BURLINGTON EMPLOYEES' RETIREMENT SYSTEM

2018 EXPERIENCE STUDY

REVIEW PERIOD: JULY 1, 2012 – JUNE 30, 2017

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Burlington Employees' Retirement System

Executive Summary

The following is an Executive Summary of our recommendations based on the results of the Experience Study for the review period July 1, 2012 to June 30, 2017. The impact on the valuation results is shown under five separate investment return assumptions to provide the information necessary to review the effect of that assumption. Exhibit A shows additional details of the impact on the actuarial valuation results under those five scenarios. Exhibit B shows the data analysis used to develop the recommended assumption changes by employee group when appropriate.

Pro Forma Impact on Actuarial Valuation Results

	$ millions					
Investment Return	8.00%	8.00%	7.75%	7.50%	7.25%	7.00%
Other Assumptions	Current	Proposed	Proposed	Proposed	Proposed	Proposed
Present Value of Benefits	$296.4	$286.2	$295.3	$304.9	$315.1	$325.8
Increase/(Decrease)		***($10.2)***	***($1.1)***	***$8.5***	***$18.6***	***$29.4***
Actuarial Accrued Liability	$252.4	$242.8	$249.1	$255.8	$262.7	$270.0
Increase/(Decrease)		***($9.6)***	***($3.3)***	***$3.3***	***$10.3***	***$17.5***
Actuarial Value of Assets	$183.8	$183.8	$183.8	$183.8	$183.8	$183.8
Increase/(Decrease)		***$0.0***	***$0.0***	***$0.0***	***$0.0***	***$0.0***
Funded Ratio	72.8%	75.7%	73.8%	71.9%	70.0%	68.1%
Increase/(Decrease)		***2.9%***	***1.0%***	***-1.0%***	***-2.9%***	***-4.7%***
Actuarially Determined Employer Contribution	$10.18	$8.91	$9.68	$10.46	$11.26	$12.08
Increase/(Decrease)		***($1.27)***	***($0.51)***	***$0.28***	***$1.08***	***$1.89***

Mortality

Current Basis:

105% of the probabilities in the RP-2000 Mortality Table with separate male and female rates, with no adjustment, combined table for non-annuitants and annuitants, projected to the valuation date with Scale BB.

Comment:

We recommend updating the table to be consistent with the latest published mortality study released by the Society of Actuaries. In addition, since Class B actual mortality was greater than expected, we recommend a 2-year set forward of rates for this group.

Recommendation:

Class A (Non-Disabled): RP-2014 Adjusted to 2006 Total Dataset Mortality Table, projected to the valuation date with Scale MP-2018.

Class B (Non-Disabled): RP-2014 Adjusted to 2006 Total Dataset Mortality Table, projected to the valuation date with Scale MP-2018, set forward 2 years.

Class A and B (Disabilities): RP-2014 Adjusted to 2006 Disabled Mortality Table, projected to the valuation date with Scale MP-2018.

Mortality improvement

Current Basis:

Projected to date of decrement using Scale BB (generational mortality).

Comment:

We recommend updating the table to be consistent with the latest published mortality study released by the Society of Actuaries.

Recommendation:

All: Projected to date of decrement using Scale MP-2018 (generational mortality).

Retirement rates

Current Basis:

Class A	
Age	Rate
45-46	15%
47-48	30%
49-51	5%
52	18%
53-59	20%
60	100%

Class B	
Age	Rate
55-59	5%
60	10%
61	15%
62	20%
63-65	25%
66	20%
67	25%
68	20%
69	25%
70	100%

Comment:

Class A retirement experience suggests a change to a table based on years of service, rather than age. Class B retirement experience indicates that participants are retiring later than expected, on average.

Recommendation:

Change to service-based rates for Class A, and extend the age-based rates for Class B to age 75. The proposed rates of retirement are as follows:

Class A

Completed Years of Service	Rate
<15	0%
15-18	5%
19	15%
20-23	25%
24	30%
25	75%
26-29	50%
30-34	75%
35+	100%

Compulsory retirement is assumed at age 60.

Retirement rates (cont.)

Class B

Age	Rate
55-59	5.0%
60	7.5%
61	12.5%
62	18.0%
63	22.5%
64-65	25.0%
66-69	30.0%
70-74	50.0%
75+	100.0%

Termination prior to retirement

Current Basis:

Class A	
Sample Rates	
Age	Rate
20	14.0%
25	7.0%
30	6.0%
35	6.0%
40	5.0%
45	4.0%
50	3.0%
55	0.0%

Class B		
Sample Rates		
	Years of Service	
Age	0-2	3+
20	27.5%	15.0%
25	27.5%	15.0%
30	22.0%	12.0%
35	22.0%	10.0%
40	16.5%	4.0%
45	16.5%	4.0%
50	16.5%	4.0%
55	16.5%	4.0%
60	16.5%	4.0%
65	16.5%	4.0%
70	0.0%	0.0%

Comment:

Experience suggests a change to a table with age-based rates for Class A, and also shows that members in this group generally do not terminate after attainment of 10 years of service. Although a select and ultimate termination table continues to be appropriate for Class B, the current rates should be updated.

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Termination prior to retirement (cont.)

Recommendation:

Class A

Completed Years of Service	Rate
<1	8.0%
1	7.0%
2	6.0%
7	5.0%
8	4.5%
9	4.0%
10+	0.0%

Class B: 100% of the Vaughn Select & Ultimate Withdrawal Table for service prior to 3 years, and 130% of the Vaughn Select & Ultimate Withdrawal Table thereafter.

Sample rates

	Completed Years of Service			
Age	**0**	**1**	**2**	**3+**
20	29.8%	25.0%	21.0%	24.18%
25	27.8%	22.5%	18.5%	17.68%
30	25.8%	20.0%	16.0%	13.13%
35	23.8%	17.8%	13.8%	10.27%
40	21.8%	15.8%	11.8%	8.45%
45	19.8%	14.1%	10.1%	7.15%
50	17.8%	12.6%	8.6%	5.85%
55	0.0%	0.0%	0.0%	0.00%

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Disability

Current Basis:

Class A	
Age	Rate
20	0.20%
25	0.24%
30	0.29%
35	0.38%
40	0.50%
45	0.74%
50	1.25%
55	0.00%

Class B	
Age	Rate
20	0.08%
25	0.09%
30	0.12%
35	0.14%
40	0.20%
45	0.29%
50	0.49%
55	0.90%
60	1.73%
65	0.00%

Comment:

Experience for both groups indicates that there were fewer disabilities than expected and that lower assumed rates at all ages will provide a better estimate of future plan experience.

Recommendation:

Class A: 1985 Pension Disability Study Class 2 Table for Males and Females.

Class B: 1985 Pension Disability Study Class 1 Table for Males and Females.

Inflation

Current Basis:

3.00%.

Comment:

We recommend updating the assumption to be consistent with the Social Security's best estimate of the ultimate long-term (75-year horizon) annual percentage increase in CPI, as published in the 2018 OASDI Trustees Report.

Recommendation:

We recommend that the assumption be lowered to 2.60%.

COLAs

Current Basis:

Cost of living increases averaging 3% per year were assumed. For employees retiring after July 1, 2017, cost of living increases were capped at 2.75%

Comment:

We recommend that this assumption be consistent with the recommended inflation assumption.

Recommendation:

We recommend that the assumption be lowered to 2.60%.

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Rate of compensation increase (including inflation)

Graded scale (sample rates shown below):

Age	Class A&B
25	8.8%
30	7.0%
35	5.6%
40	4.9%
45	4.6%
50	4.3%
55	4.0%
59	3.9%
60	3.9%
65	3.8%
69	3.8%

Comment:

Plan experience suggests a change to rates based on years of service, rather than age. Also, current long-term capital market assumptions suggest a change to the inflation assumption, from 3.00% to 2.60%.

Recommendation:

Adopt tables shown below, which include an updated long-term inflation assumption of 2.60% for all groups.

Class A

Completed Years of Service	Rate
<1	10.0%
1	8.5%
2	7.3%
3	6.3%
4	5.9%
5	5.6%
6	5.4%
7	5.2%
8	5.0%
9	4.8%
10	4.7%
11	4.6%
12	4.5%
13	4.4%
14	4.3%
15	4.2%
16	4.0%
17	3.8%
18	3.7%
19	3.6%
20+	3.5%

Class B

Completed Years of Service	Rate
<1	6.6%
1	6.0%
2	5.5%
3	5.1%
4	4.9%
5	4.7%
6	4.5%
7	4.4%
8	4.3%
9	4.3%
10	4.2%
11	4.2%
12	4.1%
13	4.0%
14	3.9%
15	3.8%
16	3.8%
17	3.8%
18	3.7%
19	3.6%
20+	3.5%

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Payroll growth

Current Basis:

3.50%.

Comment:

We suggest that this assumption be lowered, consistent with the recommendation to lower the inflation assumption.

Recommendation:

We recommend that the assumption be lowered to 3.00%.

COLA (benefit accrual rate) election

Current Basis:

For both Class A and Class B, 85% of retiring members are assumed to elect the no COLA benefit accrual rate and 15% of retiring members are assumed to elect the full COLA benefit accrual rate.

Comment:

See Section VI for details.

Recommendation:

Flor Class A, retain the current assumption. Change the Class B assumption so that 75% of retiring members are assumed to elect the no COLA benefit accrual rate and 25% of retiring members are assumed to elect the full COLA benefit accrual rate.

Investment return and investment expenses

Current Basis:

8.00% per year, net of investment-related and administrative expenses.

Comment:

See Section VII for details.

Recommendation:

Based on updated capital market assumptions (H&H Investment Advisors, 2018), we recommend that the current 8.00% assumption be reduced to 7.10% or lower. However, the final assumed long-term rate of return should be selected in consultation with the plan's investment advisor.

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Actuarial Certification

This report presents the results of the 2018 Experience Study of the Burlington Employees' Retirement System and the pro forma impact that our recommendations for changes in assumptions have on the June 30, 2017 Actuarial Valuation results. It also provides the support for our recommendations. This report may not be appropriate for any other purpose.

The valuation results present in this report have been calculated in accordance with generally accepted actuarial principles and practices. We certify that the actuarial assumptions and methods were selected by us and represent our best estimate of anticipated actuarial experience under the plan.

In preparing all related valuation results, we have relied on employee data provided by the City and on asset and contribution information also provided by the City. We have not audited the employee data or the financial information, although we have reviewed them for reasonableness.

The results in this report are based on the Plan as summarized in the June 30, 2017 Actuarial Valuation Report and unless otherwise specified in this report the actuarial assumptions and methods detailed in that same report.

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

The signing actuary is independent of the Plan Sponsor. We are not aware of any relationship that would impact the objectivity of our work.

We are members of the American Academy of Actuaries and meet its Qualification Standards to render the actuarial opinion contained herein.

