



WASHINGTON SUBURBAN SANITARY COMMISSION EMPLOYEES' RETIREMENT PLAN

**ACTUARIAL VALUATION
AS OF
JUNE 30, 2020**



April 2021

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EXECUTIVE SUMMARY

This report contains the results of an actuarial valuation of the Washington Suburban Sanitary Commission Employees' Retirement Plan (the Plan) as of June 30, 2020. The contents of this report reflect generally accepted actuarial principles.

This study relies on the following information supplied by WSSC Water: data on plan participants, plan provisions, the amount of contributions, and a reconciliation of the plan's assets from the prior year.

Boomershine Consulting Group did not audit the participant data or financial information used in this report. Based on our review of this information, we believe that it is sufficiently complete and reliable, and that it is appropriate for the purposes intended.

It is our understanding that WSSC Water currently maintains a 16.9% of covered payroll employer contributions to the Plan. This rate continues to be adequate to finance Plan benefits and lead to improved funding. The funding ratio is now 81.0% (AVA basis), and is expected to improve going forward, given continued contributions at the 16.9% rate, as shown in Section 3.2. Section 1 contains the results of the valuation, including evaluation of the contribution rate, per the Actuarial Funding Policy.

Plan experience since the prior valuation includes the following:

Favorable Experience

- *Cost-of-Living Adjustments—Open Plan.* Benefits increased 2.29% for non-active participants in the open group. This is less than the assumed 2.50% cost-of-living increase for the open group.
- *Mortality.* There were 56 deaths among retirees including disabled retirees and beneficiaries, for the plan year, compared to 46 expected. There were 16 new beneficiaries associated with these deaths.
- *Retirements.* The number of active participants who retired during the plan year totaled 60, compared to the expected 63 retirements.
- *Compensation.* This year's total payroll for continuing actives increased by 3.10% over the prior valuation, which is less than assumed.

The experience gains from these items decreased in the actuarial cost and liability of the Plan.

Unfavorable Experience

- *Cost –of-Living Adjustments – Closed Plan.* Benefits increased 3.07% for non-active participants in the closed group, which is greater than the assumed 2.50% cost-of-living increase.
- *Employee Turnover.* The number of active participants who terminated during the plan year for reasons other than retirement, disability, death or leave of absence, was 53, which is less than the expected 66 terminations.
- *Investment Return* On a market-value basis, the Plan's return was 0.02% for the year ended June 30, 2020, compared to the assumed rate of 7.00%.

The experience losses from above increased the actuarial cost and liability of the Plan.

The net impact of the experience gains and losses for the prior Plan year is a slight decrease in actuarial cost as a percent of payroll, prior to assumption changes.

New Entrants. The number of active participants increased by 1.21% from 1,651 as of June 30, 2019 to 1,671 as of June 30, 2020.

Assumption Changes. As a result of experience analysis covering 2015 through 2020, several changes in assumptions are recommended. A separate report contains detailed analysis regarding the changes. The net impact of all assumption changes is an increase in actuarial liability and cost, as shown in Sections 1.2 and 1.3.

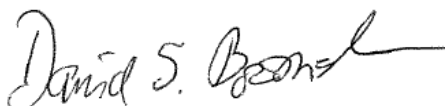
Section 2 describes the basis of the valuation. That section summarizes the plan provisions, as well as the actuarial assumptions and methods used to develop the figures herein.

To the best of our knowledge, the information contained in this report is complete and accurate. The undersigned are available to provide further information and answer any questions with respect to this report.

The first two undersigned are members of the American Academy of Actuaries, and meet the qualification standards required to render the actuarial opinions presented herein.



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SECTION 1: SUMMARY OF VALUATION RESULTS

1.1: Plan Assets

An adjusted market value of assets, or Actuarial Value of Assets (AVA), is used for the valuation to gradually recognize investment gains and losses. This method reflects five-year smoothing, such that 20% of each gain or loss is recognized per year until the entire amount has been recognized.

To ensure that the adjusted market value of assets remains reasonably close to the market value, a corridor is applied that requires the adjusted market value of assets be no less than 80% and no more than 120% of the market value.

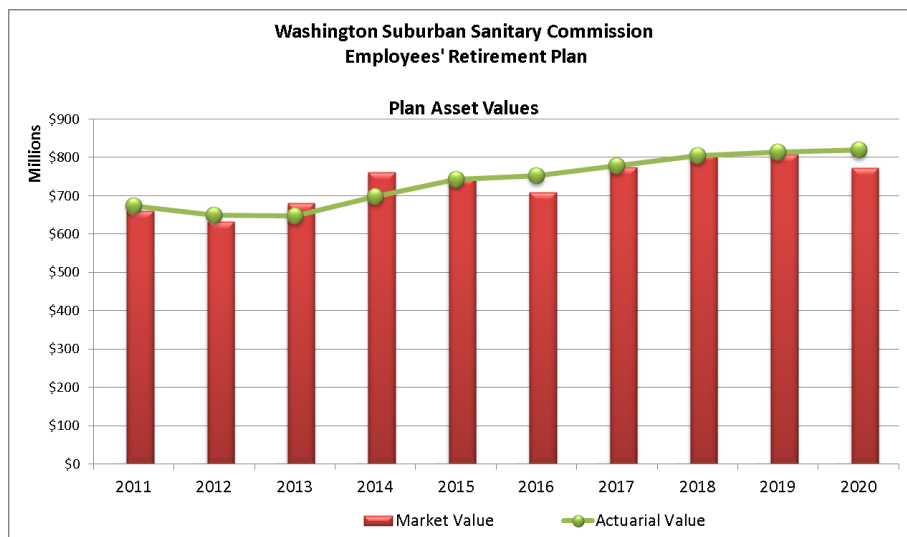
Historical Values

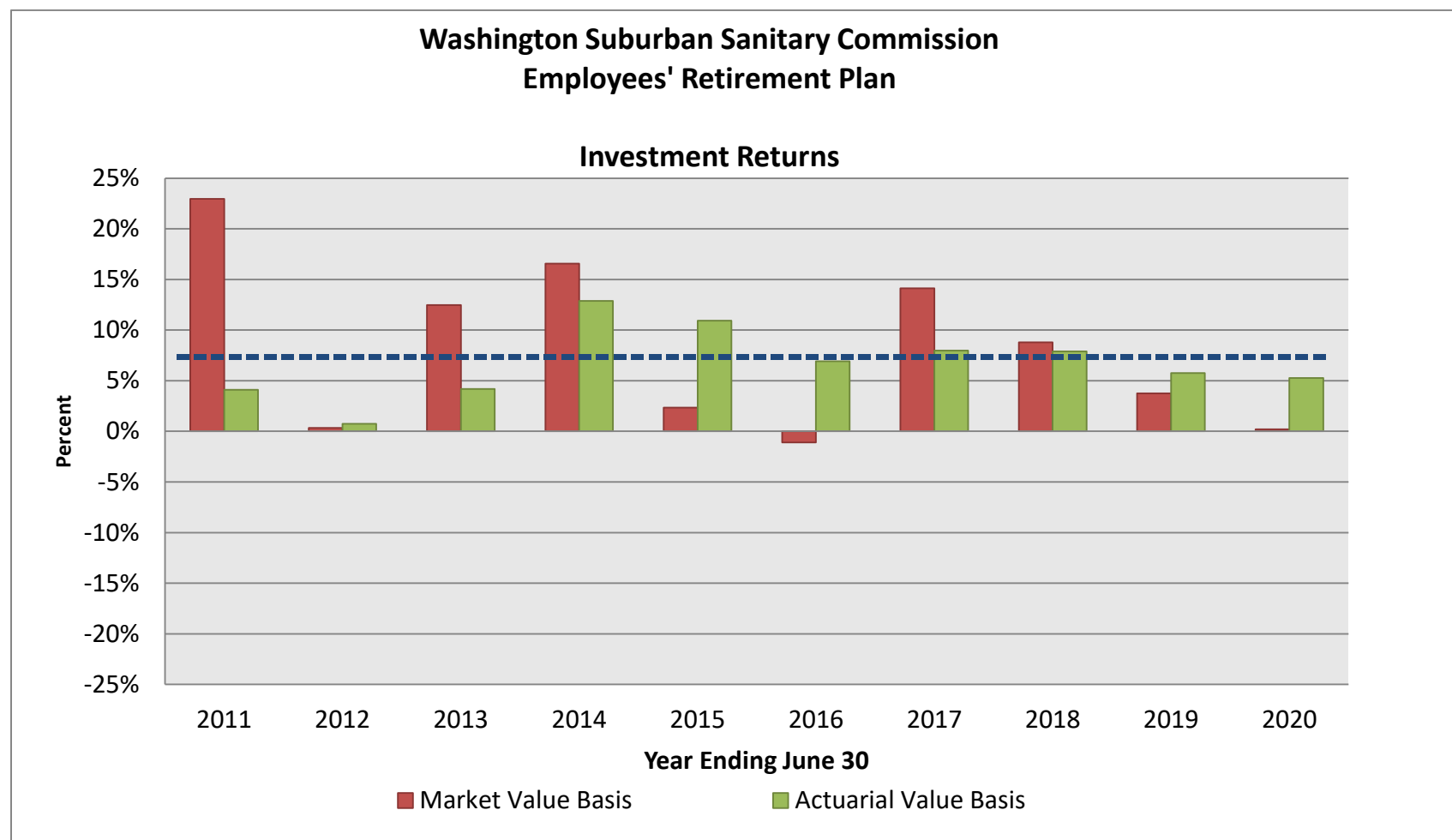
The following table shows the most recent five years of market values as well as smoothed asset values, and the accompanying annual returns.

