





















Section III – Assets

Schedule C shows the additions and deductions for the year preceding the valuation date and a reconciliation of the fund balances at market value. The market value of assets as of June 30, 2019 used to determine the actuarial value of assets is shown below. The market related actuarial value of assets used for the current valuation was \$1,385,992,022. Schedule B shows the development of the actuarial value of assets. The following table shows historical asset information. The market value return over the 20 year period shown below was 6.52%.

**TABLE 4**  
**HISTORICAL ASSET INFORMATION**  
**(in \$1,000s)**

Plan Year	Market Value as of June 30	Actuarial Value as of June 30	Benefit Payments	Expenses	University and Member Contribs.	Market Value Yield	Actuarial Value Yield
2019	\$1,403,702	\$1,385,992	\$207,823	\$3,751	\$108,112	7.3%	6.5%
2018	1,408,376	1,401,187	198,247	4,458	109,223	8.2%	9.2%
2017	1,385,630	1,371,979	188,311	4,120	112,244	10.3%	10.2%
2016	1,332,668	1,321,210	182,614	4,075	116,643	4.5%	9.6%
2015	1,342,996	1,272,123	176,872	4,172	123,845	5.8%	12.9%
2014	1,325,365	1,179,752	169,163	3,914	129,589	18.2%	14.6%
2013	1,161,569	1,070,402	162,182	3,777	115,333	15.2%	8.1%
2012	1,055,909	1,039,441	153,890	3,518	114,405	4.5%	4.0%
2011	1,052,467	1,041,628	143,198	3,070	110,823	20.9%	4.8%
2010	902,867	1,028,918	133,113	3,709	112,915	13.0%	1.8%
2009	821,867	1,034,645	124,353	3,935	116,436	-12.7%	2.1%
2008	954,307	1,024,987	118,779	3,640	124,518	-5.0%	7.3%
2007	1,002,117	953,197	110,831	3,443	118,341	14.8%	9.2%
2006	869,349	869,211	105,090	3,263	112,368	7.3%	5.4%
2005	806,229	820,501	100,459	3,781	105,755	8.2%	1.9%
2004	743,761	803,498	94,188	2,675	102,369	11.4%	2.5%
2003	662,518	778,265	89,313	2,420	88,988	4.0%	2.1%
2002	639,813	765,329	84,455	2,105	78,220	-5.6%	12.8%
2001	686,067	686,067	78,613	2,178	78,424	-8.7%	-8.7%
2000	754,280	754,280	72,043	2,215	72,036	16.4%	16.4%





#### *Section IV – Comments on Valuation*

---

1. The total valuation balance sheet on account of benefits shows that the System has total prospective benefit liabilities of \$3,486,441,922, of which \$2,002,117,433 is for the prospective benefits payable on account of present retired members, disabled members and survivors of deceased members, \$82,955,831 is for the prospective benefits payable on account of inactive members entitled to future benefits, and \$1,401,368,658 is for the prospective benefits payable on account of present active members. Against these benefit liabilities the System has a total present actuarial value of assets of \$1,385,992,022 as of June 30, 2019. The difference of \$2,100,449,900 between the total liabilities and the total present actuarial value of assets represents the present value of contributions to be made in the future on account of benefits. Of this amount, \$241,756,047 is the present value of future contributions expected to be made by members, and the balance of \$1,858,693,853 represents future University contributions.
  
2. The University's contributions to the System consist of normal contributions and unfunded actuarial accrued liability (UAAL) contributions. The valuation indicates that employer normal contributions at the rate of 0.78% of payroll are required. Prospective employer normal contributions have a present value of \$8,266,337. When this amount is subtracted from \$1,858,693,853, which is the present value of the total future contributions to be made by the employers, there remains \$1,850,427,516 as the amount of future UAAL contributions.
  
3. In accordance with Board Resolution #5, the accrued liability contribution rate payable on account of retirement benefits has been set at 31.67% of payroll. This rate is sufficient to liquidate the unfunded accrued liability of \$1,850,427,516 over 25 years beginning June 30, 2019 on the assumption that the aggregate payroll will increase 1.50% each year.





Section V – Contributions Payable by Employer

The employer contribution rates according to the Rules and Regulations of the System are shown in the following table.