Steve A. Lemanski, FSA. FCA, MAAA
Consulting Actuary

Robert P. Lessard, ASA, ACA, MAAA
Team Leader and Actuarial Specialist

November 21, 2018

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Exhibit A – Pro Forma Impact on Actuarial Valuation Results

Total

	$ millions					
Investment Return	8.00%	8.00%	7.75%	7.50%	7.25%	7.00%
Other Assumptions	Current	Proposed	Proposed	Proposed	Proposed	Proposed
Present Value of Benefits - Actives	$135.1	$129.9	$135.6	$141.8	$148.3	$155.3
Present Value of Benefits - Inactives	$161.3	$156.3	$159.7	$163.1	$166.8	$170.5
Present Value of Benefits - Total	$296.4	$286.2	$295.3	$304.9	$315.1	$325.8
Increase/(Decrease)		***($10.2)***	***($1.1)***	***$8.5***	***$18.6***	***$29.4***
Actuarial Accrued Liability - Actives	$91.1	$86.4	$89.5	$92.6	$95.9	$99.4
Actuarial Accrued Liability - Inactives	$161.3	$156.3	$159.7	$163.1	$166.8	$170.5
Actuarial Accrued Liability - Total	$252.4	$242.8	$249.1	$255.8	$262.7	$270.0
Increase/(Decrease)		***($9.6)***	***($3.3)***	***$3.3***	***$10.3***	***$17.5***
Actuarial Value of Assets	$183.8	$183.8	$183.8	$183.8	$183.8	$183.8
Increase/(Decrease)		***$0.0***	***$0.0***	***$0.0***	***$0.0***	***$0.0***
Funded Ratio	72.8%	75.7%	73.8%	71.9%	70.0%	68.1%
Increase/(Decrease)		***2.9%***	***1.0%***	***-1.0%***	***-2.9%***	***-4.7%***
Actuarially Determined Employer Contribution	$10.18	$8.91	$9.68	$10.46	$11.26	$12.08
Increase/(Decrease)		***($1.27)***	***($0.51)***	***$0.28***	***$1.08***	***$1.89***

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Exhibit A – Pro Forma Impact on Actuarial Valuation Results

Class A

	$ millions					
Investment Return	8.00%	8.00%	7.75%	7.50%	7.25%	7.00%
Other Assumptions	Current	Proposed	Proposed	Proposed	Proposed	Proposed
Present Value of Benefits - Actives	$54.7	$57.2	$60.2	$63.4	$66.7	$70.4
Present Value of Benefits - Inactives	$80.1	$78.7	$80.5	$82.3	$84.2	$86.2
Present Value of Benefits - Total	$134.9	$136.0	$140.7	$145.7	$151.0	$156.6
Increase/(Decrease)		***$1.1***	***$5.8***	***$10.8***	***$16.1***	***$21.7***
Actuarial Accrued Liability - Actives	$35.4	$35.2	$36.5	$37.9	$39.4	$40.9
Actuarial Accrued Liability - Inactives	$80.1	$78.7	$80.5	$82.3	$84.2	$86.2
Actuarial Accrued Liability - Total	$115.6	$113.9	$117.0	$120.2	$123.6	$127.2
Increase/(Decrease)		***($1.6)***	***$1.5***	***$4.7***	***$8.1***	***$11.6***
Actuarial Value of Assets	$78.6	$78.6	$78.6	$78.6	$78.6	$78.6
Increase/(Decrease)		***$0.0***	***$0.0***	***$0.0***	***$0.0***	***$0.0***
Funded Ratio	68.0%	69.0%	67.2%	65.4%	63.6%	61.8%
Increase/(Decrease)		***1.0%***	***-0.9%***	***-2.6%***	***-4.4%***	***-6.2%***
Actuarially Determined Employer Contribution	$4.81	$4.74	$5.11	$5.49	$5.87	$6.27
Increase/(Decrease)		***($0.06)***	***$0.30***	***$0.68***	***$1.07***	***$1.46***

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Exhibit A – Pro Forma Impact on Actuarial Valuation Results

Class B

	$ millions					
Investment Return	8.00%	8.00%	7.75%	7.50%	7.25%	7.00%
Other Assumptions	Current	Proposed	Proposed	Proposed	Proposed	Proposed
Present Value of Benefits - Actives	$80.4	$72.6	$75.4	$78.4	$81.6	$84.9
Present Value of Benefits - Inactives	$81.2	$77.6	$79.2	$80.8	$82.5	$84.3
Present Value of Benefits - Total	$161.5	$150.2	$154.6	$159.2	$164.1	$169.2
Increase/(Decrease)		***($11.3)***	***($6.9)***	***($2.3)***	***$2.5***	***$7.6***
Actuarial Accrued Liability - Actives	$55.7	$51.2	$52.9	$54.7	$56.6	$58.5
Actuarial Accrued Liability - Inactives	$81.2	$77.6	$79.2	$80.8	$82.5	$84.3
Actuarial Accrued Liability - Total	$136.9	$128.8	$132.1	$135.5	$139.1	$142.8
Increase/(Decrease)		***($8.0)***	***($4.8)***	***($1.3)***	***$2.2***	***$5.9***
Actuarial Value of Assets	$105.2	$105.2	$105.2	$105.2	$105.2	$105.2
Increase/(Decrease)		***$0.0***	***$0.0***	***$0.0***	***$0.0***	***$0.0***
Funded Ratio	76.9%	81.7%	79.7%	77.7%	75.7%	73.7%
Increase/(Decrease)		***4.8%***	***2.8%***	***0.8%***	***-1.2%***	***-3.2%***
Actuarially Determined Employer Contribution	$5.38	$4.17	$4.57	$4.98	$5.39	$5.81
Increase/(Decrease)		***($1.21)***	***($0.81)***	***($0.40)***	***$0.01***	***$0.43***

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Exhibit B – Section I – Mortality Rates

Actual 2012-2017 Experience Compared to Current Assumption

Class A

Age	# of Lives	Actual Deaths	Expected Deaths	Actual %	Expected %	Ratio: Actual over Expected
<55	188	1	0.4	0.53%	0.23%	227.27%
55-59	134	1	0.6	0.75%	0.46%	161.29%
60-64	114	1	1.0	0.88%	0.83%	105.26%
65-69	141	2	1.9	1.42%	1.37%	103.63%
70-74	80	1	1.8	1.25%	2.25%	55.56%
75-79	22	0	0.9	0.00%	3.91%	0.00%
80-84	20	1	1.4	5.00%	6.85%	72.99%
85-89	11	1	1.2	9.09%	11.09%	81.97%
90+	1	0	0.2	0.00%	16.00%	0.00%
Grand Total	711	8	9.4	1.13%	1.32%	85.56%

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Exhibit B – Section I – Mortality Rates

Actual 2012-2017 Experience Compared to Proposed Assumption

Class A

Age	# of Lives	Actual Deaths	Expected Deaths	Actual %	Expected %	Ratio: Actual over Expected
<55	188	1	0.7	0.53%	0.37%	144.93%
55-59	134	1	0.9	0.75%	0.66%	112.36%
60-64	114	1	1.1	0.88%	0.95%	92.59%
65-69	141	2	1.9	1.42%	1.36%	104.17%
70-74	80	1	1.7	1.25%	2.09%	59.88%
75-79	22	0	0.8	0.00%	3.45%	0.00%
80-84	20	1	1.2	5.00%	6.10%	81.97%
85-89	11	1	1.1	9.09%	10.00%	90.91%
90+	1	0	0.2	0.00%	15.00%	0.00%
Grand Total	711	8	9.5	1.13%	1.33%	84.39%

Recommendation:

We recommend updating the table to be consistent with the latest published mortality study released by the Society of Actuaries.

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Exhibit B – Section I – Mortality Rates

Actual 2012-2017 Experience Compared to Current Assumption

Class B

Age	# of Lives	Actual Deaths	Expected Deaths	Actual %	Expected %	Ratio: Actual over Expected
<55	0	0	0.0	0.00%	0.00%	0.00%
55-59	77	1	0.3	1.30%	0.44%	294.12%
60-64	241	1	1.9	0.41%	0.79%	52.36%
65-69	517	13	6.4	2.51%	1.24%	202.49%
70-74	329	6	6.9	1.82%	2.09%	87.34%
75-79	229	10	8.2	4.37%	3.57%	122.25%
80-84	153	9	9.0	5.88%	5.86%	100.45%
85-89	55	6	5.3	10.91%	9.64%	113.21%
90+	21	4	3.3	19.05%	15.76%	120.85%
Grand Total	1,622	50	41.3	3.08%	2.55%	121.09%

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Exhibit B – Section I – Mortality Rates

Actual 2012-2017 Experience Compared to <u>Proposed Assumption</u>

Class B

Age	# of Lives	Actual Deaths	Expected Deaths	Actual %	Expected %	Ratio: Actual over Expected
<55	0	0	0.0	0.00%	0.00%	0.00%
55-59	77	1	0.5	1.30%	0.70%	185.19%
60-64	241	1	2.5	0.41%	1.05%	39.37%
65-69	517	13	7.7	2.51%	1.48%	169.49%
70-74	329	6	7.7	1.82%	2.33%	78.43%
75-79	229	10	9.0	4.37%	3.93%	110.99%
80-84	153	9	10.2	5.88%	6.67%	88.15%
85-89	55	6	6.2	10.91%	11.31%	96.46%
90+	21	4	4.0	19.05%	18.81%	101.27%
Grand Total	1,622	50	47.8	3.08%	2.95%	104.62%

Recommendation:

We recommend updating the table to be consistent with the latest published mortality study released by the Society of Actuaries. In addition, since Class B actual mortality was greater than expected, we recommend a 2-year set forward of rates for this group.

