





































































































APPENDIX A – MEMBERSHIP DATA

MEMBER DATA RECONCILIATION

	Active Members	Inactive Vested	Inactive Deceased	Disabled	Retired	Beneficiary	Total
<b>1. As of June 30, 2016 <sup>1</sup></b>	<b>58,097</b>	<b>4,252</b>	<b>0</b>	<b>171</b>	<b>5,352</b>	<b>273</b>	<b>68,145</b>
<b>2. Data Adjustments</b>							
New Participants	4,979	0	0	0	0	0	4,979
Rehires	300	(299)	0	0	(1)	0	0
Terminations:							
Not Vested	(1,691)	(7)	0	0	0	0	(1,698)
Deferred Vested	(1,192)	1,192	0	0	0	0	0
Disability	(3)	(10)	0	13	0	0	0
Retirements	(284)	(257)	0	0	541	0	0
Refund / Benefits Ended	(182)	(15)	0	0	0	0	(197)
Transfer / Millie Morgan	(1)	(18)	0	0	0	0	(19)
Deaths:							
With Beneficiary	(5)	(4)	0	(3)	(19)	31	0
Without Beneficiary	(19)	(14)	0	(4)	(25)	(43)	(105)
Entitled to Future Pension Benefit	(3)	(2)	5	0	0	0	0
Data Corrections	0	164	9	2	9	(8)	176
Net Change	1,899	730	14	8	505	(20)	3,136
<b>3. As of June 30, 2017 <sup>2</sup></b>	<b>59,996</b>	<b>4,982</b>	<b>14</b>	<b>179</b>	<b>5,857</b>	<b>253</b>	<b>71,281</b>

<sup>1</sup> Effective January 1, 2018, DC accounts are treated as a separate defined contribution plan, thus the counts provided exclude members with nonvested pension benefits.

<sup>2</sup> Valuation results as of June 30, 2018 were calculated using June 30, 2017 census data, adjusted for certain activity before the valuation date. Headcounts may include multiple records for individuals, such as members with multiple periods of service.

**APPENDIX A – MEMBERSHIP DATA****SUMMARY OF MEMBERSHIP DATA**

<b>Valuation Date</b>	<b>Combined TRF Plans</b>		<b>1996 Account</b>
	<b>June 30, 2017</b>	<b>June 30, 2018</b>	<b>June 30, 2018</b>
Date of Membership Data <sup>1</sup>	June 30, 2016	June 30, 2017	June 30, 2017
<b>ACTIVE MEMBERS</b>			
Number of Active Members	71,225	71,706	59,996
Annual Membership Data Salary <sup>2</sup>	\$ 3,808,875,005	\$ 3,869,532,988	\$ 3,043,428,928
Anticipated Payroll for Next Fiscal Year	\$ 4,046,700,000	\$ 4,125,634,441	\$ 3,374,943,482
Active Member Averages			
Age	42.6	42.5	40.0
Service	13.5	13.0	10.5
Annual Membership Data Salary	\$ 53,477	\$ 53,964	\$ 50,727
<b>INACTIVE MEMBERS</b>			
Number of Inactive Members	6,756	7,631	4,996
Inactive Member Averages			
Age	52.8	52.9	50.2
Service	16.5	14.8	12.8
<b>RETIREEES, DISABLEDS, AND BENEFICIARIES</b>			
Number of Members			
Retired	52,714	53,389	5,857
Disabled	767	736	179
Beneficiaries	5,555	5,391	253
Total	59,036	59,516	6,289
Annual Benefits			
Retired	\$ N/A	\$ 1,140,223,085	\$ 105,468,904
Disabled	N/A	10,259,964	1,798,311
Beneficiaries	N/A	77,403,509	3,156,108
Total	\$ 1,209,139,704	\$ 1,227,886,558	\$ 110,423,323
Annual Benefits			
Pension	\$ 1,069,782,192	\$ 1,089,268,981	\$ 99,018,615
DC Plan Annuities	139,357,512	138,617,577	11,404,708
Total	\$ 1,209,139,704	\$ 1,227,886,558	\$ 110,423,323

<sup>1</sup> The valuation results were calculated using the prior year's census data and were adjusted for certain activity during fiscal year.