Year Ending June 30	<u>Market Value</u>		<u>Actuarial Value</u>	
	<u>Value</u>	<u>Annual Return</u>	<u>Value</u>	<u>Annual Return</u>
2016	\$ 708,236,238	-1.11%	\$ 752,824,819	5.79%
2017	775,046,158	14.12%	777,857,053	7.97%
2018	810,937,596	8.79%	804,356,892	7.89%
2019	807,675,683	3.67%	814,596,098	5.75%
2020	773,168,364	0.02%	819,689,860	5.27%
Five Year Compound Return		4.95%	6.54%	

As expected, some years the Adjusted Value is greater than the Market Value, and some years it is less. Therefore, the smoothing method has had the intended effect.

Included in the remainder of this section are: the reconciliation of the market value of assets from June 30, 2019 to June 30, 2020; development of the actuarial value of assets; a comparative summary of assets; and summary of historical returns and experience.





----- Assumed Return (7%)

Earnings Experience for Fund on Plan Year Basis

	Plan Year Ending			
	<u>6/30/2017</u>	<u>6/30/2018</u>	<u>6/30/2019</u>	<u>6/30/2020</u>
Market Basis				
Net Investment Income*	\$ 9,786,553	\$ 13,395,239	\$ 13,595,076	\$ 19,880,955
Capital Gains (Losses)	<u>88,018,680</u>	<u>53,396,826</u>	<u>15,535,021</u>	<u>(19,751,831)</u>
Total Income	\$ 97,805,233	\$ 66,792,065	\$ 29,130,097	\$ 129,124
Average Mean Market Value of Assets**	\$ 692,738,582	\$ 759,595,845	\$ 794,741,591	\$ 790,357,462
Rate of Return*				
Net Investment Income	1.41%	1.76%	1.71%	2.52%
Capital Gains (Losses)	12.71%	7.03%	1.95%	-2.50%
Total Investment Return	14.12%	8.79%	3.67%	0.02%

* Net of investment expenses

** [Beginning of Year Value + End of Year Value - Total Income] divided by 2

Note: Percentages may not sum to total due to rounding.

Annual Compounded Market Value Rate of Investment Return

Period Beginning <u>July 1</u>	Period Ending on June 30									
	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
2010	22.96%	11.09%	11.54%	12.77%	10.60%	8.56%	9.33%	9.27%	8.63%	7.74%
2011		0.33%	6.23%	9.58%	7.71%	5.89%	7.23%	7.44%	6.96%	6.17%
2012			12.47%	14.49%	10.29%	7.32%	8.65%	8.67%	7.95%	6.92%
2013				16.56%	9.21%	5.66%	7.71%	7.94%	7.21%	6.15%
2014					2.33%	0.60%	4.92%	5.87%	5.43%	4.52%
2015						-1.11%	6.26%	7.09%	6.22%	4.95%
2016							14.12%	11.43%	8.79%	6.52%
2017								8.79%	6.23%	4.11%
2018									3.67%	1.83%
2019										0.02%

Statement of Plan Assets (Market Value Basis)

	<u>June 30, 2020</u>	<u>June 30, 2019</u>
1. Cash	\$0	\$0
2. Investment	<u>773,467,370</u>	<u>807,370,427</u>
3. Subtotal (1 + 2)	773,467,370	807,370,427
4. Accrued Contributions		
a. Employer	0	0
<u>b. Employee</u>	<u>309,715</u>	<u>321,405</u>
c. Total	309,715	321,405
5. Accrued Income	<u>632,880</u>	<u>515,591</u>
6. Total Assets (3 + 4c + 5)	774,409,965	808,207,423
7. Accrued Liabilities	(1,241,601)	(531,740)
8. Net Plan Assets (6 + 7)	\$ 773,168,364	\$ 807,675,683

Statement of Receipts and Disbursements of Plan Assets

	<u>Year ending June 30, 2020</u>	<u>Year ending June 30, 2019</u>
Market Value as of the beginning of the year	\$ 807,675,683	\$ 810,937,596
Receipts		
Contributions:		
Employer Basic Contributions	\$ 26,450,000	\$ 25,406,900
Employer (Restoration Plan)	30,798	74,110
<u>Employees</u>	<u>5,032,801</u>	<u>4,253,881</u>
Subtotal	\$ 31,513,599	\$ 29,734,891
Investment Income:		
Interest and Dividends	\$ 22,116,372	\$ 16,240,214
Investment Expenses	(2,235,417)	(2,645,138)
<u>Capital Gain (Loss)</u>	<u>(19,751,831)</u>	<u>15,535,021</u>
Net Investment Income	\$ 129,124	\$ 29,130,097
Total Additions	\$ 31,642,723	\$ 58,864,988
Disbursements and Deferrals		
Benefit Payments and Refunds of Employee Contributions	\$ 66,150,042	\$ 62,126,901
Total Disbursements	\$ 66,150,042	\$ 62,126,901
Market Value as of the end of the year	\$ 773,168,364	\$ 807,675,683

Development of Actuarial Value of Assets

The Actuarial Value of Assets equals the Market Value of Assets, adjusted for unrecognized gains and losses from prior years. Investment gains and losses are determined by calculating the expected asset return based on Plan assumptions and subtracting the actual Plan return. Each gain/loss is phased in 20% per year over a 5-year period. The Actuarial Value of Assets is adjusted, if necessary, to fall within a corridor of 80% to 120% of the Market Value of Assets on the valuation date.

	Year Ending <u>6/30/2020</u>	Year Ending <u>6/30/2019</u>
1. Market Value of Assets as of beginning of year	\$807,675,683	\$810,937,596
2. Total Contributions for the year	31,513,599	29,734,891
3. Total Disbursements during the year	66,150,042	62,126,901
4. Expected Return	56,251,851	56,523,747
5. Actual Return for the year	129,124	29,130,097
6. Investment Gain/(Loss)	(56,122,727)	(27,393,650)
7. Unrecognized Investment Gains/(Losses):		
Current Year	(44,898,182)	(21,914,920)
First Prior Year	(16,436,190)	7,662,623
Second Prior Year	5,108,415	19,408,922
<u>Third Prior Year</u>	<u>9,704,461</u>	<u>(12,077,040)</u>
Total Unrecognized Gains/(Losses)	(46,521,496)	(6,920,415)
8. Market Value of Assets as of end of year	\$773,168,364	\$807,675,683
9. Actuarial Value of Assets as of end of year: [(8) - (7)]	819,689,860	814,596,098
10. Final Actuarial Value of Assets (AVA) with 80% - 120% Corridor Limitation Applied	\$819,689,860	\$814,596,098
Ratio of Actuarial Value to Market Value	106.0%	100.9%