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Exhibit B – Section II - Retirement Rates

Actual 2012-2017 Experience Compared to Current Assumption

Class A

Service	# of Lives	Actual Retirements	Expected Retirements	Actual %	Expected %	Ratio: Actual over Expected
<15	51	0	6.9	0.00%	13.49%	0.00%
15	16	1	2.1	6.25%	12.81%	48.78%
16	14	1	2.4	7.14%	16.79%	42.55%
17	17	0	3.1	0.00%	18.24%	0.00%
18	16	1	2.7	6.25%	17.06%	36.63%
19	12	2	2.4	16.67%	19.67%	84.75%
20	14	3	1.8	21.43%	12.86%	166.67%
21	9	4	0.8	44.44%	8.89%	500.00%
22	9	4	1.4	44.44%	15.56%	285.71%
23	9	1	1.6	11.11%	17.22%	64.52%
24	10	3	2.2	30.00%	21.80%	137.61%
25	8	6	1.8	75.00%	21.88%	342.86%
26	5	1	1.7	20.00%	33.00%	60.61%
27	4	3	1.7	75.00%	41.25%	181.82%
28	1	1	0.2	100.00%	15.00%	666.67%
29	1	0	0.2	0.00%	15.00%	0.00%
30	1	1	0.2	100.00%	18.00%	555.56%
31	0	0	0.0	0.00%	0.00%	0.00%
32	1	1	1.0	100.00%	100.00%	100.00%
33	1	1	0.2	100.00%	20.00%	500.00%
34	0	0	0.0	0.00%	0.00%	0.00%
35+	2	1	2.0	50.00%	100.00%	50.00%
Grand Total	201	35	35.9	17.41%	17.88%	97.41%

Exhibit B – Section II - Retirement Rates

Actual 2012-2017 Experience Compared to Proposed Assumption

Class A

Service	# of Lives	Actual Retirements	Expected Retirements	Actual %	Expected %	Ratio: Actual over Expected
<15	51	0	0.0	0.00%	0.00%	0.00%
15	16	1	0.8	6.25%	5.00%	125.00%
16	14	1	0.7	7.14%	5.00%	142.86%
17	17	0	1.8	0.00%	10.59%	0.00%
18	16	1	0.8	6.25%	5.00%	125.00%
19	12	2	1.8	16.67%	15.00%	111.11%
20	14	3	3.5	21.43%	25.00%	85.71%
21	9	4	2.3	44.44%	25.00%	177.78%
22	9	4	2.3	44.44%	25.00%	177.78%
23	9	1	2.3	11.11%	25.00%	44.44%
24	10	3	3.0	30.00%	30.00%	100.00%
25	8	6	6.0	75.00%	75.00%	100.00%
26	5	1	3.0	20.00%	60.00%	33.33%
27	4	3	2.5	75.00%	62.50%	120.00%
28	1	1	0.5	100.00%	50.00%	200.00%
29	1	0	0.5	0.00%	50.00%	0.00%
30	1	1	0.8	100.00%	75.00%	133.33%
31	0	0	0.0	0.00%	0.00%	0.00%
32	1	1	1.0	100.00%	100.00%	100.00%
33	1	1	0.8	100.00%	75.00%	133.33%
34	0	0	0.0	0.00%	0.00%	0.00%
35+	2	1	2.0	50.00%	100.00%	50.00%
Grand Total	201	35	36.2	17.41%	17.99%	96.82%

Recommendation:

The proposed table was developed from the actual retirements from 2012-2017 and has rates that are based on service. Our recommendation is to adopt the proposed table.

Exhibit B – Section II - Retirement Rates

Actual 2012-2017 Experience Compared to Current Assumption

Class B

Age	# of Lives	Actual Retirements	Expected Retirements	Actual %	Expected %	Ratio: Actual over Expected
55	94	4	4.7	4.26%	5.00%	85.11%
56	94	6	4.7	6.38%	5.00%	127.66%
57	85	6	4.3	7.06%	5.00%	141.18%
58	78	5	3.9	6.41%	5.00%	128.21%
59	77	5	3.9	6.49%	5.00%	129.87%
60	75	4	7.5	5.33%	10.00%	53.33%
61	85	7	12.8	8.24%	15.00%	54.90%
62	74	12	14.8	16.22%	20.00%	81.08%
63	70	14	17.5	20.00%	25.00%	80.00%
64	61	17	15.3	27.87%	25.00%	111.48%
65	41	10	10.3	24.39%	25.00%	97.56%
66	31	13	6.2	41.94%	20.00%	209.68%
67	16	5	4.0	31.25%	25.00%	125.00%
68	8	2	1.6	25.00%	20.00%	125.00%
69	6	2	1.5	33.33%	25.00%	133.33%
70	2	0	2.0	0.00%	100.00%	0.00%
71	4	0	4.0	0.00%	100.00%	0.00%
72	4	0	4.0	0.00%	100.00%	0.00%
73	4	0	4.0	0.00%	100.00%	0.00%
74	4	2	4.0	50.00%	100.00%	50.00%
75+	20	3	20.0	15.00%	100.00%	15.00%
Grand Total	933	117	150.8	12.54%	16.16%	77.61%

Exhibit B – Section II - Retirement Rates

Actual 2012-2017 Experience Compared to Proposed Assumption

Class B

Age	# of Lives	Actual Retirements	Expected Retirements	Actual %	Expected %	Ratio: Actual over Expected
55	94	4	4.7	4.26%	5.00%	85.11%
56	94	6	4.7	6.38%	5.00%	127.66%
57	85	6	4.3	7.06%	5.00%	141.18%
58	78	5	3.9	6.41%	5.00%	128.21%
59	77	5	3.9	6.49%	5.00%	129.87%
60	75	4	5.6	5.33%	7.50%	71.11%
61	85	7	10.6	8.24%	12.50%	65.88%
62	74	12	13.3	16.22%	18.00%	90.09%
63	70	14	15.8	20.00%	22.50%	88.89%
64	61	17	15.3	27.87%	25.00%	111.48%
65	41	10	10.3	24.39%	25.00%	97.56%
66	31	13	9.3	41.94%	30.00%	139.78%
67	16	5	4.8	31.25%	30.00%	104.17%
68	8	2	2.4	25.00%	30.00%	83.33%
69	6	2	1.8	33.33%	30.00%	111.11%
70	2	0	1.0	0.00%	50.00%	0.00%
71	4	0	2.0	0.00%	50.00%	0.00%
72	4	0	2.0	0.00%	50.00%	0.00%
73	4	0	2.0	0.00%	50.00%	0.00%
74	4	2	2.0	50.00%	50.00%	100.00%
75+	20	3	20.0	15.00%	100.00%	15.00%
Grand Total	933	117	139.5	12.54%	14.95%	83.86%

Recommendation:

The proposed table was developed from the actual retirements from 2012-2017 and has rates that extend to age 75. Our recommendation is to adopt the proposed table.

Exhibit B – Section III - Turnover Rates

Actual 2012-2017 Experience Compared to Current Assumption

Class A

Service	# of Lives	Actual Terminations	Expected Terminations	Actual %	Expected %	Ratio: Actual over Expected
0	28	2	2.1	7.14%	7.46%	95.69%
1	74	6	5.2	8.11%	7.07%	114.72%
2	60	3	4.1	5.00%	6.75%	74.07%
3	57	1	3.7	1.75%	6.40%	27.40%
4	51	6	3.1	11.76%	6.14%	191.69%
5	46	1	2.8	2.17%	6.02%	36.10%
6	39	2	2.3	5.13%	5.95%	86.21%
7	35	1	2.1	2.86%	5.94%	48.08%
8	34	3	2.0	8.82%	5.85%	150.75%
9	26	1	1.5	3.85%	5.77%	66.67%
10+	222	1	11.8	0.45%	5.31%	8.48%
Grand Total	672	27	40.6	4.02%	6.04%	66.50%

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Exhibit B – Section III - Turnover Rates

Actual 2012-2017 Experience Compared to <u>Proposed Assumption</u>

Class A

Service	# of Lives	Actual Terminations	Expected Terminations	Actual %	Expected %	Ratio: Actual over Expected
0	28	2	2.2	7.14%	8.00%	89.29%
1	74	6	5.2	8.11%	7.00%	115.83%
2	60	3	3.6	5.00%	6.00%	83.33%
3	57	1	3.4	1.75%	6.00%	29.24%
4	51	6	3.1	11.76%	6.00%	196.08%
5	46	1	2.8	2.17%	6.00%	36.23%
6	39	2	2.3	5.13%	6.00%	85.47%
7	35	1	1.8	2.86%	5.00%	57.14%
8	34	3	1.5	8.82%	4.50%	196.08%
9	26	1	1.0	3.85%	4.00%	96.15%
10	222	1	0.0	0.45%	0.00%	0.00%
Grand Total	672	27	26.9	4.02%	4.01%	100.30%

Recommendation:

Actual experience from 2012-2017 suggests that employees generally do not terminate after attainment of 10 years of service.

Our recommendation is to adopt a revised table that does not assume any terminations for 10 years of service or later.

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Exhibit B – Section III - Turnover Rates

Actual 2012-2017 Experience Compared to Current Assumption

Class B

Service	Age	# of Lives	Actual Terminations	Expected Terminations	Actual %	Expected %	Ratio: Actual over Expected
<3	<25	61	11	16.1	18.03%	26.44%	68.20%
	25-29	202	51	47.0	25.25%	23.25%	108.58%
	30-34	150	26	29.5	17.33%	19.64%	88.26%
	35-39	126	22	21.7	17.46%	17.18%	101.62%
	40-44	133	17	18.6	12.78%	13.95%	91.59%
	45-49	142	19	19.0	13.38%	13.41%	99.79%
	50-54	110	13	14.7	11.82%	13.32%	88.74%
	Subtotal	924	159	166.5	17.21%	18.02%	95.52%
3+	<25	5	0	0.8	0.00%	15.00%	0.00%
	25-29	51	6	6.9	11.76%	13.55%	86.83%
	30-34	144	15	15.9	10.42%	11.05%	94.28%
	35-39	201	18	15.4	8.96%	7.67%	116.73%
	40-44	215	17	8.6	7.91%	4.00%	197.44%
	45-49	328	16	13.1	4.88%	4.00%	121.86%
	50-54	485	24	19.4	4.95%	4.00%	123.71%
	Subtotal	1,429	96	80.1	6.72%	5.61%	119.81%
Total	<25	66	11	16.9	16.67%	25.58%	65.17%
	25-29	253	57	53.9	22.53%	21.30%	105.79%
	30-34	294	41	45.4	13.95%	15.43%	90.37%
	35-39	327	40	37.1	12.23%	11.34%	107.90%
	40-44	348	34	27.2	9.77%	7.81%	125.14%
	45-49	470	35	32.2	7.45%	6.84%	108.80%
	50-54	595	37	34.1	6.22%	5.72%	108.66%
Grand Total		2,353	255	246.6	10.84%	10.48%	103.41%

Exhibit B – Section III - Turnover Rates

Actual 2012-2017 Experience Compared to Proposed Assumption

Class B

Service	Age	# of Lives	Actual Terminations	Expected Terminations	Actual %	Expected %	Ratio: Actual over Expected
<3	<25	58	10	13.6	17.24%	23.38%	73.75%
	25-29	163	41	34.2	25.15%	20.98%	119.92%
	30-34	117	20	21.9	17.09%	18.73%	91.28%
	35-39	99	19	16.8	19.19%	16.97%	113.10%
	40-44	106	12	16.0	11.32%	15.06%	75.19%
	45-49	107	13	14.0	12.15%	13.12%	92.59%
	50-54	82	8	9.5	9.76%	11.57%	84.30%
	Subtotal	732	123	126.0	16.80%	17.21%	97.66%
3+	<25	8	1	1.6	12.50%	20.13%	62.11%
	25-29	90	16	13.7	17.78%	15.18%	117.13%
	30-34	177	21	20.8	11.86%	11.75%	101.01%
	35-39	228	21	21.5	9.21%	9.41%	97.90%
	40-44	242	22	19.1	9.09%	7.89%	115.24%
	45-49	363	22	24.0	6.06%	6.61%	91.67%
	50-54	513	29	27.2	5.65%	5.30%	106.66%
	Subtotal	1,621	132	127.8	8.14%	7.88%	103.29%
Total	<25	66	11	15.2	16.67%	22.98%	72.51%
	25-29	253	57	47.9	22.53%	18.91%	119.12%
	30-34	294	41	42.7	13.95%	14.52%	96.02%
	35-39	327	40	38.3	12.23%	11.70%	104.58%
	40-44	348	34	35.1	9.77%	10.07%	97.00%
	45-49	470	35	38.0	7.45%	8.09%	92.01%
	50-54	595	37	36.7	6.22%	6.16%	100.87%
Grand Total		2,353	255	253.7	10.84%	10.78%	100.50%

Recommendation:

Actual experience from 2012-2017 suggests that the current assumption should remain a select and ultimate table but that the assumed rates should be updated. We recommend adopting 100% of the Vaughn Select & Ultimate Withdrawal Table for service prior to 3 years and 130% of the Vaughn Select & Ultimate Withdrawal Table thereafter.