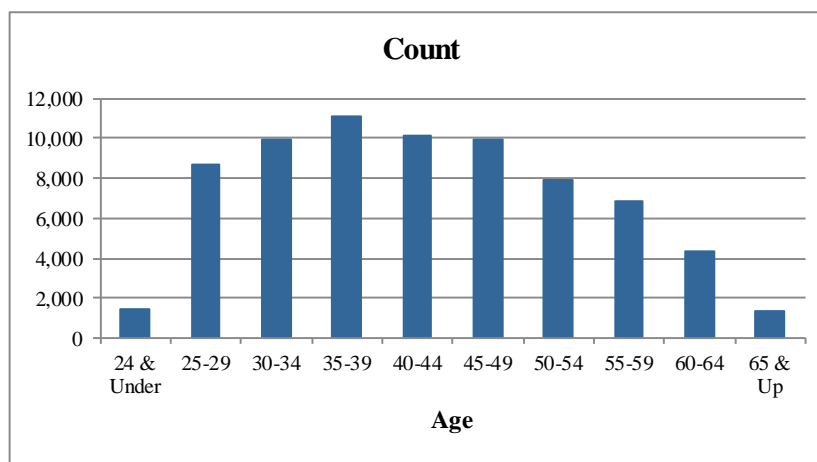
<sup>2</sup> The 2018 amounts include 287 records from the 1996 Account with less than a year of service who are missing a salary. Their salaries were defaulted to the average salary of \$50,727.



**APPENDIX A – MEMBERSHIP DATA**

**ACTIVE MEMBERS<sup>1</sup>  
As of June 30, 2017 for the June 30, 2018 Valuation  
Combined TRF Plans**

<u>Age</u>	<u>Count of Members</u>			<u>FY 2017 Annual Membership Data Salary</u>		
	<u>Male</u>	<u>Female</u>	<u>Total</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
24 & Under	265	1,186	1,451	\$ 9,531,297	\$ 41,726,716	\$ 51,258,013
25-29	2,052	6,640	8,692	81,902,535	252,187,843	334,090,378
30-34	2,572	7,384	9,956	121,451,522	308,109,968	429,561,490
35-39	3,023	8,022	11,045	168,881,656	391,580,253	560,461,909
40-44	2,782	7,371	10,153	175,095,295	397,454,209	572,549,504
45-49	2,724	7,252	9,976	184,102,883	421,092,802	605,195,684
50-54	2,075	5,878	7,953	147,544,193	360,135,869	507,680,062
55-59	1,725	5,111	6,836	122,192,501	323,618,907	445,811,409
60-64	1,154	3,175	4,329	82,221,256	203,630,496	285,851,752
65 & Up	<u>352</u>	<u>963</u>	<u>1,315</u>	<u>20,570,393</u>	<u>56,502,393</u>	<u>77,072,787</u>
<b>Total</b>	<b>18,724</b>	<b>52,982</b>	<b>71,706</b>	<b>1,113,493,532</b>	<b>2,756,039,456</b>	<b>3,869,532,988</b>



<sup>1</sup> Includes 287 records from the 1996 Account with less than a year of service who are missing a salary. Their salaries were defaulted to the average salary of \$50,727.



**AGE AND SERVICE DISTRIBUTION<sup>1</sup>**  
**As of June 30, 2017 for the June 30, 2018 Valuation**  
**Combined TRF Plans**

