526,820	\$558,961
Actual contributions as a percentage of covered-employee payroll	16.58%	15.33%	16.26%	15.12%	17.10%	17.77%	15.97%	15.30%	13.43%	12.73%

Notes to Schedule

Valuation Date: June 30, 2018

Methods and assumptions used to determine contribution rates:

Actuarial cost method	Entry Age
Amortization method	Level percent of payroll, closed
Remaining amortization period	26 years
Asset valuation method	5-year smoothed market
Inflation	2.5 percent
Salary increases	2.75 percent including inflation
Investment rate of return	6.75 percent, net of System investment expenses per annum, compounded annually



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: 3.56% net of investment expenses per annum, compounded annually.

INFLATION ASSUMPTION: 2.4% per year.

ADMINISTRATIVE EXPENSE ASSUMPTION: 1.08% 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:** Pub 2010 Teachers Employees Amount-Weighted Mortality Table, projected generationally using scale MP-2020.
- **POST-RETIREMENT HEALTHY MORTALITY:** Pub 2010 Teachers Retirees Amount-Weighted Mortality Table, projected generationally using scale MP-2020.
- **POST-RETIREMENT DISABLED MORTALITY:** Pub 2010 Teachers Disabled Retirees Amount-Weighted Mortality Table, projected generationally using scale MP-2020.



- **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: 2.40% per year and wage growth rate of 0.35%



SCHEDULE D

DEFERRED OUTFLOWS AND DEFERRED INFLOWS OF RESOURCES

Deferred Outflows and Inflows for Differences between Expected and Actual Experience											
Initial Balance of Losses / Deferred Outflow	Initial Balance of Gains / Deferred Inflow	Amortization Period	Beginning Balance Deferred Outflows (a)	Beginning Balance Deferred Inflows (b)	Losses / Deferred Outflows (c)	Gains / Deferred Inflows (d)	Amounts Recognized in Pension Expense / Deferred Outflow (e)	Amounts Recognized in Pension Expense / Deferred Inflow (f)	Ending Balance Deferred Outflows (a) + (c) - (e)	Ending Balance Deferred Inflows (b) + (d) - (f)	
2019	\$0	\$11,902	3.68	\$0	\$0	\$0	\$11,902	\$0	\$3,234	\$0	\$8,668
2018	\$0	\$2,678	3.80	\$0	\$1,973	\$0	\$0	\$0	\$705	\$0	\$1,268
2017	\$0	\$24,376	3.95	\$0	\$12,034	\$0	\$0	\$0	\$6,171	\$0	\$5,863
2016	\$0	\$4,733	4.11	\$0	\$1,277	\$0	\$0	\$0	\$1,152	\$0	\$125
2015	\$0	\$323,974	4.19	\$0	\$14,690	\$0	\$0	\$0	\$14,690	\$0	\$0
Total				<u>\$0</u>	<u>\$29,974</u>	<u>\$0</u>	<u>\$11,902</u>			<u>\$0</u>	<u>\$15,924</u>



Deferred Outflows and Inflows for Differences from Assumption Changes

Year	Initial Balance of Losses / Deferred Outflow	Initial Balance of Gains / Deferred Inflow	Amortization Period	Beginning Balance Deferred Outflows (a)	Beginning Balance Deferred Inflows (b)	Losses / Deferred Outflows (c)	Gains / Deferred Inflows (d)	Amounts Recognized in Pension Expense / Deferred Outflow (e)	Amounts Recognized in Pension Expense / Deferred Inflow (f)	Ending Balance Deferred Outflows (a) + (c) - (e)	Ending Balance Deferred Inflows (b) + (d) - (f)
2019	\$271,633	\$0	3.68	\$0	\$0	\$271,633	\$0	\$73,813	\$0	\$197,820	\$0
2018	\$31,859	\$0	3.80	\$23,475	\$0	\$0	\$0	\$8,384	\$0	\$15,091	\$0
2017	\$989,905	\$0	3.95	\$488,687	\$0	\$0	\$0	\$250,609	\$0	\$238,078	\$0
2016	\$160,911	\$0	4.11	\$43,458	\$0	\$0	\$0	\$39,151	\$0	\$4,307	\$0
2015	\$32,269	\$0	4.19	\$1,465	\$0	\$0	\$0	\$1,465	\$0	\$0	\$0
Total				<u>\$557,085</u>	<u>\$0</u>	<u>\$271,633</u>	<u>\$0</u>			<u>\$455,296</u>	<u>\$0</u>



Deferred Outflows and Inflows for Differences in Investment Experience											
Year	Initial Balance of Losses / Deferred Outflow	Initial Balance of Gains / Deferred Inflow	Amortization Period	Beginning Balance Deferred Outflows (a)	Beginning Balance Deferred Inflows (b)	Losses / Deferred Outflows (c)	Gains / Deferred Inflows (d)	Amounts Recognized in Pension Expense / Deferred Outflow (e)	Amounts Recognized in Pension Expense / Deferred Inflow (f)	Ending Balance Deferred Outflows (a) + (c) - (e)	Ending Balance Deferred Inflows (b) + (d) - (f)
2019	\$0	\$7,215	5.0	\$0	\$0	\$0	\$7,215	\$0	\$1,443	\$0	\$5,772
2018	\$0	\$19,586	5.0	\$0	\$15,669	\$0	\$0	\$0	\$3,917	\$0	\$11,752
2017	\$0	\$32,540	5.0	\$0	\$19,524	\$0	\$0	\$0	\$6,508	\$0	\$13,016
2016	\$42,386	\$0	5.0	\$16,955	\$0	\$0	\$0	\$8,477	\$0	\$8,478	\$0
2015	\$25,053	\$0	5.0	\$5,009	\$0	\$0	\$0	\$5,009	\$0	\$0	\$0
Total				<u>\$21,964</u>	<u>\$35,193</u>	<u>\$0</u>	<u>\$7,215</u>			<u>\$8,478</u>	<u>\$30,540</u>
Net difference between projected and actual earnings on investments											\$22,062