Exhibit B – Section IV - Disability Rates

Actual 2012-2017 Experience Compared to Current Assumption

Class A

Age	# of Lives	Actual Disabilities	Expected Disabilities	Actual %	Expected %	Ratio: Actual over Expected
<25	41	0	0.1	0.00%	0.22%	0.00%
25-29	148	0	0.4	0.00%	0.25%	0.00%
30-34	192	0	0.6	0.00%	0.33%	0.00%
35-39	170	0	0.7	0.00%	0.42%	0.00%
40-44	158	0	0.9	0.00%	0.59%	0.00%
45-49	111	2	1.0	1.80%	0.89%	202.02%
50-54	31	0	0.5	0.00%	1.48%	0.00%
55+	22	0	0.0	0.00%	0.00%	0.00%
Grand Total	873	2	4.2	0.23%	0.48%	47.85%

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Exhibit B – Section IV - Disability Rates

Actual 2012-2017 Experience Compared to Proposed Assumption

Class A

Age	# of Lives	Actual Disabilities	Expected Disabilities	Actual %	Expected %	Ratio: Actual over Expected
<25	41	0	0.0	0.00%	0.07%	0.00%
25-29	148	0	0.2	0.00%	0.11%	0.00%
30-34	192	0	0.3	0.00%	0.17%	0.00%
35-39	170	0	0.4	0.00%	0.24%	0.00%
40-44	158	0	0.6	0.00%	0.39%	0.00%
45-49	111	2	0.7	1.80%	0.60%	298.51%
50-54	31	0	0.3	0.00%	0.97%	0.00%
55+	22	0	0.3	0.00%	1.27%	0.00%
Grand Total	873	2	2.8	0.23%	0.32%	71.94%

Recommendation:

The 2012-2017 actual experience shows that there were fewer disabilities than expected. Also, since there was a relatively low number of exposures, a standard disability table should be used.

Our recommendation is to adopt the 1985 Pension Disability Study Class 2 Table for Males and Females.

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Exhibit B – Section IV - Disability Rates

Actual 2012-2017 Experience Compared to <u>Current Assumption</u>

Class B

Age	# of Lives	Actual Disabilities	Expected Disabilities	Actual %	Expected %	Ratio: Actual over Expected
<25	66	0	0.1	0.00%	0.09%	0.00%
25-29	253	0	0.2	0.00%	0.09%	0.00%
30-34	294	0	0.4	0.00%	0.13%	0.00%
35-39	327	0	0.5	0.00%	0.16%	0.00%
40-44	348	0	0.8	0.00%	0.23%	0.00%
45-49	470	0	1.7	0.00%	0.37%	0.00%
50-54	595	2	3.8	0.34%	0.64%	52.22%
55-59	534	8	6.3	1.50%	1.18%	126.58%
60-64	416	6	10.1	1.44%	2.42%	59.58%
65+	152	0	0.0	0.00%	0.00%	0.00%
Grand Total	3,455	16	23.9	0.46%	0.69%	66.83%

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Exhibit B – Section IV - Disability Rates

Actual 2012-2017 Experience Compared to Proposed Assumption

Class B

Age	# of Lives	Actual Disabilities	Expected Disabilities	Actual %	Expected %	Ratio: Actual over Expected
<25	66	0	0.0	0.00%	0.03%	0.00%
25-29	253	0	0.1	0.00%	0.05%	0.00%
30-34	294	0	0.2	0.00%	0.07%	0.00%
35-39	327	0	0.4	0.00%	0.12%	0.00%
40-44	348	0	0.7	0.00%	0.19%	0.00%
45-49	470	0	1.5	0.00%	0.31%	0.00%
50-54	595	2	3.4	0.34%	0.56%	59.70%
55-59	534	8	5.3	1.50%	0.99%	152.09%
60-64	416	6	5.6	1.44%	1.35%	106.76%
65+	152	0	2.0	0.00%	1.28%	0.00%
Grand Total	3,455	16	19.1	0.46%	0.55%	83.90%

Recommendation:

The 2012-2017 actual experience shows that there were fewer disabilities than expected. Also, since there was a relatively low number of exposures, a standard disability table should be used.

Our recommendation is to adopt the 1985 Pension Disability Study Class 1 Table for Males and Females.

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Exhibit B – Section V – Rate of Compensation Increase

Actual 2012-2017 Experience Compared to Current Assumption

Class A

Service	# of Lives	Prior Year Salaries	Actual Salaries	Expected Salaries	Ratio: Actual over Expected
<1	94	2,655,845	4,153,024	2,849,486	145.75%
1	57	2,472,592	2,700,812	2,651,319	101.87%
2	56	2,511,525	2,695,271	2,686,533	100.33%
3	45	2,269,816	2,368,425	2,426,620	97.60%
4	45	2,265,473	2,378,355	2,419,897	98.28%
5	37	1,944,949	2,048,564	2,076,282	98.67%
6	34	1,763,918	1,803,233	1,880,735	95.88%
7	32	1,709,079	1,885,243	1,810,979	104.10%
8	26	1,497,457	1,604,637	1,583,415	101.34%
9	29	1,692,072	1,736,561	1,787,949	97.13%
10	33	1,943,942	2,019,895	2,047,719	98.64%
11	38	2,281,761	2,356,212	2,398,506	98.24%
12	41	2,537,625	2,645,430	2,664,540	99.28%
13	46	2,877,443	3,030,364	3,011,441	100.63%
14	38	2,548,945	2,653,251	2,670,699	99.35%
15	36	2,224,902	2,359,122	2,330,758	101.22%
16	33	1,912,379	2,007,974	1,996,205	100.59%
17	26	1,421,334	1,479,561	1,479,741	99.99%
18	16	804,258	853,235	836,711	101.97%
19	12	526,420	547,615	548,641	99.81%
20+	35	979,831	1,027,884	1,017,744	101.00%
Grand Total	809	40,841,566	44,354,668	43,175,920	102.73%

Exhibit B – Section V - Rate of Compensation Increase

Actual 2012-2017 Experience Compared to Proposed Assumption

Class A

Service	# of Lives	Prior Year Salaries	Actual Salaries	Expected Salaries	Ratio: Actual over Expected
<1	94	2,655,845	4,153,024	2,921,429	142.16%
1	57	2,472,592	2,700,812	2,682,762	100.67%
2	56	2,511,525	2,695,271	2,694,866	100.02%
3	45	2,269,816	2,368,424	2,412,815	98.16%
4	45	2,265,473	2,378,355	2,399,136	99.13%
5	37	1,944,949	2,048,564	2,053,866	99.74%
6	34	1,763,918	1,803,233	1,859,170	96.99%
7	32	1,709,079	1,885,243	1,797,951	104.86%
8	26	1,497,457	1,604,637	1,572,330	102.05%
9	29	1,692,072	1,736,561	1,773,291	97.93%
10	33	1,943,942	2,019,895	2,035,307	99.24%
11	38	2,281,761	2,356,212	2,386,722	98.72%
12	41	2,537,625	2,645,430	2,651,818	99.76%
13	46	2,877,443	3,030,364	3,004,051	100.88%
14	38	2,548,945	2,653,251	2,658,550	99.80%
15	36	2,224,902	2,359,122	2,318,348	101.76%
16	33	1,912,379	2,007,974	1,988,875	100.96%
17	26	1,421,334	1,479,561	1,475,345	100.29%
18	16	804,258	853,235	834,015	102.30%
19	12	526,420	547,615	545,371	100.41%
20+	35	979,831	1,027,884	1,014,125	101.36%
Grand Total	809	40,841,566	44,354,667	43,080,143	102.96%

Recommendation:

Plan experience suggests a change to rates based on years of service, rather than age.

Our recommendation is to adopt the proposed merit table, which includes an updated long-term inflation assumption of 2.60%.

Exhibit B – Section V - Rate of Compensation Increase

Actual 2012-2017 Experience Compared to Current Assumption

Class B

Service	# of Lives	Prior Year Salaries	Actual Salaries	Expected Salaries	Ratio: Actual over Expected
<1	456	10,579,447	16,750,669	11,155,549	150.16%
1	242	8,919,844	9,504,853	9,399,191	101.12%
2	190	7,601,278	7,989,931	8,004,783	99.81%
3	163	6,911,001	7,320,631	7,269,646	100.70%
4	145	5,869,801	6,225,283	6,173,749	100.83%
5	144	5,943,054	6,092,295	6,244,222	97.57%
6	129	5,658,733	5,826,517	5,935,108	98.17%
7	117	5,123,520	5,361,936	5,369,059	99.87%
8	108	4,745,805	4,906,755	4,967,797	98.77%
9	102	4,292,151	4,443,586	4,493,832	98.88%
10	95	3,973,410	4,140,768	4,156,111	99.63%
11	85	3,826,279	4,001,284	4,000,796	100.01%
12	88	4,092,975	4,216,673	4,278,089	98.56%
13	88	4,109,096	4,272,289	4,293,760	99.50%
14	81	3,862,962	3,962,622	4,031,591	98.29%
15	72	3,394,080	3,546,706	3,539,559	100.20%
16	72	3,618,283	3,753,550	3,771,369	99.53%
17	62	3,162,535	3,248,638	3,296,018	98.56%
18	53	2,836,916	2,921,970	2,955,849	98.85%
19	43	2,493,360	2,551,421	2,596,688	98.26%
20+	511	25,454,064	26,144,965	26,492,920	98.69%
Grand Total	3,046	126,468,594	137,183,342	132,425,686	103.59%