1.2: Development of Unfunded Actuarial Accrued Liability

	<u>June 30, 2020</u>		<u>June 30, 2019</u>
	Before Assumption Changes	After Assumption Changes	
1. Actuarial Accrued Liability (AAL)			
a. Active Participants			
(i) Retirement (Immediate Pension)	\$251,280,211	\$262,066,069	\$ 252,344,947
(ii) Vested Termination (Deferred to Normal Retirement)*	(1,671,472)	(838,803)	(1,735,242)
(iii) Death - Spouse's Benefit*	3,850,095	2,231,335	3,862,922
(iv) <u>Disability*</u>	<u>8,060,726</u>	<u>2,621,457</u>	<u>8,257,884</u>
(v) Total Active Participants	261,519,560	266,080,058	262,730,511
b. Retired and Disabled Participants Receiving Benefits	719,134,080	735,055,379	699,915,102
c. Terminated Participants with Deferred Benefits **	9,547,732	9,888,456	10,383,522
d. Refunds			
(i) Accumulated Employee Contributions Credited to Account of Terminated Participants and Beneficiaries of Deceased Participants who have not received a refund	445,301	266 445,301	438,952
(ii) <u>Participants on Leave of Absence or Military Leave</u>	<u>5,962</u>	<u>5,962</u>	<u>10,949</u>
(iii) Total Refunds	451,263	451,263	449,901
e. Total Actuarial Accrued Liability	990,652,635	1,011,475,156	973,479,036
2. Actuarial Value of Assets	819,689,860	819,689,860	814,596,098
3. Funding Ratio (2 / 1e)	82.7%	81.0%	83.7%
4. Unfunded Actuarial Accrued Liability (UAAL)			
(1e - 2)	\$170,962,775	\$191,785,296	\$158,882,938

*Including liability for refund of employee contributions for Active Participants.

**Including liability for vested Participants on Leave of Absence or Military Leave. Non-vested Participants who are on Leave of Absence or Military Leave are included with Refunds in line 1d(ii).

1.3: Actuarially Determined Employer Contribution

	<u>June 30, 2020</u>		<u>June 30, 2019</u>
	Before Assumption Changes	After Assumption Changes	
1. Total Normal Cost, with Expenses	\$12,789,058	\$13,968,577	\$12,369,580
As a percentage of payroll	8.07%	8.84%	7.97%
2. 20-Year Amortization of Unfunded Actuarial Accrued Liability	15,081,941	16,918,855	14,016,285
3. Expected Employee Contributions	4,759,556	4,747,176	4,667,665
4. Actuarially Determined Employer Contribution [(1) + (2) - (3)]	\$23,111,443	\$26,140,256	\$21,718,200
5. Expected Payroll for the Year	158,419,552	158,006,887	155,224,491
6. Net Employer Cost as a % of Payroll [(4) / (5)]	14.59%	16.54%	13.99%
7. Fixed WSSC Water Contribution Rate, % of Payroll	16.90%	16.90%	16.90%
Equivalent Amortization Years Implied by Fixed Rate:			
Level Dollar	13.4	18.7	12.2
Level Percent of Payroll	10.5	13.3	9.8
Fixed Contribution Adequate to cover Actuarial Cost:	YES	YES	YES
Additional Contribution to satisfy ADEC:	N/A	N/A	N/A

The calculation above is based on WSSC Water's current Actuarial Funding Policy for the Retirement Plan.

History of Equivalent Amortization Years

Valuation Year	Equivalent Years - Level Dollar	Equivalent Years - Level % of Payroll
2015	16.3	12.2
2016	14.2	11.0
2017	13.0	10.3
2018	12.4	9.9
2019	12.2	9.8
2020 (Prior Assump)	13.4	10.5
2020 (New Assump)	18.7	13.3

1.4: Present Value of Plan Benefits

	<u>June 30, 2020</u>		<u>June 30, 2019</u>
	Before Assumption Changes	After Assumption Changes	
Number of Plan Participants			
Active Participants	1,671	1,671	1,651
Retired and Disabled Participants Receiving Benefits	1,668	1,668	1,639
Terminated Participants with Deferred Benefits or Refunds Due	122	122	120
<u>Participants on Leave of Absence or Military Leave</u>	<u>7</u>	<u>7</u>	<u>6</u>
Total	3,468	3,468	3,416
Total Annual Earnings of Active Participants	\$ 160,137,543	\$ 159,724,878	\$ 156,371,107
Total Annual Benefits of Retired and Disabled Participants	66,095,371	66,095,371	63,135,440
Present Value of Plan Benefits			
1. Active Participants			
a. Retirement (Immediate Pension)	\$ 337,894,869	\$ 357,693,478	\$ 336,447,719
b. Vested Termination (Pension Deferred to Normal Retirement)*	9,599,094	12,095,537	9,138,800
c. Death - Spouse's Benefit*	5,506,512	3,189,292	5,451,397
<u>d. Disability*</u>	<u>15,803,580</u>	<u>6,012,458</u>	<u>15,737,266</u>
e. Total Actives (a + b + c + d)	\$ 368,804,055	\$ 378,990,765	\$ 366,775,182
2. Retired and Disabled Participants Receiving Benefits	719,134,080	735,055,379	699,915,102
3. Terminated Participants with Deferred Benefits**	9,547,732	9,888,456	10,383,522
4. Refunds			
a. Accumulated Employee Contributions Credited to Account of Terminated Participants and Beneficiaries of Deceased Participants who have not received a refund	445,301	445,301	438,952
b. <u>Nonvested Participants on Leave of Absence or Military Leave</u>	<u>5,962</u>	<u>5,962</u>	<u>10,949</u>
c. Total Refunds (a + b)	\$ 451,263	\$ 451,263	\$ 449,901
Total Present Value (1e + 2 + 3 + 4c)	\$ 1,097,937,130	\$ 1,124,385,863	\$ 1,077,523,707

*Including liability for refund of employee contributions for Active Participants.

**Including liability for vested Participants on Leave of Absence or Military Leave. Non-vested Participants who are on a Leave of Absence or Military Leave are included with Refunds in line 4.

1.5: Present Value of Accumulated Plan Benefits

	<u>June 30, 2020</u>		<u>June 30, 2019</u>
	Before Assumption Changes	After Assumption Changes	
1. Actuarial present value of vested benefits (PVVB)			
a. Participants currently receiving payments (retired and disabled participants and beneficiaries)	\$719,134,080	\$735,055,379	\$699,915,102
b. Other participants			
i. Active participants	191,116,547	194,860,248	190,410,712
ii. <u>Deferred vested participants/refunds</u>	<u>9,998,995</u>	<u>10,339,719</u>	<u>10,833,423</u>
iii. Total	201,115,542	205,199,967	201,244,135
c. Total PVVB (a. + b.)	\$920,249,622	\$940,255,346	\$901,159,237
2. Actuarial present value of non-vested benefits	16,654,883	10,089,669	16,040,614
3. Total actuarial present value of accumulated plan benefits (PVAB) (1.c. + 2.)	\$936,904,505	\$950,345,015	\$917,199,851
4. Market value of assets	773,168,364	773,168,364	807,675,683
5. Ratio of Assets to PVAB (4. ÷ 3.)	82.5%	81.4%	88.1%

The calculation of the actuarial present value of accumulated plan benefits is based on the unit credit cost method and the actuarial assumptions shown in Section 2.3.

1.6: Change in Present Value of Accumulated Plan Benefits

1. Actuarial present value of accumulated plan benefits (PVAB) as of July 1, 2019	\$ 917,199,851
2. Change due to plan amendments	0
3. Change due to changes in assumptions and/or methods	13,440,510
4. Change due to passage of time	61,888,739
5. Change due to benefits paid	(66,150,042)
6. Change due to benefits accumulated and actuarial experience	23,965,957
7. Actuarial present value of accumulated plan benefits (PVAB) as of June 30, 2020: (sum of above)	\$ 950,345,015

The calculation of the actuarial present value of accumulated plan benefits is based on the unit credit cost method and the actuarial assumptions shown in Section 2.3.

SECTION 2: BASIS OF VALUATION

2.1: Summary of Plan Provisions

The salient features of the retirement plan are presented below.