TABLE 5

	June 30, 2019	June 30, 2018
<b>A. Funding Results</b>		
1. Present Value of Future Benefits	\$3,486,441,922	\$3,474,101,645
2. Actuarial Value of Assets	<u>1,385,992,022</u>	<u>1,401,187,212</u>
3. PV of Future Contributions (1) – (2)	2,100,449,900	2,072,914,433
4. PV of Future Member Contributions	<u>241,756,047</u>	<u>256,756,964</u>
5. PV of Future University Contributions (3) – (4)	1,858,693,853	1,816,157,469
6. PV of Future University Normal Conts.	<u>8,266,337</u>	<u>9,712,156</u>
7. Unfunded Accrued Liability (5) – (6)	1,850,427,516	1,806,445,313
<b>B. Annual Contribution Rate (% of payroll)</b>		
1. Total		
a. Normal rate (including expenses)	9.58%	9.68%
b. Unfunded accrued liability	<u>31.67%</u>	<u>27.25%</u>
c. Sub-total	41.25%	36.93%
2. Members	<u>8.80%</u>	<u>8.81%</u>
3. University	32.45%	28.12%





Section VI – Derivation of Experience Gains and Losses

**CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITIES (UAAL)  
DURING PLAN YEAR**

1) Beginning of Year:	
a) Unfunded Actuarial Accrued Liability	\$1,806,445,313
b) Total Normal Cost (including expenses)	38,438,084
c) Expected Total Contributions based on prior valuation contribution rate with Administrative Expenses	162,943,641
d) Actual Total Contributions based on contribution rate applicable to current fiscal year	108,111,563
2) End of Year:	
a) Expected UAAL from previous valuation [(1a) + (1b)] * 1.0675 – (1c) * 1.03375	\$1,800,970,037
b) Expected UAAL on actual contributions [(1a) + (1b)] * 1.0675 – (1d) * 1.03375	1,857,652,698
c) Increase (Decrease) in UAAL due to deficiency (surplus) (2b) – (2a)	56,682,661
3) Gains (Losses) on Year’s Activities	
a) Liability – Assumed vs. Actual	\$10,046,685
b) Assets – Assumed vs. Actual	(2,821,503)
c) Change in Plan Assumptions	0
d) Change in Plan Provisions	0
e) Change in Methods	0
f) Total	\$7,225,182
4) Actual UAAL at End of Year (2a) + (2c) – (3f)	\$1,850,427,516

\* Expected Total Contributions are based on the Annual Required Contribution (ARC) rate, the average member contribution rate, and annual covered payroll as of the previous valuation date.





Section VI – Derivation of Experience Gains and Losses

**GAINS & LOSSES IN ACTUARIAL ACCRUED LIABILITIES  
DURING PLAN YEAR**

Type of Activity	Gain (or Loss)
<b>Age &amp; Service Retirements.</b> If members retire at older ages, there is a gain. If younger ages, a loss.	\$(3,248,973)
<b>Disability Retirements.</b> If disability claims are less than assumed, there is a gain. If more, a loss.	283,063
<b>Death-in Service Benefits.</b> If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	(552,782)
<b>Withdrawal From Employment.</b> If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	13,882,988
<b>Pay Increases.</b> If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	5,471,766
<b>New Members.</b> Additional unfunded accrued liability will produce a loss.	(2,680,575)
<b>Contribution Income.</b> If more contributions are received than expected, there is a gain. If less, a loss	(56,682,661)
<b>Investment Income.</b> If there is a greater investment income than assumed, there is a gain. If less income, a loss.	(2,821,503)
<b>Death After Retirement.</b> If retirees live longer than assumed, there is a loss. If not as long, a gain.	(3,111,088)
<b>Other.</b> Miscellaneous gains and losses resulting from changes in valuation software, data adjustments, timing of financial transactions, etc.	<u>2,286</u>
<b>Gain (or Loss) During Year From Financial Experience</b>	<b>\$(49,457,479)</b>
<b>Non-Recurring Items.</b> Adjustments for plan amendments, assumptions changes and method changes.	<u>0</u>
<b>Composite Gain (or Loss) During Year</b>	<b>\$(49,457,479)</b>





## Section VII – Risk Consideration

---

Actuarial Standards of Practice are issued by the Actuarial Standards Board and are binding on credentialed actuaries practicing in the United States. These standards generally identify what the actuary should consider, document and disclose when performing an actuarial assignment. In September 2017, Actuarial Standard of Practice Number 51, Assessment and Disclosure of Risk in Measuring Pension Obligations, (ASOP 51) was issued as final with application to measurement dates on or after November 1, 2018. This ASOP, which applies to funding valuations, actuarial projections, and actuarial cost studies of proposed plan changes, is first applicable for the June 30, 2019 actuarial valuation for the System.