Age		0-4	5-9	10-14	15-19	20-24	25-29	30-34	Over 34	Total
24 & Under	Number	1,451	0	0	0	0	0	0	0	1,451
	Total Salary	\$ 51,258,013	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 51,258,013
	Average Sal.	\$ 35,326	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 35,326
25-29	Number	7,137	1,554	1	0	0	0	0	0	8,692
	Total Salary	\$ 266,172,062	\$ 67,869,093	\$ 49,222	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 334,090,378
	Average Sal.	\$ 37,295	\$ 43,674	\$ 49,222	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 38,437
30-34	Number	3,416	4,950	1,590	0	0	0	0	0	9,956
	Total Salary	\$ 124,041,281	\$ 222,049,351	\$ 83,470,857	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 429,561,490
	Average Sal.	\$ 36,312	\$ 44,858	\$ 52,497	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 43,146
35-39	Number	2,100	2,326	5,215	1,404	0	0	0	0	11,045
	Total Salary	\$ 80,285,500	\$ 103,790,542	\$ 288,223,455	\$ 88,162,412	\$ 0	\$ 0	\$ 0	\$ 0	\$ 560,461,909
	Average Sal.	\$ 38,231	\$ 44,622	\$ 55,268	\$ 62,794	\$ 0	\$ 0	\$ 0	\$ 0	\$ 50,743
40-44	Number	1,508	1,338	2,079	4,330	896	2	0	0	10,153
	Total Salary	\$ 58,774,688	\$ 60,783,384	\$ 112,964,043	\$ 276,253,236	\$ 63,653,385	\$ 120,767	\$ 0	\$ 0	\$ 572,549,504
	Average Sal.	\$ 38,975	\$ 45,429	\$ 54,336	\$ 63,800	\$ 71,042	\$ 60,384	\$ 0	\$ 0	\$ 56,392
45-49	Number	1,282	1,099	1,468	2,052	3,421	651	3	0	9,976
	Total Salary	\$ 49,149,764	\$ 51,236,889	\$ 79,364,947	\$ 130,091,370	\$ 245,619,198	\$ 49,589,067	\$ 144,449	\$ 0	\$ 605,195,684
	Average Sal.	\$ 38,338	\$ 46,621	\$ 54,063	\$ 63,397	\$ 71,797	\$ 76,174	\$ 48,150	\$ 0	\$ 60,665
50-54	Number	726	722	1,002	1,195	1,351	2,151	806	0	7,953
	Total Salary	\$ 27,831,802	\$ 32,192,695	\$ 54,694,277	\$ 74,762,434	\$ 95,433,296	\$ 161,415,167	\$ 61,350,392	\$ 0	\$ 507,680,062
	Average Sal.	\$ 38,336	\$ 44,588	\$ 54,585	\$ 62,563	\$ 70,639	\$ 75,042	\$ 76,117	\$ 0	\$ 63,835
55-59	Number	453	463	710	894	996	992	1,866	462	6,836
	Total Salary	\$ 15,935,499	\$ 19,893,430	\$ 37,351,409	\$ 54,614,594	\$ 67,793,413	\$ 72,421,847	\$ 141,919,151	\$ 35,882,065	\$ 445,811,409
	Average Sal.	\$ 35,178	\$ 42,966	\$ 52,608	\$ 61,090	\$ 68,066	\$ 73,006	\$ 76,055	\$ 77,667	\$ 65,215
60-64	Number	297	224	383	501	573	507	461	1,383	4,329
	Total Salary	\$ 9,164,965	\$ 9,004,227	\$ 20,038,233	\$ 30,501,313	\$ 39,434,931	\$ 37,145,289	\$ 34,141,592	\$ 106,421,201	\$ 285,851,752
	Average Sal.	\$ 30,858	\$ 40,197	\$ 52,319	\$ 60,881	\$ 68,822	\$ 73,265	\$ 74,060	\$ 76,950	\$ 66,032
65 & Up	Number	171	131	114	148	145	103	102	401	1,315
	Total Salary	\$ 3,230,732	\$ 4,309,579	\$ 4,682,506	\$ 8,482,278	\$ 9,976,995	\$ 7,487,150	\$ 7,626,422	\$ 31,277,126	\$ 77,072,787
	Average Sal.	\$ 18,893	\$ 32,898	\$ 41,075	\$ 57,313	\$ 68,807	\$ 72,691	\$ 74,769	\$ 77,998	\$ 58,610
Total	Number	18,541	12,807	12,562	10,524	7,382	4,406	3,238	2,246	71,706
	Total Salary	\$ 685,844,307	\$ 571,129,192	\$ 680,838,950	\$ 662,867,637	\$ 521,911,217	\$ 328,179,287	\$ 245,182,005	\$ 173,580,392	\$ 3,869,532,988
	Average Sal.	\$ 36,991	\$ 44,595	\$ 54,198	\$ 62,986	\$ 70,701	\$ 74,485	\$ 75,720	\$ 77,284	\$ 53,964

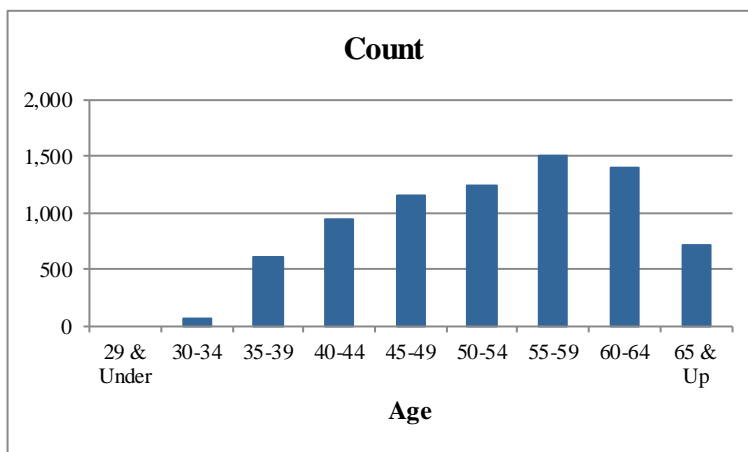
<sup>1</sup> Includes 287 records from the 1996 Account with less than a year of service who are missing a salary. Their salaries were defaulted to the average salary of \$50,727.