1. Effective date May 1, 1967. The most recent amendment was adopted January 1, 2016.
2. Closed version Closed version means the retirement plan in effect on June 30, 1978. Membership in this version is mandatory for employees hired prior to July 1, 1978 who did not elect to transfer membership to the open version.
3. Participation Each permanent full-time employee automatically becomes a participant on his hire date. A contract employee may be excluded by contractual agreement.
4. Gross compensation Gross compensation is defined as total compensation paid to the employee by WSSC Water excluding merit bonuses, lump sum pay awards, and General Manager's awards, plus any amounts of compensation for which the employee has entered into a deferred compensation agreement and/or employer pick-up contributions. It does not include the employee's final pay period unless he receives compensation for the full pay period.
5. Final average monthly compensation Final average monthly compensation is defined as an amount equal to the participant's gross compensation during each of the three years prior to termination which were the highest (to include 78 pay periods), divided by 36 months.
6. Credited service Credited service means the years and fractional years (measured to the nearest month) of an employee's latest period of continuous service but excludes periods of non-military leaves of absence without pay which are not otherwise purchased. Additional "purchased" years of WSSC Water service, military service, prior agency service and authorized leave(s) of absence are added.

Credited service includes accumulated unused sick leave that counts at the rate of .000481 year's credited service for each hour of unused sick leave.

For purposes of computing benefits, credited service, excluding credit for unused sick leave, is limited to a maximum of 36 years.
7. Closed version credited service Closed version credited service means all credited service earned by an employee hired prior to July 1, 1978 until the date he transfers his membership to the open version. Also included is purchased service if the employee is a member at the time of purchase.

8. Open version credited service Open version credited service means all credited service earned by an employee hired after June 30, 1978. Any employee hired prior to July 1, 1978 who transfers his membership to the open version shall have all credited service earned after his transfer counted as open version credited service. Also included is purchased service if the employee is a member at the time of purchase.
9. Employee contributions Mandatory: Each participant in the closed version is required to contribute 6% of his gross compensation with respect to each pay period. Each participant in the open version is required to contribute 3% of his gross compensation with respect to each pay period. All contributions are credited with 5% interest per annum.
10. Normal retirement Eligibility: A participant in the closed version is eligible to retire upon the earlier of (i) attainment of age 60 and completion of one year credited service and (ii) the completion of 30 years of credited service.
- A participant in the open version hired before March 31, 1994 is eligible to retire upon the earlier of (i) attainment of age 62 and completion of three years credited service, and (ii) the date on which he has completed at least 30 years credited service and the sum of his credited service and attained age total at least 85.
- A participant in the open version hired after March 31, 1994 is eligible to retire upon the earlier of (i) attainment of 65 and completion of five years credited service, and (ii) the date on which he has completed at least 30 years credited service and the sum of his credited service and attained age total at least 85.
- Monthly benefit amount: $2.1\% \times \text{final average monthly compensation} \times \text{closed version credited service}$ plus $1.4\% \times \text{final average monthly compensation} \times \text{open version credited service}$.
11. Early retirement Any employee in the closed version may retire early provided he has completed 15 or more years of credited service and has attained age 45, and further provided that the sum of his age and credited service at termination total at least 65.
- Any employee in the open version may retire early provided he has completed 15 or more years of credited service and has attained age 50.

Early Retirement
(continued)

Monthly benefit amount: The annual monthly benefit is determined in accordance with the normal retirement formula but using final average monthly compensation and credited service at the time of termination. This benefit is reduced to reflect early commencement. The percentage payable is as follows (provided, however, that the Open Version reductions for years 13, 14 and 15 shall be effective only with respect to Employees hired on and after January 21, 2009):

Years <u>Early</u>	Percentage of Benefit Payable	
	<u>Closed Version</u>	<u>Open Version</u>
1	98%	95%
2	95%	90%
3	91%	85%
4	86%	80%
5	80%	75%
6	74%	70%
7	68%	65%
8	62%	60%
9	56%	55%
10	50%	50%
11	44%	45%
12	38%	40%
13	32%	35%
14	26%	30%
15	20%	25%

If a participant defers the commencement of benefits, his benefit will be adjusted by any cost-of-living increases made effective during the deferral period.

12. Temporary supplemental benefit

Any participant in the Open Version whose benefit commencement date is prior to age 62 shall receive a benefit equal to 0.6% of his final average monthly compensation at termination multiplied by his Open Version credited service at termination, reduced to reflect early commencement, if applicable. The percentage of benefit payable is determined in accordance with the percentages in the previous table. The benefit is payable through the month in which he attains age 62 or dies, if earlier.

13. Disability retirement

Eligibility: A participant is eligible for a disability benefit if he has one year of credited service and is found by the Social Security Administration to be disabled under its criteria for a period of at least 24 months.

Disability Retirement
(continued)

Monthly benefit amount: The disability benefit is determined under the normal retirement formula using credited service and final average monthly compensation at the time of termination. This benefit is subject to a minimum of 35% of final average monthly compensation, or 50% of final average monthly compensation if disabled as a result of a job-related accident.

14. Deferred vested retirement

Eligibility: Any participant of the plan who terminates after completing five years of credited service is eligible for a deferred vested benefit beginning on his normal retirement date.

Monthly benefit amount: The deferred vested benefit is determined using the normal retirement formula based on final average monthly compensation and credited service at the time of termination.

In lieu of this benefit the participant may elect a withdrawal benefit and thereby forfeit his deferred vested benefit.

15. Withdrawal benefit

Eligibility: Each participant, who terminates before becoming eligible for a normal, early, disability or deferred retirement benefit, automatically receives a withdrawal benefit. Any participant eligible for a normal, early, disability or deferred vested retirement benefit, which will not commence within one month of termination, may elect a withdrawal benefit.

Amount: The withdrawal benefit shall be the sum of all contributions made by the employee which have not been withdrawn previously, plus credited interest.

16. Pre-retirement death

If any employee completes at least 15 years of Credited Service, the spouse if named as beneficiary will receive a spousal benefit equal to the benefit payable had the participant retired on a joint and 100% survivor option on the day before death. Alternatively, the spouse may elect a refund of contributions and interest.

If not married at date of death, the sum of all contributions made by the employee plus credited interest will be paid to the employee's designated beneficiaries.

17. Consumer Price Index increase

All benefits payable to pensioners and beneficiaries retired under the Closed Version shall be increased following two months during which the Consumer Price Index is at least 3% higher than the Consumer Price Index of the base month.

All benefits payable to pensioners and beneficiaries retired under the Open Version shall be increased each March 1 following retirement in accordance with increases in the Consumer Price Index from the prior calendar year. In the event the participant retired during the preceding calendar year, a pro rata increase to reflect the partial year during which he was retired will be provided.

18. Normal and optional forms of payment

Pensions are normally payable for the life of the participant; however, a participant may elect to receive any other form of benefit provided under the plan which is actuarially equivalent in value. The following optional forms of payment are available under the plan:

- A reduced pension which is payable during the lifetime of the pensioner and continues to the surviving spouse at a rate equal to 100%, 75%, 66-2/3% or 50% of the reduced initial pension.
- A reduced pension which is payable as long as both the pensioner and the spouse are surviving. In addition, if the spouse survives the pensioner, a lifetime pension will continue to the spouse at a rate equal to 100%, 75%, 66-2/3% or 50% of the reduced initial pension. However, if the pensioner survives the spouse, the lifetime benefit will be increased to the original standard form of pension.
- A reduced pension to the participant during his lifetime with benefit payments guaranteed for at least 120 months or 180 months.

If a participant marries following his Benefit Commencement Date, the Participant may revoke any existing election and in its place elect a joint and contingent survivor option, provided such election is made within one year of the date of marriage and the Participant names his spouse as contingent annuitant.

A pensioner who elects a joint and contingent survivor option and subsequently divorces may revoke the existing election. After such revocation, a lifetime pension will continue to the pensioner at a rate equal to the unreduced initial pension.

There have been no changes in Plan provisions since the prior valuation.