A typical retirement plan faces many different risks, but the greatest risk is the inability to make benefit payments when due. If the System's assets are depleted, benefits may not be paid which could create legal and litigation risk or the plan could become "pay as you go." The term "risk" is most commonly associated with an outcome with undesirable results. However, in the actuarial world, risk can be translated as uncertainty. The actuarial valuation process uses many actuarial assumptions to project how future contributions and investment returns will meet the cash flow needs for future benefit payments. Of course, we know that actual experience will not unfold exactly as anticipated by the assumptions and that uncertainty, whether favorable or unfavorable, creates risk. ASOP 51 defines risk as the potential of actual future measurements to deviate from expected results due to actual experience that is different than the actuarial assumptions.

The various risk factors for a given plan can have a significant impact – positive or negative – on the actuarial projection of liability and contribution rates.

There are a number of risks inherent in the funding of a defined benefit plan. These include:

- economic risks, such as investment return and price inflation;
- demographic risks such as mortality, payroll growth, aging population including impact of baby boomers, and retirement ages;
- contribution risk, i.e., the potential for contribution rates to be too high for the plan sponsor/employer to pay and
- external risks such as the regulatory and political environment.

There is a direct correlation between healthy, well-funded retirement plans and consistent contributions equal to the full actuarial contribution rate each year. The System is primarily funded by member and employer contributions to the trust fund, together with the earnings on these accumulated contributions. These contributions fund benefit accruals for current active members and administrative expenses. The remainder of the contributions amortizes the unfunded actuarial accrued liability. The required contribution rate is the sum of the rates for the normal cost for the plan and





## *Section VII – Risk Consideration*

---

the amortization of the unfunded actuarial accrued liability. The required contribution rate is sensitive to increases in the UAAL and periods of lower than expected returns would lead to much higher contribution rates as a percentage of payroll.

The other significant risk factor for the System is investment return because of the volatility of returns and the size of plan assets compared to payroll. A perusal of historical returns over 10-20 years reveals that the actual return each year is rarely close to the average return for the same period. This is to be expected, given the underlying capital market assumptions and the Plan's asset allocation. To the extent market rates of interest affect the expected return on assets, there is a risk of change to the discount rate which determines the present value of liabilities and actuarial valuation results.

A key demographic risk for the System is improvements in mortality (longevity) greater than anticipated. While the actuarial assumptions reflect a margin for improvement in mortality experience these assumptions are refined every experience study, the risk arises because there is a possibility of some sudden shift, perhaps from a significant medical breakthrough that could quickly increase liabilities. Likewise, there is some possibility of a significant public health crisis that could result in a significant number of additional deaths in a short time period, which would also be significant, although more easily absorbed. While either of these events could happen, it represents a small probability and thus represents much less risk than the volatility associated with investment returns.







Schedule A – Valuation Balance Sheet and Schedule of Funding Progress

VALUATION BALANCE SHEET  
SHOWING THE PRESENT AND PROSPECTIVE ASSETS AND LIABILITIES  
AS OF JUNE 30, 2019

PRESENT AND PROSPECTIVE ASSETS		
Actuarial Value of Present Assets		\$1,385,992,022
Present Value of Future Member Contributions		\$241,756,047
Present Value of Future Employer Contributions		
Normal Contributions	8,266,337	
Unfunded Accrued Liability Contributions	<u>\$1,850,427,516</u>	
Total Prospective Employer Contributions		<u>\$1,858,693,853</u>
Total Present and Prospective Assets		<u>\$3,486,441,922</u>
ACTUARIAL LIABILITIES		
Present Value of Benefits Payable on Account of Retired Members and Survivors of Deceased Members Now Drawing Retirement Benefits		\$2,002,117,433
Present Value of Prospective Benefits Payable on Account of Inactive Members		\$82,955,831
Present Value of Prospective Benefits Payable on Account of Present Active Members:		
Service Retirement Benefits	\$1,331,952,171	
Disability Retirement Benefits	\$18,290,876	
Death Benefits	\$15,054,527	
Separation Benefits	<u>\$36,071,084</u>	
Total		<u>\$1,401,368,658</u>
Total Actuarial Liabilities		<u>\$3,486,441,922</u>