**INACTIVE VESTED MEMBERS**  
**As of June 30, 2017 for the June 30, 2018 Valuation**  
**Combined TRF Plans**

<u>Age</u>	<u>Count of Members</u>		
	<u>Male</u>	<u>Female</u>	<u>Total</u>
29 & Under	0	0	0
30-34	11	59	70
35-39	155	449	604
40-44	263	685	948
45-49	357	798	1,155
50-54	304	932	1,236
55-59	350	1,159	1,509
60-64	297	1,102	1,399
65 & Up	<u>154</u>	<u>556</u>	<u>710</u>
Total	1,891	5,740	7,631

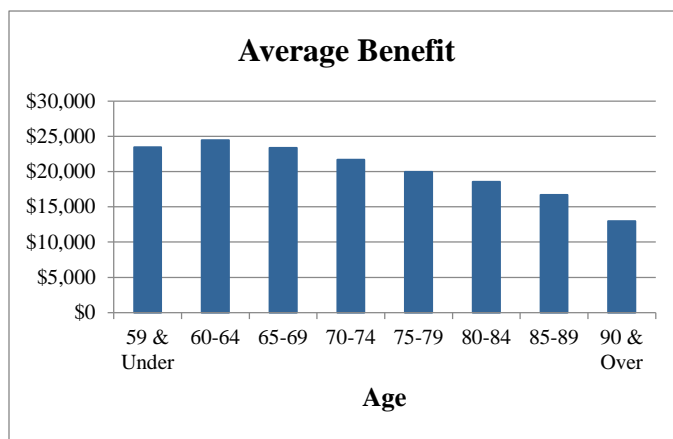
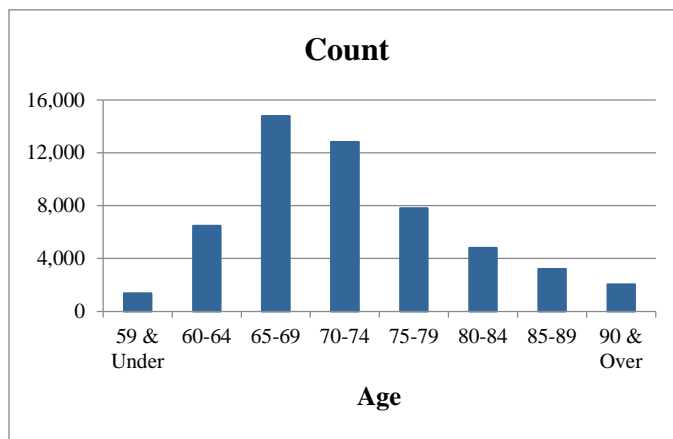