2.2: Demographic Information

Participant Summary

	<u>June 30, 2020</u>	<u>June 30, 2019</u>
1. Closed Plan Active Participants		
a. Number	4	5
b. Average Age	69.24	67.72
c. Average Years of Service	45.18	43.82
d. Total Pay	\$557,114	\$ 668,082
e. Average Pay	139,279	133,616
2. Open Plan Active Participants		
a. Number	1,667	1,646
b. Average Age	47.28	47.42
c. Average Years of Service	11.76	12.13
d. Total Pay	\$152,861,269	\$ 149,156,378
e. Average Pay	91,698	90,617
3. All Active Participants		
a. Number	1,671	1,651
b. Average Age	47.33	47.49
c. Average Years of Service	11.84	12.22
d. Total Pay	\$153,418,383	\$ 149,824,460
e. Average Pay	91,812	90,748
4. Retired Participants and Beneficiaries		
a. Number	1,624	1,592
b. Average Age	70.97	70.69
c. Total Annual Pension	\$65,250,130	\$ 62,259,196
d. Average Annual Pension	40,179	39,108
5. Disabled Participants		
a. Number	44	47
b. Average Age	65.69	65.37
c. Total Annual Pension	845,242	\$ 876,243
d. Average Annual Pension	19,210	18,643
6. Deferred Vested Participants		
a. Number	127 *	124 *
b. Average Age	51.81	51.62
c. Total Annual Pension	\$1,394,527	\$ 1,451,272
d. Average Annual Pension	10,981	11,704

*Including vested Participants on Leave of Absence or Military Leave (4 for 2019 and 5 for 2020). Non-vested Participants who are on a Leave of Absence or Military Leave are not shown above (2 for 2019 and 2 for 2020).

Reconciliation of Closed Plan Participants

	<u>Active</u>	<u>Inactive</u>	<u>Retired and Beneficiaries</u>	<u>Deferred Vested</u>	<u>Disabled</u>	<u>Total</u>
As of June 30, 2019	5	0	768	1	8	782
Retired	-1	0	2	-1	0	0
Disabled	0	0	0	0	0	0
Died:						
With Beneficiary	0	0	-11	0	-2	-13
Without Beneficiary	0	0	-25	0	0	-25
Refund Paid to Beneficiary	0	0	0	0	0	0
Refund Payable to Beneficiary	0	0	0	0	0	0
Beneficiaries Added	0	0	11	0	0	11
Terminated						
Vested	0	0	0	0	0	0
Non-vested: Refund Paid	0	0	0	0	0	0
Non-vested: Refund Payable	0	0	0	0	0	0
Vested and Paid Employee Contributions	0	0	0	0	0	0
Added	0	0	0	0	0	0
Went on Leave	0	0	0	0	0	0
Returned from Leave	0	0	0	0	0	0
Reinstated	0	0	0	0	0	0
Adjustments	0	0	0	0	0	0
As of June 30, 2020	4	0	745	0	6	755

Reconciliation of Open Plan Participants

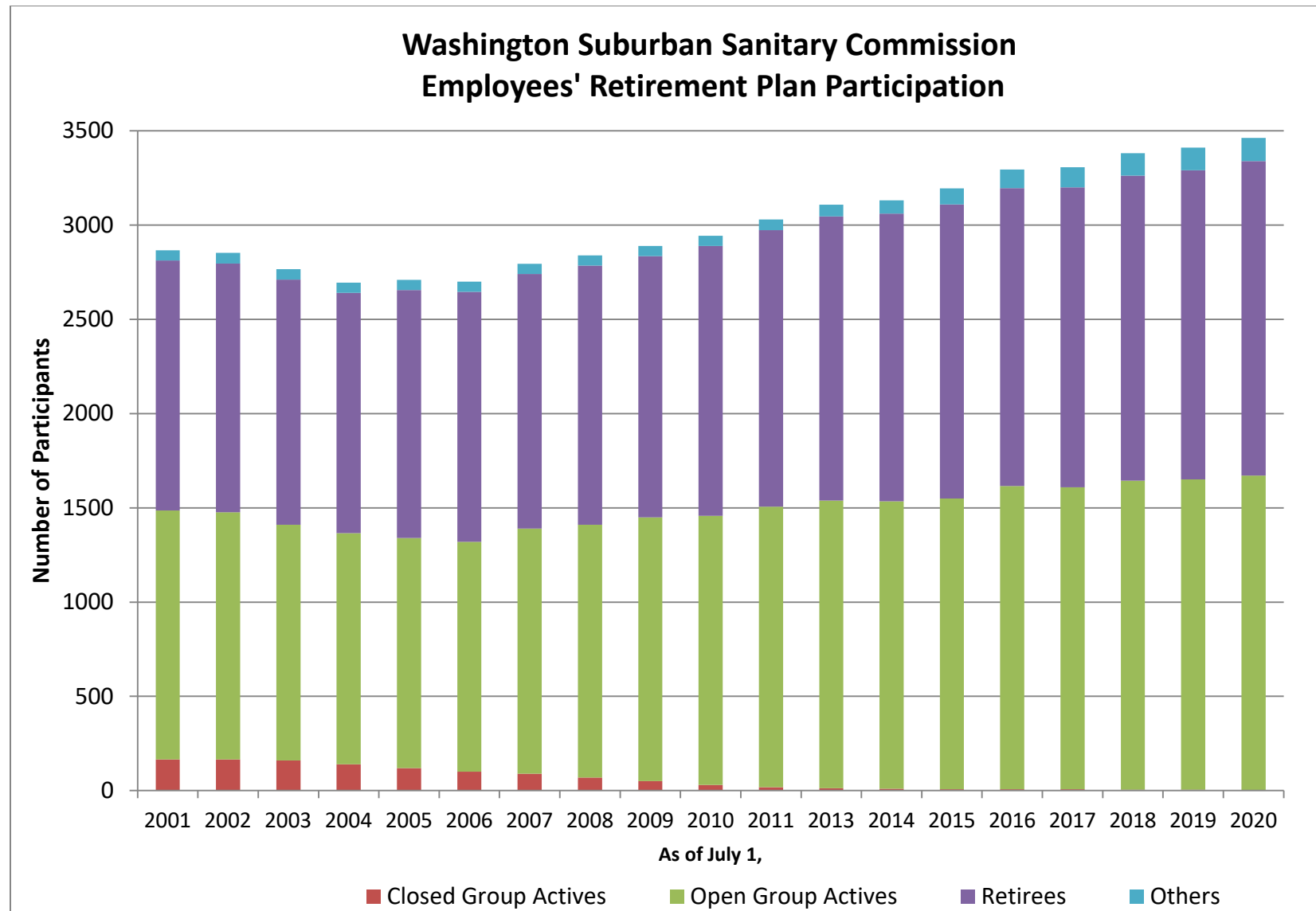
	<u>Active*</u>	<u>Inactive</u>	<u>Retired and Beneficiaries</u>	<u>Deferred Vested</u>	<u>Disabled</u>	<u>Total</u>
As of June 30, 2019	1,646	6	824	119	39	2,634
Retired	-59	-1	66	-6	0	0
Disabled	0	-1	0	0	1	0
Died:						
With Beneficiary	-1	0	-2	0	-2	-5
Without Beneficiary	0	0	-14	0	0	-14
Refund Paid to Beneficiary	-3	0	0	0	0	-3
Refund Payable to Beneficiary	-1	0	0	0	0	-1
Beneficiaries Added	0	0	5	0	0	5
Terminated						
Vested	-11	0	0	11	0	0
Non-vested: Refund Paid	-10	0	0	0	0	-10
Non-vested: Refund Payable	-30	0	0	0	0	-30
Vested and Paid Employee Contributions	-2	0	0	-1	0	-3
Added	136	0	0	0	0	136
Went on Leave	-5	5	0	0	0	0
Returned from Leave	2	-2	0	0	0	0
Reinstated	5	0	0	-1	0	4
Adjustments**	0	0	0	0	0	0
As of June 30, 2019	1,667	7	879	122	38	2,713