Schedule A – Valuation Balance Sheet and Schedule of Funding Progress

SCHEDULE OF FUNDING PROGRESS

Actuarial Valuation Date	Value of Plan Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b – a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b – a) / (c))
6/30/2019	\$1,385,992,022	\$3,236,419,538	\$1,850,427,516	42.8%	\$428,085,691	432.3%
6/30/2018	1,401,187,212	3,207,632,525	1,806,445,313	43.7	453,802,083	398.1%
6/30/2017	1,371,979,452	2,807,476,917	1,435,497,465	48.9	478,529,460	300.0%
6/30/2016	1,321,209,628	2,762,852,807	1,441,643,179	47.8	488,774,924	295.0%
6/30/2015	1,272,122,896	2,728,214,819	1,456,091,923	46.6	500,964,899	290.7%
6/30/2014	1,179,752,077	2,684,515,789	1,504,763,712	43.9	501,190,385	300.2%

SUMMARY OF ASSUMPTIONS AND METHODS

Valuation Date	June 30, 2019
Actuarial Cost Method	Individual Entry Age Normal
Amortization Method	Level percent, closed
Payroll Growth Rate	1.50%
Asset Valuation Method	5 Year Smoothed Market
Actuarial Assumptions:	
Investment rate of return*	6.75%
Projected salary increases*	2.75%
Cost-of-living adjustments	None
*Includes inflation at	2.50%





**DEVELOPMENT OF THE JUNE 30, 2019 ACTUARIAL VALUE OF ASSETS**



Schedule B – Development of the Actuarial Value of Assets



Valuation date June 30:		2015	2016	2017	2018	2019	2020
A.	Actuarial Value Beginning of Year	\$1,179,752,077	\$1,272,122,896	\$1,321,209,628	\$1,371,979,452	\$1,401,187,212	
B.	Market Value End of Year	1,342,996,273	1,332,667,782	1,385,629,773	1,408,375,956	1,403,702,320	
C.	Market Value Beginning of Year	1,325,364,820	1,342,996,273	1,332,667,782	1,385,629,773	1,408,375,956	
	Audit Adjustment	(1,336,437)	(4,549)	0	5,870,247	0	
	Adjusted Market Value Beginning of Year	1,324,028,383	1,342,991,724	1,332,667,782	1,391,500,020	1,408,375,956	
D.	Cash Flow						
	D1. Contributions	123,844,673	116,643,497	112,244,122	109,223,431	108,111,563	
	D2. Benefit Payments	(176,871,770)	(182,614,074)	(188,310,782)	(198,246,775)	(207,822,961)	
	D3. Administrative Expenses	(3,377,926)	(3,362,509)	(4,172,828)	(4,457,620)	(3,750,583)	
	D4. Investment Expenses	0	0	0	0	0	
	D5. Net	(56,405,023)	(69,333,086)	(80,239,488)	(93,480,964)	(103,461,981)	
E.	Investment Income						
	E1. Market Total: B.-C.-D5.	74,031,288	59,004,595	133,201,479	116,227,147	98,788,346	
	E2. Assumed Rate	7.75%	7.75%	7.75%	7.75%	6.75%	
	E3. Amount for Immediate Recognition	100,426,505	101,395,202	100,172,473	104,218,864	91,573,535	
	E4. Amount for Phased-In Recognition	(26,395,217)	(42,390,607)	33,029,006	12,008,283	7,214,811	
F.	Phased-In Recognition of Investment Income						
	F1. Current Year: 0.20*E4.	(5,279,043)	(8,478,121)	6,605,801	2,401,657	1,442,962	0
	F2. First Prior Year	23,219,566	(5,279,043)	(8,478,121)	6,605,801	2,401,657	1,442,962
	F3. Second Prior Year	14,768,636	23,219,566	(5,279,043)	(8,478,121)	6,605,801	2,401,657
	F4. Third Prior Year	(7,206,422)	14,768,636	23,219,566	(5,279,043)	(8,478,121)	6,605,801
	F5. Fourth Prior Year	22,846,600	(7,206,422)	14,768,636	23,219,566	(5,279,043)	(8,478,121)
	F6. Total Recognized Investment Gain	48,349,337	17,024,616	30,836,839	18,469,860	(3,306,744)	1,972,299
G.	Actuarial Value End of Year:						
	A.+D5.+E3.+F6.	\$1,272,122,896	\$1,321,209,628	\$1,371,979,452	\$1,401,187,212	\$1,385,992,022	
H.	Difference Between Market & Actuarial Values	\$ 70,873,377	\$ 11,458,154	\$ 13,650,321	\$ 7,188,744	\$ 17,710,299	\$ 15,738,000
I.	Market Value Rate of Return	5.81%	4.51%	10.31%	8.21%	7.28%	
J.	Actuarial Value Rate of Return	12.92% <sup>1</sup>	9.57% <sup>1</sup>	10.23% <sup>1</sup>	9.26% <sup>1</sup>	6.54% <sup>1</sup>	