**APPENDIX A – MEMBERSHIP DATA**

**RETIRED MEMBERS  
As of June 30, 2017 for the June 30, 2018 Valuation  
Combined TRF Plans**

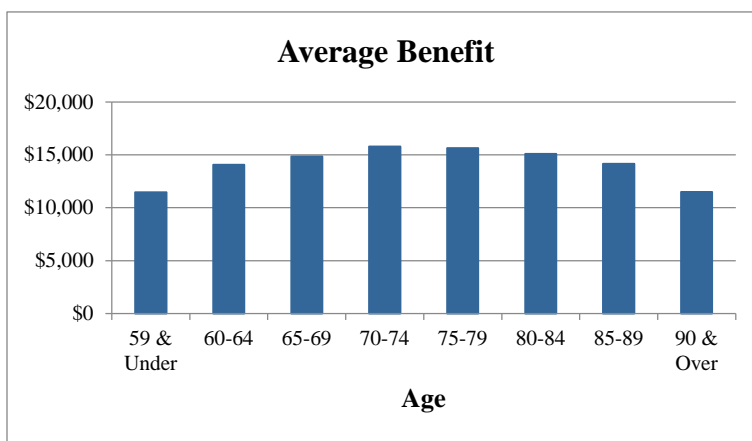
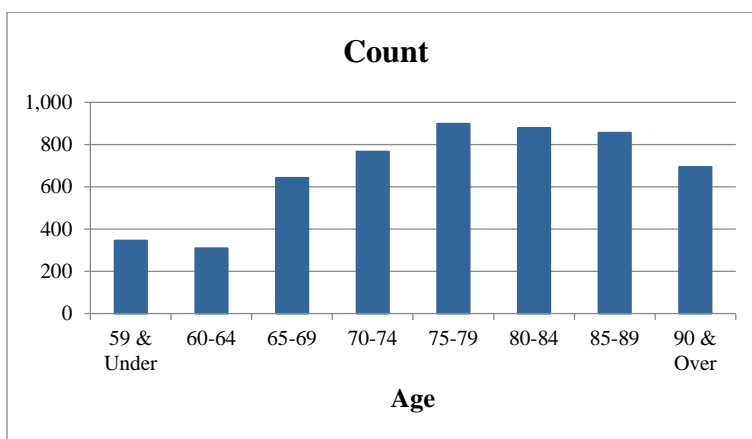
<u>Age</u>	<u>Count of Members</u>			<u>Annual Benefits</u>		
	<u>Male</u>	<u>Female</u>	<u>Total</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
59 & Under	362	1,009	1,371	\$8,839,673	\$23,319,365	\$32,159,038
60-64	1,728	4,760	6,488	46,103,920	112,729,463	158,833,383
65-69	4,078	10,718	14,796	106,726,210	238,845,428	345,571,638
70-74	4,385	8,449	12,834	107,110,335	171,057,544	278,167,879
75-79	3,006	4,798	7,804	67,968,326	87,776,434	155,744,760
80-84	1,909	2,908	4,817	40,780,596	48,501,465	89,282,061
85-89	1,178	2,044	3,222	23,648,901	30,099,384	53,748,285
90 & Over	<u>631</u>	<u>1,426</u>	<u>2,057</u>	<u>10,623,878</u>	<u>16,092,164</u>	<u>26,716,042</u>
Total	17,277	36,112	53,389	\$411,801,839	\$728,421,247	\$1,140,223,086





**BENEFICIARIES RECEIVING BENEFITS  
As of June 30, 2017 for the June 30, 2018 Valuation  
Combined TRF Plans**

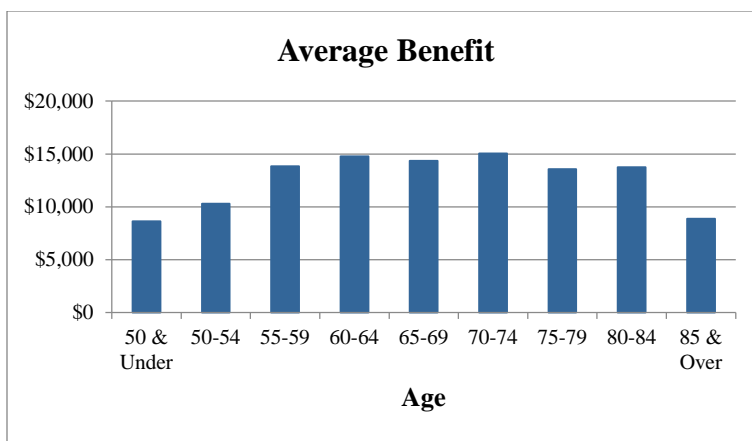
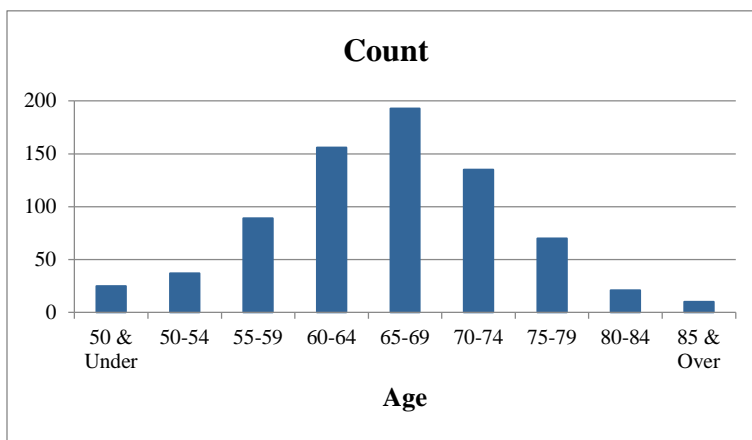
<u>Age</u>	<u>Count of Members</u>			<u>Annual Benefits</u>		
	<u>Male</u>	<u>Female</u>	<u>Total</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
59 & Under	154	192	346	\$ 1,642,941	\$ 2,324,874	\$ 3,967,815
60-64	135	175	310	1,602,026	2,758,464	4,360,490
65-69	258	385	643	3,500,608	6,061,916	9,562,524
70-74	285	481	766	4,065,326	8,029,224	12,094,550
75-79	229	669	898	2,836,015	11,221,149	14,057,164
80-84	178	700	878	2,147,497	11,117,208	13,264,705
85-89	148	708	856	1,526,283	10,596,110	12,122,393
90 & Over	<u>104</u>	<u>590</u>	<u>694</u>	<u>906,795</u>	<u>7,067,072</u>	<u>7,973,867</u>
Total	1,491	3,900	5,391	\$ 18,227,491	\$ 59,176,017	\$ 77,403,508