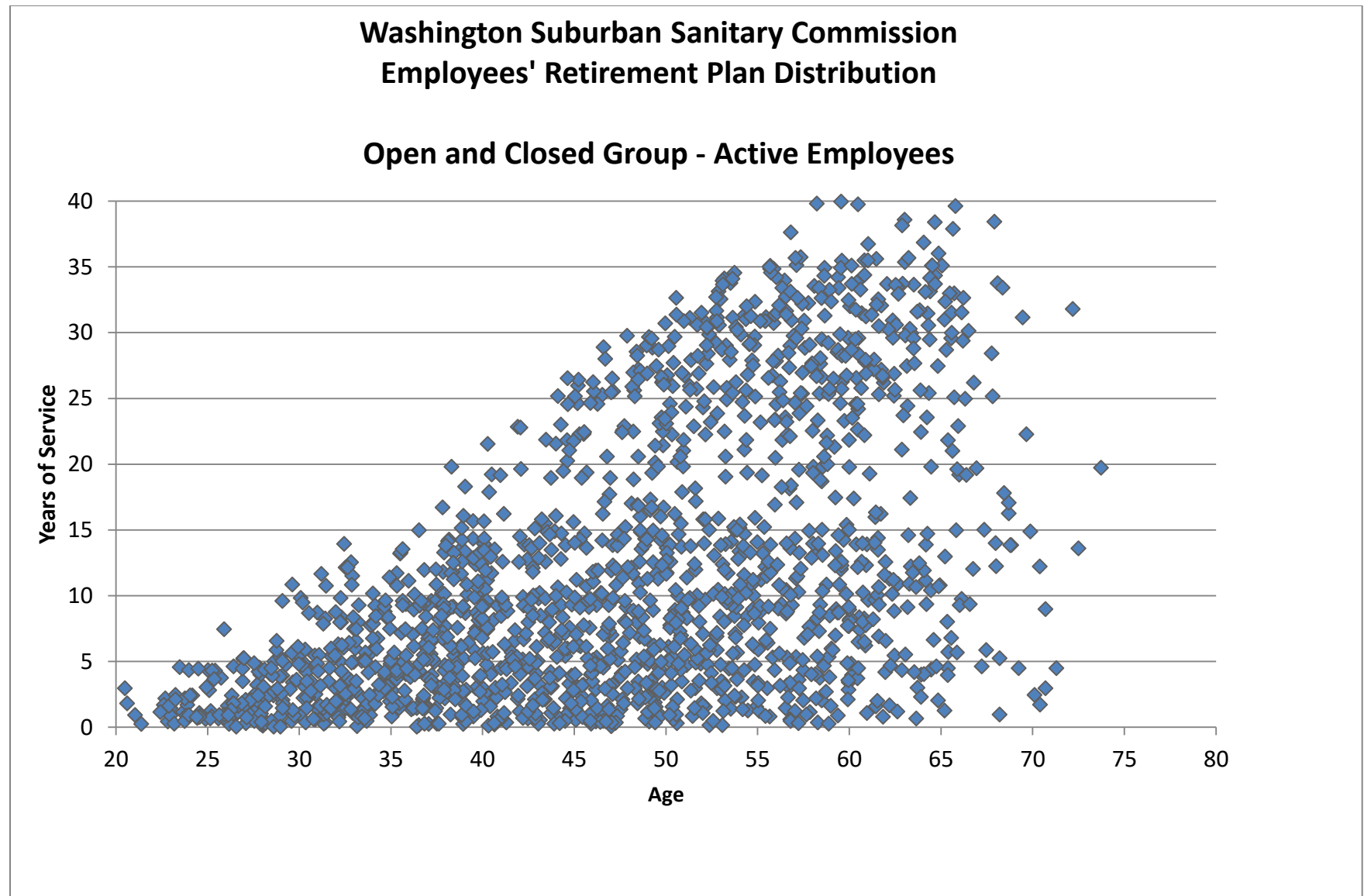
*Those with retiree payments stopped while reemployed are included in the active count.

** Two new Alternate Payees were added. One Alternate Payee died and her benefit reverted back to the retiree participant. Combined two retiree records for the same retiree into one retire record.

Active Participant Age/Service Distribution

Age Group	SERVICE LEVEL									Total
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40+	
MALE										
0 - 19	0	0	0	0	0	0	0	0	0	0
20 - 24	24	1	0	0	0	0	0	0	0	25
25 - 29	67	13	1	0	0	0	0	0	0	81
30 - 34	47	48	11	0	0	0	0	0	0	106
35 - 39	54	55	29	6	1	0	0	0	0	145
40 - 44	34	47	36	9	5	1	0	0	0	132
45 - 49	44	38	33	15	10	25	2	0	0	167
50 - 54	29	38	34	15	17	28	24	1	0	186
55 - 59	25	30	25	6	10	30	22	6	1	155
60 - 64	14	21	24	10	6	23	23	7	2	130
65 - 69	3	9	6	6	3	5	10	4	2	48
70+	4	0	1	1	2	0	0	0	2	10
Total	345	300	200	68	54	112	81	18	7	1,185
FEMALE										
0 - 19	0	0	0	0	0	0	0	0	0	0
20 - 24	2	0	0	0	0	0	0	0	0	2
25 - 29	17	0	0	0	0	0	0	0	0	17
30 - 34	30	5	1	0	0	0	0	0	0	36
35 - 39	27	17	8	0	0	0	0	0	0	52
40 - 44	27	19	9	6	2	0	0	0	0	63
45 - 49	25	19	10	7	5	4	1	0	0	71
50 - 54	22	14	12	6	8	7	7	0	0	76
55 - 59	12	11	11	9	11	9	12	4	0	79
60 - 64	8	7	11	0	7	9	15	5	0	62
65 - 69	3	2	3	1	2	3	5	3	3	25
70+	0	1	1	0	0	0	1	0	0	3
Total	173	95	66	29	35	32	41	12	3	486





2.3: Actuarial Assumptions and Methods Effective June 30, 2020

The funding methods and assumptions are used in determining the actuarial costs and liabilities presented in this Report. The assumptions were developed from the actuarial assumption review and experience study prepared in 2021, covering Plan experience from July 1, 2015 through June 30, 2020. The next study and assumption review will cover 2020 through 2025.

- | | |
|------------------------------|---|
| 1. Employee data | The employee data used in the determination of cost estimates consist of pertinent information with respect to active participants and pensioners of the Washington Suburban Sanitary Commission Employee's Retirement Plan. |
| 2. Valuation date | June 30, 2020 |
| 3. Actuarial funding method | <p>The Entry Age Normal Cost Method is used. The contributions equal the Normal Cost plus an amount to amortize the Unfunded Actuarial Accrued Liability over a period no longer than 30 years. Beginning with the June 30, 2018 valuation, a 20-year amortization period is used for the purpose of comparing the actuarial cost to WSSC Water's contribution rate.</p> <p>The Normal Cost is the level annual payment that would be required to fund the Plan if paid from the date each employee became eligible to participate to the date of exit. The Actuarial Accrued Liability is the accumulated value of the Normal Cost for each employee from date of participation to the present. The Unfunded Actuarial Accrued Liability is the Actuarial Accrued Liability minus the Actuarial Value of Assets. Actuarial gains and losses reduce or increase the Unfunded Actuarial Accrued Liability.</p> |
| 4. Valuation of assets | The Average Value Method is used to determine the Actuarial Value of Assets. This method determines the value of assets so that asset appreciation or depreciation is only partially recognized in the year of occurrence. The result is a gradual recognition of 20% per year over a 5-year period of each year's appreciation or depreciation in excess of or less than that which was assumed. The Actuarial Value of Assets must be within 80% to 120% of the Market Value of Assets. |
| 5. Rate of investment return | A rate of 7.00% per year, net of investment expenses, is assumed as the annual investment return for the trust. |
| 6. Cost-of-living | An annual retiree cost-of-living increase of 2.50% is assumed. |
| 7. Expenses* | Administrative expenses are assumed to be \$1,000,000 per year. |

8. Salary Increases*

The total pay increase assumption, including wage growth and career increases, is:

<u>Years of Service</u>	<u>Increase</u>
Up to 4	7.50%
5+	2.75%

9. Mortality tables for employees and annuitants *

For non-disability annuitant mortality, the Pub2010G(B) mortality tables (Employees rates up to age 49, and Healthy Retiree rates thereafter) projected with Scale SSA generationally. Mortality for pre-retirement deaths is 50% of the annuitant mortality for males and females.

For disability retirement pension mortality, the Pub2010G Disabled Retiree tables, projected with Scale SSA generationally.

A 109% factor is applied to females in each case.