<sup>1</sup> Reflects phase-in of 5-year "smoothed" market value of assets.





Schedule C – Summary of Changes in Net Assets

**SUMMARY OF CHANGES IN NET ASSETS  
FOR THE YEAR ENDING JUNE 30, 2019**

<b>Additions for the Year</b>		
Contributions		
Members	\$32,848,638	
University	\$75,262,925	
Other	\$ <u>          0</u>	
Total		\$108,111,563
Net Investment Income		<u>\$98,788,346</u>
<b>TOTAL</b>		<b>\$206,899,909</b>
<b>Deductions for the Year</b>		
Benefit Payments	(\$207,822,961)	
Administrative Expenses	<u>(\$3,750,583)</u>	
<b>TOTAL</b>		<b>(\$211,573,544)</b>
<b>Excess of Additions Over Deductions</b>		
<b>TOTAL</b>		<b>(\$4,673,635)</b>
<b>Reconciliation of Asset Balances</b>		
Market Value of Assets as of June 30, 2018		\$1,408,375,956
Audit Adjustment		\$0
Excess of Additions over Deductions		(\$4,673,635)
Market Value of Assets as of June 30, 2019*		\$1,403,702,320

\* The Market Value of Assets shown above is used in the determination of the Actuarial Value of Assets (Schedule B).





*Schedule D – Outline of Actuarial Assumptions and Methods*

---

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

**INFLATION ASSUMPTION:** 2.50% per year.

**PAYROLL GROWTH ASSUMPTION:** 1.50% per year

**ADMINISTRATIVE EXPENSE ASSUMPTION:** Actual prior year expenses

**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 no future payroll increases. See Schedule E for a detailed explanation.

**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 generationally using scale MP-2017.





*Schedule D – Outline of Actuarial Assumptions and Methods*

---

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

Age	Men	Women
20	0.007%	0.007%
25	0.020%	0.020%
30	0.037%	0.037%
35	0.053%	0.053%
40	0.070%	0.070%
45	0.105%	0.105%
50	0.140%	0.140%
55	0.210%	0.210%
60	0.140%	0.140%

- **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%





*Schedule D – Outline of Actuarial Assumptions and Methods*

---

- **RETIREMENT:** Representative values are presented below.

Members with Less than 25 Years of Service as of July 1, 2015:

Age	Less than 25 Years of Service	25 Years of Service or More, but Less than 30	30 Years of Service	31 or More Years of Service
45			9.5%	9.5%
50			9.5%	9.5%
55		5%	15%	15%
58	5%	5%	45%	25%
60	5%	5%	45%	25%
61	10%	10%	45%	25%
62	11%	11%	45%	25%
63	10%	10%	45%	25%
64	10%	10%	45%	25%
65	20%	20%	50%	30%
66	15%	15%	50%	30%
67	15%	15%	50%	30%
68	15%	15%	50%	30%
69	15%	15%	50%	30%
70+	100%	100%	100%	100%







*Schedule D – Outline of Actuarial Assumptions and Methods*

---

Members with 25 or More Years of Service as of July 1, 2015:

Age	Less than 25 Years of Service	25 Years of Service or More, but Less than 30	30 or More Years of Service
45			9.5%
50			9.5%
55		5.0%	42.0%
58	5.0%	5.0%	32.0%
60	5.0%	5.0%	26.0%
61	9.0%	9.0%	20.7%
62	9.9%	9.9%	25.2%
63	9.0%	9.0%	25.2%
64	9.0%	9.0%	25.2%
65	18.0%	18.0%	25.2%
66	13.5%	13.5%	27.0%
67	13.5%	13.5%	27.0%
68	13.5%	13.5%	27.0%
69	13.5%	13.5%	27.0%
70+	100%	100%	100%

**ASSETS:** The method of valuing assets is intended to recognize a “smoothed” market value of assets. Under this method, the difference between actual return on market value from investment experience and the expected return on market value is recognized over a 5-year period.

**SALARY INCREASES:** 2.75% per annum





### *Schedule E – Actuarial Cost Method*

---

1. The valuation is prepared on the projected benefit basis, which is used to determine the present value of each member's expected benefit payable at retirement, disability or death. The calculations are based on the member's age, years of service, sex, compensation, expected future salary increases, and an assumed future interest earnings rate (currently 6.75%). The calculations consider the probability of a member's death or termination of employment prior to becoming eligible for a benefit and the probability of the member terminating with a service, disability, or survivor's benefit. The present value of the expected benefits payable to active members is added to the present value of the expected future payments to current benefit recipients to obtain the present value of all expected benefits payable to the present group of members and survivors.
2. The employer contributions required to support the benefits of the System are determined using the individual entry age normal cost method. Under this method, the actuarial present value of the projected benefits of each individual included in the valuation is allocated as a level percentage of the individual's projected compensation between entry age and assumed exit.

The portion of the actuarial present value allocated to a valuation year is called the normal cost. The normal cost is calculated for each individual member. The normal cost rate is defined as the total of the individual normal cost divided by the total annual covered payroll.

The portion of the actuarial present value not provided for at a valuation date by the sum of (a) the actuarial value of assets and (b) the actuarial present value of future normal cost is called the Unfunded Actuarial Accrued Liability (UAAL). The UAAL is amortized as a level percentage of the projected salaries of the present and future members of the System, over a 30 year period beginning June 30, 2014 on a closed basis.





*Schedule F– Summary of Plan 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.





*Schedule F– Summary of Plan Provisions*

---

**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  $\frac{1}{2}\%$  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  $\frac{1}{2}\%$  for each month member is under age 58 at time annuity begins.
- iii. After age 65 – Benefit is coordinated. Annuity is reduced by  $\frac{1}{2}\%$  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  $\frac{1}{2}\%$  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.





*Schedule F– Summary of Plan Provisions*

---

- 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:





*Schedule F– Summary of Plan Provisions*

---

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.





*Schedule F– Summary of Plan Provisions*

---

- 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).





*Schedule F– Summary of Plan Provisions*

---

**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:







## *Schedule F– Summary of Plan Provisions*

---

- 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.





*Schedule F– Summary of Plan Provisions*

---

**13. Christmas Bonus**

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





Schedule G– Schedule of Active Member Data

**SCHEDULE OF ACTIVE MEMBER DATA  
AS OF JUNE 30, 2019**

Age	Completed Years of Service							Total	Payroll
	Under 5	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30+		
Under 20	0	0	0	0	0	0	0	0	0
20 to 24	51	0	0	0	0	0	0	51	788,189
25 to 29	290	29	1	0	0	0	0	320	5,601,928
30 to 34	261	179	25	1	0	0	0	466	12,544,068
35 to 39	231	190	216	114	1	0	0	752	25,974,123
40 to 44	161	182	289	419	125	2	0	1,178	45,806,735
45 to 49	147	115	229	355	467	93	1	1,407	61,837,143
50 to 54	106	83	178	345	448	344	85	1,589	76,997,632
55 to 59	52	62	141	241	387	350	281	1,514	78,913,550
60 to 64	25	34	80	148	201	224	291	1,003	60,008,457
65 to 69	14	18	31	54	91	88	247	543	36,565,947
70+	4	3	18	30	28	33	201	317	23,047,918
Total	1,342	895	1,208	1,707	1,748	1,134	1,106	9,140	428,085,691