**DISABLED MEMBERS  
As of June 30, 2017 for the June 30, 2018 Valuation  
Combined TRF Plans**

<u>Age</u>	<u>Count of Members</u>			<u>Annual Benefits</u>		
	<u>Male</u>	<u>Female</u>	<u>Total</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
50 & Under	2	23	25	\$ 11,493	\$ 204,215	\$ 215,708
50-54	11	26	37	105,500	275,783	381,283
55-59	16	73	89	270,394	960,602	1,230,996
60-64	29	127	156	456,114	1,846,545	2,302,659
65-69	49	144	193	752,501	2,017,386	2,769,887
70-74	48	87	135	864,110	1,168,087	2,032,197
75-79	19	51	70	296,084	653,722	949,806
80-84	8	13	21	117,579	170,970	288,549
85 & Over	<u>5</u>	<u>5</u>	<u>10</u>	<u>47,554</u>	<u>41,325</u>	<u>88,879</u>
Total	187	549	736	\$ 2,921,329	\$ 7,338,635	\$ 10,259,964





**MEMBERS AND BENEFICIARIES RECEIVING BENEFITS  
As of June 30, 2017 for the June 30, 2018 Valuation  
1996 Account**

**Schedule of Average Benefit Payments <sup>1,2</sup>**

For the Year Ended June 30, 2018	Years of Credited Service						Total
	< 10	10 - 14	15 - 19	20 - 24	25 - 29	30 +	
Average Monthly Defined Benefit	\$175	\$493	\$779	\$1,133	\$1,530	\$2,278	\$1,312
Average Monthly DC Annuity <sup>3</sup>	\$67	\$150	\$243	\$334	\$494	\$742	\$393
Average Final Average Salary <sup>4</sup>	\$38,058	\$46,696	\$55,207	\$61,506	\$66,412	\$75,286	\$61,952
Number of Benefit Recipients	181	790	1,645	1,019	873	1,781	6,289

<sup>1</sup> Calculated using the prior year census data, adjusted for certain activity during the fiscal year.

<sup>2</sup> Members with less than 10 years of service are primarily members receiving a disability benefit.

<sup>3</sup> This represents those retirees who elected to receive their ASA as a supplemental monthly payment in addition to the monthly Defined Benefit payment.

<sup>4</sup> Excludes the 100 in-pay members who are missing a final average salary in the data.



**MEMBERS AND BENEFICIARIES RECEIVING BENEFITS  
As of June 30, 2017 for the June 30, 2018 Valuation  
1996 Account**

**Schedule of Benefit Recipients by Type of Benefit Option <sup>1,2</sup>**

Amount of Monthly Benefit (in dollars)	Number of Recipients by Benefit Option							Total Benefit Recipients
	5-Year Certain & Life	Straight Life	Joint with 100% Survivor Benefits	Joint with Two- Thirds Survivor Benefits	Joint with One-Half Survivor Benefits	Survivors	Disability	
1 - 500	255	190	138	24	38	65	54	764
501 - 1,000	495	401	369	84	150	89	72	1,660
1,001 - 1,500	395	364	313	97	125	40	34	1,368
1,501 - 2,000	283	240	260	78	111	25	8	1,005
2,001 - 2,500	164	130	195	51	89	20	8	657
2,501 - 3,000	63	107	101	38	45	8	2	364
Over 3,000	89	101	150	58	66	6	1	471
Total	1,744	1,533	1,526	430	624	253	179	6,289

<sup>1</sup> Calculated using the prior year census data, adjusted for certain activity during the fiscal year.