Exhibit B – Section V – Rate of Compensation Increase

Actual 2012-2017 Experience Compared to Proposed Assumption

Class B

Service	# of Lives	Prior Year Salaries	Actual Salaries	Expected Salaries	Ratio: Actual over Expected
<1	456	10,579,447	16,750,669	11,277,691	148.53%
1	242	8,919,844	9,504,853	9,455,035	100.53%
2	190	7,601,278	7,989,931	8,019,348	99.63%
3	163	6,911,001	7,320,631	7,263,462	100.79%
4	145	5,869,801	6,225,283	6,157,422	101.10%
5	144	5,943,054	6,092,295	6,222,378	97.91%
6	129	5,658,733	5,826,517	5,913,376	98.53%
7	117	5,123,520	5,361,936	5,348,955	100.24%
8	108	4,745,805	4,906,755	4,949,874	99.13%
9	102	4,292,151	4,443,586	4,476,713	99.26%
10	95	3,973,410	4,140,768	4,140,293	100.01%
11	85	3,826,279	4,001,284	3,986,983	100.36%
12	88	4,092,975	4,216,673	4,260,787	98.96%
13	88	4,109,096	4,272,289	4,273,460	99.97%
14	81	3,862,962	3,962,622	4,013,617	98.73%
15	72	3,394,080	3,546,706	3,523,055	100.67%
16	72	3,618,283	3,753,550	3,755,778	99.94%
17	62	3,162,535	3,248,638	3,282,712	98.96%
18	53	2,836,916	2,921,970	2,941,882	99.32%
19	43	2,493,360	2,551,421	2,583,120	98.77%
20+	511	25,454,064	26,144,965	26,344,957	99.24%
Grand Total	3,046	126,468,594	137,183,342	132,190,898	103.78%

Recommendation:

Our recommendation is to adopt the proposed merit table, which includes an updated long-term inflation assumption of 2.60%.

Exhibit B – Section VI – COLA (Benefit Accrual Rate)

For both Class A and Class B, 85% of retiring members are assumed to elect the no COLA benefit accrual rate and 15% of retiring members are assumed to elect the full COLA benefit accrual rate.

For members that retired during the 2012-2017 measurement period, the COLA elected was as follows:

COLA Selection	Class A	Class B
Full COLA	8.3%	28.9%
Half COLA	2.8%	5.4%
No COLA	88.9%	65.8%

Recommendation:

We recommend retaining the Class A assumption. We recommend changing the Class B assumption so that 75% of retiring members are assumed to elect the no COLA benefit accrual rate and 25% of retiring members are assumed to elect the full COLA benefit accrual rate.

DRAFT

Exhibit B – Section VII - Investment Return Assumption

Expected Long-Term Return Based on Asset Allocation

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return*	Weighting
US Large Cap	30.09%	4.50%	1.35%
US Mid Cap	8.99%	5.00%	0.45%
US Small Cap	8.99%	5.00%	0.45%
MSCI EAFE	9.31%	5.25%	0.49%
MSCI Emerging Markets	10.40%	6.25%	0.65%
Intermediate Government Credit	27.74%	1.50%	0.42%
Real Estate	2.08%	4.50%	0.09%
Private Equity	1.56%	6.25%	0.10%
Cash	0.84%	0.25%	0.00%
	100.00%		4.00%
Long-Term Inflation Expectation			2.60%
Long-Term Expected Nominal Return			6.60%

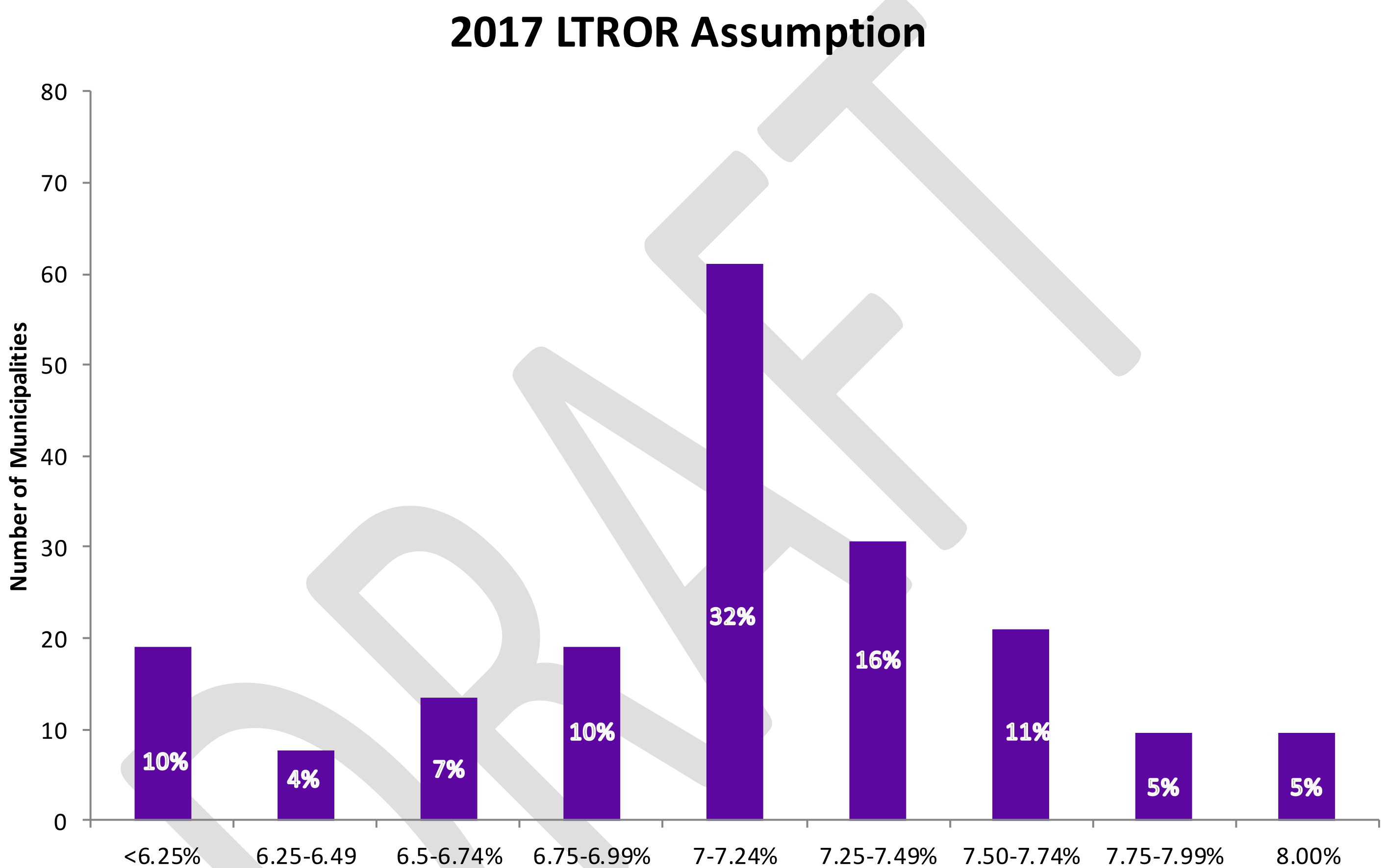
**Long-Term Expected Real Rates of Return are provided by H&H Investment Advisors. The returns are geometric means.*

The long-term expected rate of return on pension plan investments was determined using a building block method in which best-estimate ranges of expected future real rates of return are developed. Best estimates of the real rates of return for each major asset class are included in the pension plan's target asset allocation.

The information above is based on geometric means and does not reflect additional returns through investment selection, asset allocation and rebalancing. The results support a rate between 6.60% and 7.10%.

Exhibit B – Section VII - Investment Return Assumption

Survey of Long-Term Rate of Return Assumption, based on FYE 2017 CAFRs*



** This information comes from 191 Connecticut plans that we gathered data on.*

Recommendation:

The plan's current asset allocation combined with updated long term capital market expectations (H&H Investment Advisors, 2018) that assume 2.60% inflation support an investment return assumption in the range of 6.60% to 7.10%.

As a result, our recommendation is to change the current assumption of 8.00% to 7.10% or lower. However, the final rate should be selected in consultation with the plan's investment advisor.

DRAFT

BURLINGTON EMPLOYEES' RETIREMENT SYSTEM (BERS)
2018 EXPERIENCE STUDY

CURRENT AND PROPOSED ACTUARIAL ASSUMPTIONS

The current actuarial assumptions used in the 2017 BERS actuarial valuation plus the proposed changes in actuarial assumptions are compared as follows:

		Current Assumption	Proposed Assumption	Comments
Mortality (Non-Disabled)				
	Class A	105% of the RP-2000 Mortality Table, combined table for non-annuitants and annuitants.	RP-2014 Mortality Table, separate tables for non-annuitants and annuitants.	The proposed table is consistent with the latest study published by the Society of Actuaries (SOA) for non-disabled lives.
	Class B	Same as Class A.	RP-2014 Mortality Table, set forward 2 years, separate tables for non-annuitants and annuitants.	An age set forward is proposed for Class B, since mortality was greater than expected.
Mortality (Disabled)		105% of the RP-2000 Mortality Table, combined table for non-annuitants.	RP-2014 Disabled Mortality Table.	The proposed table is consistent with the latest study published by the SOA for disabled lives.
Mortality Improvement		Generational projection per Scale BB.	Generational projection per Scale MP-2018.	The proposed improvement scale is consistent with the latest study published by the SOA.
Retirement				
	Class A	Age-based rates from age 45 to age 60.	Service-based rates from 15 years of service to 35 years of service. In addition, compulsory retirement is assumed at age 60.	Class A retirement suggests a change to a table based on years of service, rather than age.
	Class B	Age-based rates from age 55 to age 70.	Age-based rates from age 55 to age 75.	Class B experience indicates that members are retiring later than expected, on average.
Turnover				
	Class A	Age-based rates to age 54. 0% assumed at age 55+.	Service-based rates to 9 years of service. 0% assumed at 10+ years of service.	Class A retirement suggests a change to a table based on years of service, rather than age.
	Class B	Select and ultimate age-based rates to age 69.	Select and ultimate age-based rates to age 54. (100% of the Vaughn table prior to 2 years of service; 100% of the Vaughn Table for 3+ years of service).	A select-and-ultimate table remains appropriate for Class B; however, the current rates should be updated.