**Average Active Age: 50.2**

**Average Service: 17.9**





Schedule G– Schedule of Active Member Data

DISTRIBUTION OF ACTIVE PARTICIPANTS BY PENSION ELIGIBILITY, CONTRIBUTORY MAXIMUM, AND PLAN TYPE

Pension Eligibility Certification	Contributory Maximum Certification	Employee Contribution Wage Base	Plan Type	Participant Count @ 6/30/2019	Participant Count @ 6/30/2018
Cert. #7	Cert. #7	None	Coordinated	-	-
Cert. #55	Cert. #55	\$35,000	Coordinated	30	42
Cert. #37	Cert. #37	\$35,000	Coordinated	445	557
Cert. #55	Cert. #55	\$35,000	Supplemented	1,714	1,888
Cert. #7	Cert. #7	None	Supplemented	2	3
Cert. #37	Cert. #94	\$50,000	Coordinated	49	58
Cert. #55	Cert. #94	\$50,000	Supplemented	3,851	4,131
Cert. #55	Cert. #94	\$50,000	Coordinated	16	27
Cert. #37	Cert. #139*	\$69,557	Coordinated	53	66
Cert. #55	Cert. #139*	\$69,557	Coordinated	9	13
Cert. #55	Cert. #139*	\$69,557	Supplemented	<u>2,971</u>	<u>2,850</u>
				9,140	9,635

\*Effective 7/1/2014, the Certification 139 contribution wage base is frozen at \$69,557.





Schedule H – Data Reconciliation

**DATA RECONCILIATION  
AS OF JUNE 30, 2019**

	Active	Terminated Vested	Receiving Benefits	Total
<b>1. Number of Participants as of June 30, 2018</b>	<b>9,635</b>	<b>469</b>	<b>8,816</b>	<b>18,920</b>
<b>2. Change in status during the plan year:</b>				
a. Active to inactive	(559)	259		(300)
b. Active to retiree	(449)		449	
c. Inactive to active	94	(19)		75
d. Inactive to retired		(45)	45	
e. Retired to active				
<b>3. No longer participating due to:</b>				
a. Death	(4)	(7)	(205)	(216)
b. Termination / Refund	(5)	(34)	(13)	(52)
c. Deletion of duplicate data				
d. Data adjustment		(34)		(34)
<b>4. New participant due to:</b>				
a. Initial participation	428			428
b. Omitted in error last year				
c. Pickups and Corrections		2	1	3
d. New beneficiaries			3	3
<b>5. Number of Participants as of June 30, 2019</b>	<b>9,140</b>	<b>591</b>	<b>9,096</b>	<b>18,827</b>





Schedule I – Estimated Benefit Payments

ESTIMATED PROJECTED BENEFIT PAYMENTS\*

Year End	Current In-Pay	Current Not-In-Pay	Total
2019	\$209,529,420	\$17,422,726	\$226,952,146
2020	204,508,809	28,837,323	233,346,132
2021	199,509,021	38,624,667	238,133,688
2022	194,389,670	47,686,815	242,076,485
2023	189,202,747	56,297,504	245,500,251
2024	184,241,131	64,045,312	248,286,443
2025	178,953,002	71,841,036	250,794,038
2026	173,370,367	79,980,645	253,351,012
2027	167,744,052	88,067,756	255,811,808
2028	162,080,249	95,612,133	257,692,382
2029	156,251,061	103,119,839	259,370,900
2030	150,286,370	110,601,393	260,887,763
2031	144,232,674	117,983,221	262,215,895
2032	138,098,645	124,967,539	263,066,184
2033	131,858,445	131,373,366	263,231,811
2034	125,647,726	137,336,726	262,984,452
2035	119,315,618	142,788,942	262,104,560
2036	112,950,299	147,576,989	260,527,288
2037	106,594,285	151,791,343	258,385,628
2038	100,184,337	155,251,299	255,435,636
2039	93,764,003	157,859,514	251,623,517
2040	87,395,133	159,412,315	246,807,448
2041	81,067,486	160,316,896	241,384,382
2042	74,836,328	160,722,808	235,559,136
2043	68,724,860	160,679,829	229,404,689

\*Amounts shown are the cash flows for current members only, based on the current benefit structure and assuming that all actuarial assumptions are met each year. To the extent that actual experience deviates from that expected, results will vary. Amounts are shown in future nominal dollars and have not been discounted to the valuation date. Does not include refunds to current non-vested inactive members.