10. Rates of age retirement*

<u>Age</u>	<u>Rate</u>
50-54	7.0%
55-60	11.0%
61-64	7.0%
65-69	20.0%
70+	100%

11. Withdrawal Rates*

<u>Years of Service</u>	<u>Male</u>	<u>Female</u>
0	11.0%	13.8%
1	9.4%	11.7%
2	7.9%	9.9%
3	6.8%	8.4%
4	5.7%	7.2%
5	4.9%	6.1%
6	4.1%	5.2%
7	3.5%	4.4%
8	3.0%	3.7%
9	2.5%	3.2%
10	2.2%	2.7%
11	1.8%	2.3%
12	1.6%	2.0%
13	1.3%	1.7%
14	1.1%	1.4%
15+	1.0%	1.2%

As shown above, female rates are equal to 125% of male rates.

12. Disability rates*

The assumed rates of disability are illustrated by the following table:

<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
40	0.01%	53	0.14%
41	0.02%	54	0.15%
42	0.03%	55	0.16%
43	0.04%	56	0.17%
44	0.05%	57	0.18%
45	0.06%	58	0.19%
46	0.07%	59	0.20%
47	0.08%	60	0.21%
48	0.09%	61	0.22%
49	0.10%	62	0.23%
50	0.11%	63	0.24%
51	0.12%	64	0.25%
52	0.13%	65+	0.00%

13. Marital status

It is assumed that 70% of the participants are married. Husbands are assumed to be three years older than their wives.

14. Option election

It is assumed that one-half of retiring participants will elect a joint and two-thirds survivor pension.

15. Sick Leave credit*

It is assumed that an active participant will earn an additional 0.018 years of service credit for sick leave each year.

Changes in methods and assumptions since the prior valuation:

Based on the experience study covering July 1, 2015 through June 30, 2020, several actuarial assumptions were updated. Assumptions that were changed are indicated above by asterisks.

2.4: Prior Actuarial Assumptions and Methods

Several assumptions were made as a result of the 2021 review. The assumptions used for the prior valuation include the following:

1. Rate of investment return A rate of 7.00% per year, net of investment expenses, is assumed as the annual investment return for the trust.
2. Cost-of-living An annual retiree cost-of-living increase of 2.50% is assumed.
3. Expenses No allowance has been made in the valuation for non-investment expenses because all non-investment related expenses are paid directly by WSSC Water.
4. Salary Increases The total pay increase assumption, including wage growth and career increases, is:

<u>Years of Service</u>	<u>Increase</u>
Up to 5	7.50%
6+	2.75%

5. Mortality tables for employees and annuitants For non-disability annuitant mortality, the RP-2000 Blue Collar Combined Healthy mortality tables (separately for males and females) with a one year set-forward and projected to 2025 with Scale BB.

Mortality for pre-retirement deaths is 50% of the annuitant mortality.

For disability retirement pension mortality, the RP2000 Disabled Retiree tables (males and females) are assumed, projected to 2025 with Scale BB.

6. Rates of age retirement

<u>Age</u>	<u>Rate</u>
50-59	7.5%
60	9.4%
61	11.7%
62	14.6%
63	18.3%
64	22.9%
65-69	28.6%
70+	100%

7. Withdrawal Rates	<u>Years of Service</u>	<u>Male</u>	<u>Female</u>
	0	11.0%	16.5%
	1	9.4%	14.0%
	2	7.9%	11.9%
	3	6.8%	10.1%
	4	5.7%	8.6%
	5	4.9%	7.3%
	6	4.1%	6.2%
	7	3.5%	5.3%
	8	3.0%	4.5%
	9	2.5%	3.8%
	10	2.2%	3.2%
	11	1.8%	2.8%
	12	1.6%	2.3%
	13	1.3%	2.0%
	14	1.1%	1.7%
	15	1.0%	1.4%
	16	0.8%	1.2%
	17	0.7%	1.0%
	18	0.6%	0.9%
	19	0.5%	0.8%
	20+	0.0%	0.0%

As shown above, female rates are equal to 150% of males rates.
The assumed rates of disability are illustrated by the following table:

		<u>Rate</u>	
	<u>Age</u>	<u>Male</u>	<u>Female</u>
	20	0.021%	0.026%
	25	0.021%	0.035%
	30	0.028%	0.041%
	35	0.035%	0.055%
	40	0.048%	0.069%
	45	0.069%	0.104%
	50	0.124%	0.179%
	55	0.248%	0.338%
	60	0.621%	0.835%
	64	1.532%	1.994%

9. Marital status It is assumed that 70% of the participants are married. Husbands are assumed to be three years older than their wives.
10. Option election It is assumed that one-half of retiring participants will elect a joint and two-thirds survivor pension.
11. Sick Leave credit It is assumed that an active participant will earn an additional .016 year of service credit for sick leave each year.

SECTION 3: PROJECTIONS OF PLAN FUNDING

3.1: 15-Year Projection of Cash Flows

Based on 16.9% of Payroll Level Contribution Rate

Plan Year Beginning July 1	MVA at Beginning of Year	AVA at Beginning of Year	Contributions		Benefit Payments	Estimated Investment Income*	Net Increase in Fund
			WSSC Water	Employee			
2020	\$773,168,364	\$819,689,860	\$26,703,164	\$4,740,207	\$67,600,049	\$52,877,705	\$16,721,026
2021	789,889,390	831,966,278	27,637,775	4,906,114	68,395,169	54,058,685	18,207,404
2022	808,096,795	836,024,616	28,605,097	5,077,828	69,801,248	55,324,015	19,205,692
2023	827,302,487	838,527,032	29,606,275	5,255,552	71,196,686	56,660,963	20,326,104
2024	847,628,591	847,628,591	30,642,495	5,439,496	72,635,275	58,076,274	21,522,990
2025	869,151,581	869,151,581	31,714,982	5,629,878	74,181,143	59,573,146	22,736,863
2026	891,888,444	891,888,444	32,825,006	5,826,924	75,851,401	61,152,230	23,952,759
2027	915,841,203	915,841,203	33,973,882	6,030,867	77,721,599	62,811,121	25,094,270
2028	940,935,474	940,935,474	35,162,968	6,241,947	79,474,460	64,555,585	26,486,040
2029	967,421,514	967,421,514	36,393,671	6,460,415	81,142,071	66,402,091	28,114,106
2030	995,535,620	995,535,620	37,667,450	6,686,530	82,854,382	68,362,770	29,862,368
2031	1,025,397,988	1,025,397,988	38,985,811	6,920,558	84,247,824	70,458,605	32,117,150
2032	1,057,515,137	1,057,515,137	40,350,314	7,162,778	85,590,120	72,715,904	34,638,876
2033	1,092,154,013	1,092,154,013	41,762,575	7,413,475	86,846,182	75,154,625	37,484,493
2034	1,129,638,506	1,129,638,506	43,224,265	7,672,946	87,822,072	77,804,183	40,879,322

*Assuming 7.00% returns each year.

MVA = Market Value of Assets

AVA = Actuarial Value of Assets

Additional Assumptions for Projections:

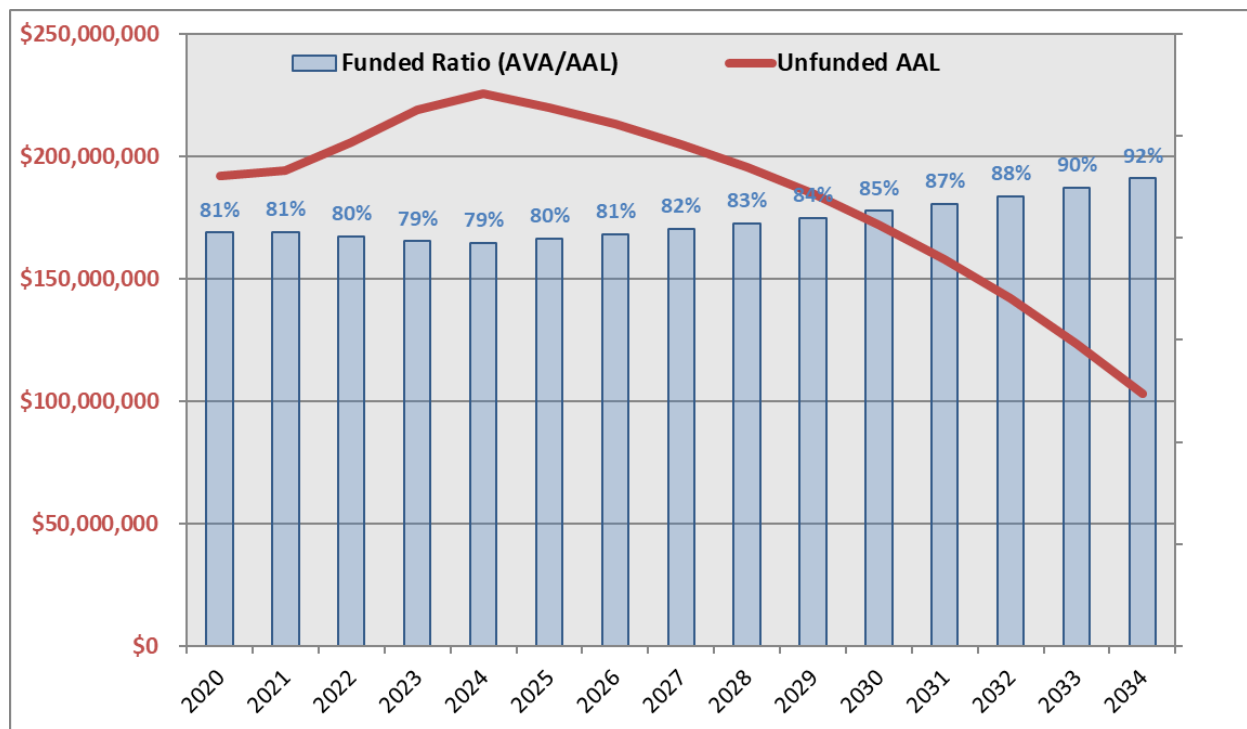
The cost of future entrants is estimated by projecting future replacements of assumed decrements (retirements, terminations, disabilities or deaths).

We have also assumed that the normal cost and employee contributions will remain at the current percentages of payroll, and that total payroll will increase by 3.50% annually.

3.2: 15-Year Projection of Funding Progress

Based on 16.9% of Payroll Level Contribution Rate

Plan Year Beginning July 1	AVA at Beginning of Year	Actuarial Accrued Liability (AAL)	Funded Ratio (AVA/AAL)	Unfunded AAL	Present Value of Future Benefits (PVFB)	Percent of PVFB Funded
2020	\$819,689,860	\$1,011,475,156	81%	\$191,785,296	\$1,097,937,130	70%
2021	831,966,278	1,026,228,759	81%	194,262,481	1,080,755,459	73%
2022	836,024,616	1,041,678,310	80%	205,653,694	1,095,008,140	74%
2023	838,527,032	1,057,257,542	79%	218,730,510	1,109,221,924	75%
2024	847,628,591	1,073,004,133	79%	225,375,542	1,123,123,528	75%
2025	869,151,581	1,088,903,372	80%	219,751,791	1,137,032,485	76%
2026	891,888,444	1,104,873,820	81%	212,985,376	1,150,890,607	77%
2027	915,841,203	1,120,811,299	82%	204,970,096	1,164,743,305	79%
2028	940,935,474	1,136,526,870	83%	195,591,396	1,178,291,871	80%
2029	967,421,514	1,152,147,269	84%	184,725,756	1,191,772,925	81%
2030	995,535,620	1,167,775,645	85%	172,240,025	1,205,273,676	83%
2031	1,025,397,988	1,183,388,702	87%	157,990,715	1,218,924,369	84%
2032	1,057,515,137	1,199,338,375	88%	141,823,238	1,232,785,579	86%
2033	1,092,154,013	1,215,725,112	90%	123,571,099	1,247,187,219	88%
2034	1,129,638,506	1,232,693,525	92%	103,055,019	1,262,620,831	89%



RISK ASSESSMENT

There are a number of risks inherent in managing a pension plan/trust. Some of the most substantial risks are (not an all-inclusive list):

- **Investment Return Risk:** Future investment returns may be unfavorable compared to what is assumed for Plan funding purposes.
- **Investment Volatility Risk:** Investment returns will vary from year to year and over time, with a possible single or multiple year significant drop in plan assets. This impacts contribution amounts as well as compound returns.
- **Longevity Risk:** Plan members and beneficiaries may live longer than projected, and thus be entitled to additional years of benefit payments versus what had been expected.
- **Other Demographic Risks:** Future demographic experience may be unfavorable compared to expected rates of retirement, termination, and disability. Future salary increases may also be higher than expected, thereby increasing the liability of pay-related benefits.

The following examples quantify several of these risks. In the first table, we can see that a lower investment return would have a significant impact on funding and plan costs. The second table illustrates the impact of plan participants living longer than expected. In general, each 10% lower rate of mortality entails one additional year of life expectancy. A 20-year amortization is used in each case.

1. Investment Return Risk

<i>As of 6/30/2020 (\$ mm)</i>	Current Return Assumption	1% Lower Per Year
Actuarial Liability	\$1,011.5	\$1,127.5
Plan Assets	819.7	819.7
Unfunded Liability	\$191.8	\$307.8
Funding Ratio	81%	73%
Actuarially Determined Employer Contribution	\$25.1	\$38.9
% of Payroll	15.9%	24.6%

2. Longevity Risk

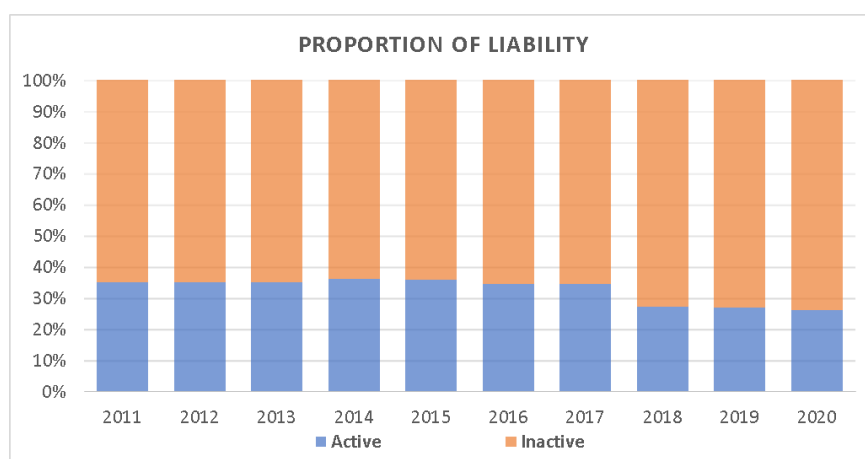
<i>As of 6/30/2020 (\$ mm)</i>	Current Mortality Assumption	10% Lower Mortality Rates
Actuarial Liability	\$1,011.5	\$1,034.7
Plan Assets	819.7	819.7
Unfunded Liability	\$191.8	\$215.0
Funding Ratio	81%	79%
Actuarially Determined Employer Contribution	\$25.1	\$27.4
% of Payroll	15.9%	17.4%

Plan Maturity

Another challenging risk faced by many pension plans is the maturing of the plan over time. This can be seen in the number of inactive (retirees, beneficiaries, etc.) versus the number of active employees in the plan population, as well as the liability of each group. As the plan matures risks emerge, including:

- Higher ratio of assets to payroll, which leads to a greater degree of contribution rate volatility.
- Negative cash flow (disbursements exceeding contributions), which exacerbates the impact of an economic downturn.
- Greater degree of longevity risk (as illustrated above).

The following graphs illustrate some of these plan maturity measures in recent years, showing how the plan is maturing over time. Over the past decade, the percentage of participants has remained fairly consistent and is about 52% inactive as of June 30, 2020. However, as shown in the graph below, the Plan liability has increased from about 65% inactive in 2011 to 74% in 2020, indicating continued maturing/aging.



Since 2011 (shown below), the fund has experienced negative cash flow (disbursements greater than contributions) of approximately \$30 million. This is another indication of a very mature plan. As the Plan's funding approaches 100% and the contribution rate remains higher than the actuarial rate, this not a significant concern, because investment returns are used to finance benefit payments.