BURLINGTON EMPLOYEES' RETIREMENT SYSTEM (BERS)
2018 EXPERIENCE STUDY

CURRENT AND PROPOSED ACTUARIAL ASSUMPTIONS

The current actuarial assumptions used in the 2017 BERS actuarial valuation plus the proposed changes in actuarial assumptions are compared as follows:

		Current Assumption	Proposed Assumption	Comments
Disability				
	Class A	Age-based rates to age 54.	1985 Pension Disability Study (Class 2) Table.	Experience for both Class A and Class B indicates that there were fewer disabilities than expected, and the proposed tables contain lower assumed rates of disability.
	Class B	Age-based rates to age 64.	1985 Pension Disability Study (Class 1) Table.	See comment for Class A.
Inflation		3.00%.	2.60%.	The proposed assumption is consistent with Social Security's best estimate of the ultimate long-term (75-year horizon) annual percentage increase in CPI, as published in the 2018 OASDI Trustees Report.
Cost of Living Adjustment		3.00% for members retiring on or prior to July 1, 2017, and 2.75% for members retiring after July 1, 2017.	2.60% for all members.	The proposed assumption is consistent with the recommended inflation assumption.
Rate of Compensation Increase				
	Class A	Age-based rates, grading down from 8.8% at age 25 to 3.8% at age 69+.	Service-based rates, grading down from 10.0% for <1 year of service to 3.5% for 20+ years of service.	Plan experience for both Class A and Class B suggests a change to rates based on years of service, rather than age. The proposed tables also include an updated long-term inflation assumption of 2.60%.
	Class B	Same as Class A.	Service-based rates, grading down from 6.6% for <1 year of service to 3.5% for 20+ years of service.	See comment for Class A.

BURLINGTON EMPLOYEES' RETIREMENT SYSTEM (BERS)
2018 EXPERIENCE STUDY

CURRENT AND PROPOSED ACTUARIAL ASSUMPTIONS

The current actuarial assumptions used in the 2017 BERS actuarial valuation plus the proposed changes in actuarial assumptions are compared as follows:

	Current Assumption	Proposed Assumption	Comments
Payroll Growth	3.50%.	3.00%.	We recommend a reduction in this assumption, consistent with our recommendation to lower the inflation assumption.
COLA (Benefit Accrual Rate) Election			
Class A	85% of retiring members are assumed to elect the no COLA benefit accrual rate, and 15% of retiring members are assumed to elect the full COLA benefit accrual rate.	No change.	Applies to Police members hired prior to July 1, 2006, and Fire members hired prior to January 1, 2007.
Class B	Same as Class A.	75% of retiring members are assumed to elect the no COLA benefit accrual rate, and 25% of retiring members are assumed to elect the full COLA benefit accrual rate.	Applies to members hired prior to July 1, 2006 (for IBEW, hired prior to May 5, 2008).
Investment Return	8.00%, net of investment expenses.	7.10% or lower, net of investment expenses.	The proposed assumption is based on our updated capital market assumptions (H&H Investment Advisors, 2018). However, the final assumed long-term rate of return should be selected in consultation with the plan's investment advisor.

City of Burlington
Vermont

BURLINGTON EMPLOYEES' RETIREMENT SYSTEM

Robert Hooper
Chairman of the Board
Munir Kasti
Vice-Chairman

Stephanie Hanker
Retirement Administrator
802-865-7097
7-1-1 (TTY)

CITY COUNCIL REPORT

FOR June 2018

MISSION
The mission of the Retirement Board as defined by the Ordinance is to be trustees of the funds of the retirement system. The Board has the authority to invest funds, determine asset allocation within guidelines, develop the guidelines, and hire such managers and consultants as may be needed. The Board also sets policy and oversees the general administration of, and has the responsibility for, the proper operation of the retirement system. The Board makes decisions on disability applications and follow-ups.

HIGHLIGHTS
The market value of assets as of June 30, 2018 was $191,480,598 compared to a market value as of June 30, 2017 was $175,690,863. Investment performance, gross of fees, for the fiscal year was approximately 9.8% putting us in the 19th percentile of public funds for the year. On a net basis our percentile ranking would be even better. As of June 30, 2018 our asset totals were comprised of equity totaling 68.9%, real assets totaled 10.1%, the fixed income component was19.3%, while the remaining 1.6% is cash and equivalents

The board continues to seek information and recommendations on the best representation of our Assumed Rate of Return, with many board members feeling it represents an overly inflated estimate of our potential long term earnings. However, we remain acutely aware of the overall impact on the Burlington Tax Payer of inappropriately adjusting the rate too quickly or excessively. Our annual rate of return for this period and our peer ranking were excellent, but overall we feel that in a correcting market such earnings may be difficult to maintain. We are consulting with our plan advisors currently to determine a point for discussion on this topic. I would remind Council that the rate is intended to reflect the LONG TERM potential for the earnings of a plan, and not indicate an expected annual result. Still, consensus of our board and other public plans trends downward from the 8% we currently designate. I would anticipate discussion with the appropriate Council committee chair before a final decision is made.

Significantly, the Board approved the City's sending out an RFP for Actuary Services. This RFP resulted in the selection of Hooker and Holcombe and as a result the department should see a significant savings for provided actuarial services to the system. Hooker and Holcombe has been instrumental in assisting in the future expected service improvements to the members of the system.

At the time of this writing there are 933 active members of the Retirement System, 714 retirees and beneficiaries, and 355 members who have left service with vested benefits. Pension benefits average about 1,277,540 per month.

The FY 2018 members of the Board were James Strouse (now resigned), Robert Hooper and Roger Stone (now resigned), who are appointed by the City Council with Mayor presiding, Beth Anderson, Chief Administrative Officer, who is the Ex-Officio member, Lt. Benjamin O'Brien, Fire and Cpl. Daniel Gilligan, Police who are elected by the Class "A" employees and Munir Kasti and Matthew Dow, who are elected by the Class "B" members.

______________________________	______________________________
Robert Hooper, Chairperson	Date

City of Burlington
Vermont

BURLINGTON EMPLOYEES' RETIREMENT SYSTEM

Robert Hooper
Chairman of the Board
Munir Kasti
Vice-Chairman

Special Meeting
Retirement Board Meeting Agenda
City Hall Conference Room 12
January 15, 2019 10:00am

Stephanie Hanker
Retirement Administrator
802-865-7097
VT Relay – dial 711

1. Agenda
2. Public Forum
3. Presentation – Experience Study – Hooker and Holcombe
4. Approve Minutes –December 06, 2018
5. Approval of Retirement Application
6. Ratify Refund and Rollovers
7. Review and Approve Annual Board Report to City Council
8. Discussion Regarding Possible RFP for Consulting Services
9. Discussion Regarding Subcommittee for Future Asset Allocation
10. Other Business
11. Adjourn

Non-Discrimination
The City of Burlington will not tolerate unlawful harassment or discrimination on the basis of political or religious affiliation, race, color, national origin, place of birth, ancestry, age, sex, sexual orientation, gender identity, marital status, veteran status, disability, HIV positive status or genetic information. The City is also committed to providing proper access to services, facilities, and employment opportunities. For accessibility information or alternative formats, please contact Human Resources Department at 865-7145.

City of Burlington
Vermont

BURLINGTON EMPLOYEES' RETIREMENT SYSTEM

Robert Hooper
Chairman of the Board
Munir Kasti
Vice-Chairman

Special Meeting
Retirement Board Meeting Agenda
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BURLINGTON EMPLOYEES' RETIREMENT SYSTEM (BERS)
2018 EXPERIENCE STUDY

CURRENT AND PROPOSED ACTUARIAL ASSUMPTIONS

The current actuarial assumptions used in the 2017 BERS actuarial valuation plus the proposed changes in actuarial assumptions are compared as follows:

	Current Assumption	Proposed Assumption	Comments
Mortality (Non-Disabled)			
Class A	105% of the RP-2000 Mortality Table, combined table for non-annuitants and annuitants.	RP-2014 Mortality Table, separate tables for non-annuitants and annuitants.	The proposed table is consistent with the latest study published by the Society of Actuaries (SOA) for non-disabled lives.
Class B	Same as Class A.	RP-2014 Mortality Table, set forward 2 years, separate tables for non-annuitants and annuitants.	An age set forward is proposed for Class B, since mortality was greater than expected.
Mortality (Disabled)	105% of the RP-2000 Mortality Table, combined table for non-annuitants.	RP-2014 Disabled Mortality Table.	The proposed table is consistent with the latest study published by the SOA for disabled lives.
Mortality Improvement	Generational projection per Scale BB.	Generational projection per Scale MP-2018.	The proposed improvement scale is consistent with the latest study published by the SOA.
Retirement			
Class A	Age-based rates from age 45 to age 60.	Service-based rates from 15 years of service to 35 years of service. In addition, compulsory retirement is assumed at age 60.	Class A retirement suggests a change to a table based on years of service, rather than age.
Class B	Age-based rates from age 55 to age 70.	Age-based rates from age 55 to age 75.	Class B experience indicates that members are retiring later than expected, on average.
Turnover			
Class A	Age-based rates to age 54. 0% assumed at age 55+.	Service-based rates to 9 years of service. 0% assumed at 10+ years of service.	Class A retirement suggests a change to a table based on years of service, rather than age.
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BURLINGTON EMPLOYEES' RETIREMENT SYSTEM (BERS)
2018 EXPERIENCE STUDY

CURRENT AND PROPOSED ACTUARIAL ASSUMPTIONS

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		Current Assumption	Proposed Assumption	Comments
Disability				
	Class A	Age-based rates to age 54.	1985 Pension Disability Study (Class 2) Table.	Experience for both Class A and Class B indicates that there were fewer disabilities than expected, and the proposed tables contain lower assumed rates of disability.
	Class B	Age-based rates to age 64.	1985 Pension Disability Study (Class 1) Table.	See comment for Class A.
Inflation		3.00%.	2.60%.	The proposed assumption is consistent with Social Security's best estimate of the ultimate long-term (75-year horizon) annual percentage increase in CPI, as published in the 2018 OASDI Trustees Report.
Cost of Living Adjustment		3.00% for members retiring on or prior to July 1, 2017, and 2.75% for members retiring after July 1, 2017.	2.60% for all members.	The proposed assumption is consistent with the recommended inflation assumption.
Rate of Compensation Increase				
	Class A	Age-based rates, grading down from 8.8% at age 25 to 3.8% at age 69+.	Service-based rates, grading down from 10.0% for <1 year of service to 3.5% for 20+ years of service.	Plan experience for both Class A and Class B suggests a change to rates based on years of service, rather than age. The proposed tables also include an updated long-term inflation assumption of 2.60%.
	Class B	Same as Class A.	Service-based rates, grading down from 6.6% for <1 year of service to 3.5% for 20+ years of service.	See comment for Class A.

BURLINGTON EMPLOYEES' RETIREMENT SYSTEM (BERS)
2018 EXPERIENCE STUDY

CURRENT AND PROPOSED ACTUARIAL ASSUMPTIONS

The current actuarial assumptions used in the 2017 BERS actuarial valuation plus the proposed changes in actuarial assumptions are compared as follows:

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Class B	Same as Class A.	75% of retiring members are assumed to elect the no COLA benefit accrual rate, and 25% of retiring members are assumed to elect the full COLA benefit accrual rate.	Applies to members hired prior to July 1, 2006 (for IBEW, hired prior to May 5, 2008).
Investment Return	8.00%, net of investment expenses.	7.10% or lower, net of investment expenses.	The proposed assumption is based on our updated capital market assumptions (H&H Investment Advisors, 2018). However, the final assumed long-term rate of return should be selected in consultation with the plan's investment advisor.