<sup>2</sup> Members who elected Social Security Integration were included in their selected benefit option of either 5-Year Certain & Life, Straight Life, Modified Cash Refund Plus 5-Year Certain & Life, Joint With 100% Survivor Benefits, Joint With Two-Thirds Survivor Benefits, or Joint With One-Half Survivor Benefits.



**MEMBERS AND BENEFICIARIES RECEIVING BENEFITS**  
**As of June 30, 2017 for the June 30, 2018 Valuation**  
**1996 Account**

**Schedule of Retirees and Beneficiaries <sup>1</sup>**

	<u>Added to Rolls</u>		<u>Removed from Rolls</u>		<u>Rolls - End of Year</u>		<b>Percent Change In Total Annual Benefits</b>	<b>Average Annual Benefit</b>	<b>Percent Change In Average Annual Benefit</b>
	<b>Number</b>	<b>Annual Benefits <sup>2</sup></b>	<b>Number</b>	<b>Annual Benefits <sup>2</sup></b>	<b>Number</b>	<b>Total Annual Benefits <sup>2</sup></b>			
2018 <sup>3</sup>	710	\$9,562	217	\$1,002	6,289	110,423	8.1%	17,558	(0.4%)
2017 <sup>3</sup>	855	12,106	36	564	5,796	102,178	12.1	17,629	(3.8)
2016 <sup>3</sup>	858	16,075	17	305	4,977	91,160	20.4	18,316	0.1
2015 <sup>3</sup>	499	9,101	28	353	4,136	75,714	12.7	18,306	(0.1)
2014 <sup>3</sup>	0	12,216	0	251	3,665	67,169	0.0	18,327	0.0
2013	712	12,216	18	251	3,665	67,169	21.1	18,327	(1.8)
2012	433	8,132	16	236	2,971	55,475	15.8	18,672	(0.4)
2011	390	7,666	17	253	2,554	47,887	17.7	18,750	0.5
2010	249	4,859	12	129	2,181	40,701	12.1	18,662	(0.1)
2009	270	5,145	10	119	1,944	36,312	(16.5)	18,679	(2.8)

<sup>1</sup> Dollar amounts are in thousands except for the average annual benefit.

<sup>2</sup> Annual benefits includes members selecting an annuity for their ASA. End of year annual benefits are not equal to prior end of year annual benefits plus additions less removals due to beneficiary benefit changes, data changes, and COLA increases.

<sup>3</sup> The valuation results were calculated using the prior year census data, adjusted for certain activity during the fiscal year.

























## APPENDIX D – GLOSSARY OF ACTUARIAL TERMS

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<b>Accrued Service</b>	Service credited under the system that was rendered before the date of the actuarial valuation.
<b>Actuarial Assumptions</b>	Estimates of future experience with respect to demographic or economic events. Demographic assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.
<b>Actuarial Cost Method</b>	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of retirement system benefits between future normal cost and actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”
<b>Actuarial Equivalent</b>	A single amount or series of amounts of equal value to another single amount or series of amounts computed on the basis of a given set of actuarial assumptions.
<b>Actuarial Accrued Liability</b>	The difference between the actuarial present value of system benefits and the actuarial value of future normal costs. Also referred to as “accrued liability” or “actuarial liability.”
<b>Actuarial Present Value</b>	The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest and by probabilities of payment.
<b>Amortization</b>	Paying off an interest-discounted amount with periodic payments of interest and principal, as opposed to paying off with lump sum payment.
<b>Experience Gain (Loss)</b>	The difference between actual experience and actuarial assumptions anticipated experience during the period between two actuarial valuation dates.
<b>Normal Cost</b>	The actuarial present value of retirement system benefits allocated to the current year by the actuarial cost method.
<b>Unfunded Actuarial Accrued Liability</b>	<p>The difference between actuarial liability and the actuarial value of assets. Sometimes referred to as “unfunded accrued liability” or “unfunded liability”.</p> <p>Most retirement systems have unfunded actuarial liability. They arise anytime new benefits are added and anytime an actuarial loss is realized.</p>