BURLINGTON EMPLOYEES' RETIREMENT SYSTEM

2018 EXPERIENCE STUDY

REVIEW PERIOD: JULY 1, 2012 – JUNE 30, 2017

hooker & holcombe

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Burlington Employees' Retirement System

Executive Summary

The following is an Executive Summary of our recommendations based on the results of the Experience Study for the review period July 1, 2012 to June 30, 2017. The impact on the valuation results is shown under five separate investment return assumptions to provide the information necessary to review the effect of that assumption. Exhibit A shows additional details of the impact on the actuarial valuation results under those five scenarios. Exhibit B shows the data analysis used to develop the recommended assumption changes by employee group when appropriate.

Pro Forma Impact on Actuarial Valuation Results

	$ millions					
Investment Return	8.00%	8.00%	7.75%	7.50%	7.25%	7.00%
Other Assumptions	Current	Proposed	Proposed	Proposed	Proposed	Proposed
Present Value of Benefits	$296.4	$286.2	$295.3	$304.9	$315.1	$325.8
Increase/(Decrease)		***($10.2)***	***($1.1)***	***$8.5***	***$18.6***	***$29.4***
Actuarial Accrued Liability	$252.4	$242.8	$249.1	$255.8	$262.7	$270.0
Increase/(Decrease)		***($9.6)***	***($3.3)***	***$3.3***	***$10.3***	***$17.5***
Actuarial Value of Assets	$183.8	$183.8	$183.8	$183.8	$183.8	$183.8
Increase/(Decrease)		***$0.0***	***$0.0***	***$0.0***	***$0.0***	***$0.0***
Funded Ratio	72.8%	75.7%	73.8%	71.9%	70.0%	68.1%
Increase/(Decrease)		***2.9%***	***1.0%***	***-1.0%***	***-2.9%***	***-4.7%***
Actuarially Determined Employer Contribution	$10.18	$8.91	$9.68	$10.46	$11.26	$12.08
Increase/(Decrease)		***($1.27)***	***($0.51)***	***$0.28***	***$1.08***	***$1.89***

Mortality

Current Basis:

105% of the probabilities in the RP-2000 Mortality Table with separate male and female rates, with no adjustment, combined table for non-annuitants and annuitants, projected to the valuation date with Scale BB.

Comment:

We recommend updating the table to be consistent with the latest published mortality study released by the Society of Actuaries. In addition, since Class B actual mortality was greater than expected, we recommend a 2-year set forward of rates for this group.

Recommendation:

Class A (Non-Disabled): RP-2014 Adjusted to 2006 Total Dataset Mortality Table, projected to the valuation date with Scale MP-2018.

Class B (Non-Disabled): RP-2014 Adjusted to 2006 Total Dataset Mortality Table, projected to the valuation date with Scale MP-2018, set forward 2 years.

Class A and B (Disabilities): RP-2014 Adjusted to 2006 Disabled Mortality Table, projected to the valuation date with Scale MP-2018.

Mortality improvement

Current Basis:

Projected to date of decrement using Scale BB (generational mortality).

Comment:

We recommend updating the table to be consistent with the latest published mortality study released by the Society of Actuaries.

Recommendation:

All: Projected to date of decrement using Scale MP-2018 (generational mortality).

Retirement rates

Current Basis:

Class A	
Age	**Rate**
45-46	15%
47-48	30%
49-51	5%
52	18%
53-59	20%
60	100%

Class B	
Age	**Rate**
55-59	5%
60	10%
61	15%
62	20%
63-65	25%
66	20%
67	25%
68	20%
69	25%
70	100%

Comment:

Class A retirement experience suggests a change to a table based on years of service, rather than age. Class B retirement experience indicates that participants are retiring later than expected, on average.

Recommendation:

Change to service-based rates for Class A, and extend the age-based rates for Class B to age 75. The proposed rates of retirement are as follows:

Class A

Completed Years of Service	Rate
<15	0%
15-18	5%
19	15%
20-23	25%
24	30%
25	75%
26-29	50%
30-34	75%
35+	100%

Compulsory retirement is assumed at age 60.

Retirement rates (cont.)

Class B

Age	Rate
55-59	5.0%
60	7.5%
61	12.5%
62	18.0%
63	22.5%
64-65	25.0%
66-69	30.0%
70-74	50.0%
75+	100.0%

Termination prior to retirement

Current Basis:

Class A	
Sample Rates	
Age	Rate
20	14.0%
25	7.0%
30	6.0%
35	6.0%
40	5.0%
45	4.0%
50	3.0%
55	0.0%

Class B		
Sample Rates		
	Years of Service	
Age	0-2	3+
20	27.5%	15.0%
25	27.5%	15.0%
30	22.0%	12.0%
35	22.0%	10.0%
40	16.5%	4.0%
45	16.5%	4.0%
50	16.5%	4.0%
55	16.5%	4.0%
60	16.5%	4.0%
65	16.5%	4.0%
70	0.0%	0.0%

Comment:

Experience suggests a change to a table with age-based rates for Class A, and also shows that members in this group generally do not terminate after attainment of 10 years of service. Although a select and ultimate termination table continues to be appropriate for Class B, the current rates should be updated.

Termination prior to retirement (cont.)

Recommendation:

Class A

Completed Years of Service	Rate
<1	8.0%
1	7.0%
2	6.0%
7	5.0%
8	4.5%
9	4.0%
10+	0.0%

Class B: 100% of the Vaughn Select & Ultimate Withdrawal Table for service prior to 3 years, and 130% of the Vaughn Select & Ultimate Withdrawal Table thereafter.

Sample rates

	Completed Years of Service			
Age	0	1	2	3+
20	29.8%	25.0%	21.0%	24.18%
25	27.8%	22.5%	18.5%	17.68%
30	25.8%	20.0%	16.0%	13.13%
35	23.8%	17.8%	13.8%	10.27%
40	21.8%	15.8%	11.8%	8.45%
45	19.8%	14.1%	10.1%	7.15%
50	17.8%	12.6%	8.6%	5.85%
55	0.0%	0.0%	0.0%	0.00%

Disability

Current Basis:

Class A	
Age	**Rate**
20	0.20%
25	0.24%
30	0.29%
35	0.38%
40	0.50%
45	0.74%
50	1.25%
55	0.00%

Class B	
Age	**Rate**
20	0.08%
25	0.09%
30	0.12%
35	0.14%
40	0.20%
45	0.29%
50	0.49%
55	0.90%
60	1.73%
65	0.00%

Comment:

Experience for both groups indicates that there were fewer disabilities than expected and that lower assumed rates at all ages will provide a better estimate of future plan experience.

Recommendation:

Class A: 1985 Pension Disability Study Class 2 Table for Males and Females.

Class B: 1985 Pension Disability Study Class 1 Table for Males and Females.

Inflation

Current Basis:

3.00%.

Comment:

We recommend updating the assumption to be consistent with the Social Security's best estimate of the ultimate long-term (75-year horizon) annual percentage increase in CPI, as published in the 2018 OASDI Trustees Report.

Recommendation:

We recommend that the assumption be lowered to 2.60%.

COLAs

Current Basis:

Cost of living increases averaging 3% per year were assumed. For employees retiring after July 1, 2017, cost of living increases were capped at 2.75%

Comment:

We recommend that this assumption be consistent with the recommended inflation assumption.

Recommendation:

We recommend that the assumption be lowered to 2.60%.

Rate of compensation increase (including inflation)

Graded scale (sample rates shown below):

Age	Class A&B
25	8.8%
30	7.0%
35	5.6%
40	4.9%
45	4.6%
50	4.3%
55	4.0%
59	3.9%
60	3.9%
65	3.8%
69	3.8%

Comment:

Plan experience suggests a change to rates based on years of service, rather than age. Also, current long-term capital market assumptions suggest a change to the inflation assumption, from 3.00% to 2.60%.

Recommendation:

Adopt tables shown below, which include an updated long-term inflation assumption of 2.60% for all groups.

Class A

Completed Years of Service	Rate
<1	10.0%
1	8.5%
2	7.3%
3	6.3%
4	5.9%
5	5.6%
6	5.4%
7	5.2%
8	5.0%
9	4.8%
10	4.7%
11	4.6%
12	4.5%
13	4.4%
14	4.3%
15	4.2%
16	4.0%
17	3.8%
18	3.7%
19	3.6%
20+	3.5%

Class B

Completed Years of Service	Rate
<1	6.6%
1	6.0%
2	5.5%
3	5.1%
4	4.9%
5	4.7%
6	4.5%
7	4.4%
8	4.3%
9	4.3%
10	4.2%
11	4.2%
12	4.1%
13	4.0%
14	3.9%
15	3.8%
16	3.8%
17	3.8%
18	3.7%
19	3.6%
20+	3.5%

Payroll growth

Current Basis:

3.50%.

Comment:

We suggest that this assumption be lowered, consistent with the recommendation to lower the inflation assumption.

Recommendation:

We recommend that the assumption be lowered to 3.00%.

COLA (benefit accrual rate) election

Current Basis:

For both Class A and Class B, 85% of retiring members are assumed to elect the no COLA benefit accrual rate and 15% of retiring members are assumed to elect the full COLA benefit accrual rate.

Comment:

See Section VI for details.

Recommendation:

Flor Class A, retain the current assumption. Change the Class B assumption so that 75% of retiring members are assumed to elect the no COLA benefit accrual rate and 25% of retiring members are assumed to elect the full COLA benefit accrual rate.

Investment return and investment expenses

Current Basis:

8.00% per year, net of investment-related and administrative expenses.

Comment:

See Section VII for details.

Recommendation:

Based on updated capital market assumptions (H&H Investment Advisors, 2018), we recommend that the current 8.00% assumption be reduced to 7.10% or lower. However, the final assumed long-term rate of return should be selected in consultation with the plan's investment advisor.

Actuarial Certification

This report presents the results of the 2018 Experience Study of the Burlington Employees' Retirement System and the pro forma impact that our recommendations for changes in assumptions have on the June 30, 2017 Actuarial Valuation results. It also provides the support for our recommendations. This report may not be appropriate for any other purpose.

The valuation results present in this report have been calculated in accordance with generally accepted actuarial principles and practices. We certify that the actuarial assumptions and methods were selected by us and represent our best estimate of anticipated actuarial experience under the plan.

In preparing all related valuation results, we have relied on employee data provided by the City and on asset and contribution information also provided by the City. We have not audited the employee data or the financial information, although we have reviewed them for reasonableness.

The results in this report are based on the Plan as summarized in the June 30, 2017 Actuarial Valuation Report and unless otherwise specified in this report the actuarial assumptions and methods detailed in that same report.

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

The signing actuary is independent of the Plan Sponsor. We are not aware of any relationship that would impact the objectivity of our work.

We are members of the American Academy of Actuaries and meet its Qualification Standards to render the actuarial opinion contained herein.

Steve A. Lemanski, FSA. FCA, MAAA
Consulting Actuary

Robert P. Lessard, ASA, ACA, MAAA
Team Leader and Actuarial Specialist

November 21, 2018

Exhibit A – Pro Forma Impact on Actuarial Valuation Results

Total

	$ millions					
Investment Return	8.00%	8.00%	7.75%	7.50%	7.25%	7.00%
Other Assumptions	Current	Proposed	Proposed	Proposed	Proposed	Proposed
Present Value of Benefits - Actives	$135.1	$129.9	$135.6	$141.8	$148.3	$155.3
Present Value of Benefits - Inactives	$161.3	$156.3	$159.7	$163.1	$166.8	$170.5
Present Value of Benefits - Total	$296.4	$286.2	$295.3	$304.9	$315.1	$325.8
Increase/(Decrease)		***($10.2)***	***($1.1)***	***$8.5***	***$18.6***	***$29.4***
Actuarial Accrued Liability - Actives	$91.1	$86.4	$89.5	$92.6	$95.9	$99.4
Actuarial Accrued Liability - Inactives	$161.3	$156.3	$159.7	$163.1	$166.8	$170.5
Actuarial Accrued Liability - Total	$252.4	$242.8	$249.1	$255.8	$262.7	$270.0
Increase/(Decrease)		***($9.6)***	***($3.3)***	***$3.3***	***$10.3***	***$17.5***
Actuarial Value of Assets	$183.8	$183.8	$183.8	$183.8	$183.8	$183.8
Increase/(Decrease)		***$0.0***	***$0.0***	***$0.0***	***$0.0***	***$0.0***
Funded Ratio	72.8%	75.7%	73.8%	71.9%	70.0%	68.1%
Increase/(Decrease)		***2.9%***	***1.0%***	***-1.0%***	***-2.9%***	***-4.7%***
Actuarially Determined Employer Contribution	$10.18	$8.91	$9.68	$10.46	$11.26	$12.08
Increase/(Decrease)		***($1.27)***	***($0.51)***	***$0.28***	***$1.08***	***$1.89***

Exhibit A – Pro Forma Impact on Actuarial Valuation Results

Class A

	$ millions					
Investment Return	8.00%	8.00%	7.75%	7.50%	7.25%	7.00%
Other Assumptions	Current	Proposed	Proposed	Proposed	Proposed	Proposed
Present Value of Benefits - Actives	$54.7	$57.2	$60.2	$63.4	$66.7	$70.4
Present Value of Benefits - Inactives	$80.1	$78.7	$80.5	$82.3	$84.2	$86.2
Present Value of Benefits - Total	$134.9	$136.0	$140.7	$145.7	$151.0	$156.6
Increase/(Decrease)		***$1.1***	***$5.8***	***$10.8***	***$16.1***	***$21.7***
Actuarial Accrued Liability - Actives	$35.4	$35.2	$36.5	$37.9	$39.4	$40.9
Actuarial Accrued Liability - Inactives	$80.1	$78.7	$80.5	$82.3	$84.2	$86.2
Actuarial Accrued Liability - Total	$115.6	$113.9	$117.0	$120.2	$123.6	$127.2
Increase/(Decrease)		***($1.6)***	***$1.5***	***$4.7***	***$8.1***	***$11.6***
Actuarial Value of Assets	$78.6	$78.6	$78.6	$78.6	$78.6	$78.6
Increase/(Decrease)		***$0.0***	***$0.0***	***$0.0***	***$0.0***	***$0.0***
Funded Ratio	68.0%	69.0%	67.2%	65.4%	63.6%	61.8%
Increase/(Decrease)		***1.0%***	***-0.9%***	***-2.6%***	***-4.4%***	***-6.2%***
Actuarially Determined Employer Contribution	$4.81	$4.74	$5.11	$5.49	$5.87	$6.27
Increase/(Decrease)		***($0.06)***	***$0.30***	***$0.68***	***$1.07***	***$1.46***

Exhibit A – Pro Forma Impact on Actuarial Valuation Results

Class B

	$ millions					
Investment Return	8.00%	8.00%	7.75%	7.50%	7.25%	7.00%
Other Assumptions	Current	Proposed	Proposed	Proposed	Proposed	Proposed
Present Value of Benefits - Actives	$80.4	$72.6	$75.4	$78.4	$81.6	$84.9
Present Value of Benefits - Inactives	$81.2	$77.6	$79.2	$80.8	$82.5	$84.3
Present Value of Benefits - Total	$161.5	$150.2	$154.6	$159.2	$164.1	$169.2
Increase/(Decrease)		***($11.3)***	***($6.9)***	***($2.3)***	***$2.5***	***$7.6***
Actuarial Accrued Liability - Actives	$55.7	$51.2	$52.9	$54.7	$56.6	$58.5
Actuarial Accrued Liability - Inactives	$81.2	$77.6	$79.2	$80.8	$82.5	$84.3
Actuarial Accrued Liability - Total	$136.9	$128.8	$132.1	$135.5	$139.1	$142.8
Increase/(Decrease)		***($8.0)***	***($4.8)***	***($1.3)***	***$2.2***	***$5.9***
Actuarial Value of Assets	$105.2	$105.2	$105.2	$105.2	$105.2	$105.2
Increase/(Decrease)		***$0.0***	***$0.0***	***$0.0***	***$0.0***	***$0.0***
Funded Ratio	76.9%	81.7%	79.7%	77.7%	75.7%	73.7%
Increase/(Decrease)		***4.8%***	***2.8%***	***0.8%***	***-1.2%***	***-3.2%***
Actuarially Determined Employer Contribution	$5.38	$4.17	$4.57	$4.98	$5.39	$5.81
Increase/(Decrease)		***($1.21)***	***($0.81)***	***($0.40)***	***$0.01***	***$0.43***

Exhibit B – Section I – Mortality Rates

Actual 2012-2017 Experience Compared to <u>Current Assumption</u>

Class A

Age	# of Lives	Actual Deaths	Expected Deaths	Actual %	Expected %	Ratio: Actual over Expected
<55	188	1	0.4	0.53%	0.23%	227.27%
55-59	134	1	0.6	0.75%	0.46%	161.29%
60-64	114	1	1.0	0.88%	0.83%	105.26%
65-69	141	2	1.9	1.42%	1.37%	103.63%
70-74	80	1	1.8	1.25%	2.25%	55.56%
75-79	22	0	0.9	0.00%	3.91%	0.00%
80-84	20	1	1.4	5.00%	6.85%	72.99%
85-89	11	1	1.2	9.09%	11.09%	81.97%
90+	1	0	0.2	0.00%	16.00%	0.00%
Grand Total	711	8	9.4	1.13%	1.32%	85.56%

Exhibit B – Section I – Mortality Rates

Actual 2012-2017 Experience Compared to Proposed Assumption

Class A

Age	# of Lives	Actual Deaths	Expected Deaths	Actual %	Expected %	Ratio: Actual over Expected
<55	188	1	0.7	0.53%	0.37%	144.93%
55-59	134	1	0.9	0.75%	0.66%	112.36%
60-64	114	1	1.1	0.88%	0.95%	92.59%
65-69	141	2	1.9	1.42%	1.36%	104.17%
70-74	80	1	1.7	1.25%	2.09%	59.88%
75-79	22	0	0.8	0.00%	3.45%	0.00%
80-84	20	1	1.2	5.00%	6.10%	81.97%
85-89	11	1	1.1	9.09%	10.00%	90.91%
90+	1	0	0.2	0.00%	15.00%	0.00%
Grand Total	711	8	9.5	1.13%	1.33%	84.39%

Recommendation:

We recommend updating the table to be consistent with the latest published mortality study released by the Society of Actuaries.

Exhibit B – Section I – Mortality Rates

Actual 2012-2017 Experience Compared to Current Assumption

Class B

Age	# of Lives	Actual Deaths	Expected Deaths	Actual %	Expected %	Ratio: Actual over Expected
<55	0	0	0.0	0.00%	0.00%	0.00%
55-59	77	1	0.3	1.30%	0.44%	294.12%
60-64	241	1	1.9	0.41%	0.79%	52.36%
65-69	517	13	6.4	2.51%	1.24%	202.49%
70-74	329	6	6.9	1.82%	2.09%	87.34%
75-79	229	10	8.2	4.37%	3.57%	122.25%
80-84	153	9	9.0	5.88%	5.86%	100.45%
85-89	55	6	5.3	10.91%	9.64%	113.21%
90+	21	4	3.3	19.05%	15.76%	120.85%
Grand Total	1,622	50	41.3	3.08%	2.55%	121.09%

Exhibit B – Section I – Mortality Rates

Actual 2012-2017 Experience Compared to Proposed Assumption

Class B

Age	# of Lives	Actual Deaths	Expected Deaths	Actual %	Expected %	Ratio: Actual over Expected
<55	0	0	0.0	0.00%	0.00%	0.00%
55-59	77	1	0.5	1.30%	0.70%	185.19%
60-64	241	1	2.5	0.41%	1.05%	39.37%
65-69	517	13	7.7	2.51%	1.48%	169.49%
70-74	329	6	7.7	1.82%	2.33%	78.43%
75-79	229	10	9.0	4.37%	3.93%	110.99%
80-84	153	9	10.2	5.88%	6.67%	88.15%
85-89	55	6	6.2	10.91%	11.31%	96.46%
90+	21	4	4.0	19.05%	18.81%	101.27%
Grand Total	1,622	50	47.8	3.08%	2.95%	104.62%

Recommendation:

We recommend updating the table to be consistent with the latest published mortality study released by the Society of Actuaries. In addition, since Class B actual mortality was greater than expected, we recommend a 2-year set forward of rates for this group.

Exhibit B – Section II - Retirement Rates

Actual 2012-2017 Experience Compared to Current Assumption

Class A

Service	# of Lives	Actual Retirements	Expected Retirements	Actual %	Expected %	Ratio: Actual over Expected
<15	51	0	6.9	0.00%	13.49%	0.00%
15	16	1	2.1	6.25%	12.81%	48.78%
16	14	1	2.4	7.14%	16.79%	42.55%
17	17	0	3.1	0.00%	18.24%	0.00%
18	16	1	2.7	6.25%	17.06%	36.63%
19	12	2	2.4	16.67%	19.67%	84.75%
20	14	3	1.8	21.43%	12.86%	166.67%
21	9	4	0.8	44.44%	8.89%	500.00%
22	9	4	1.4	44.44%	15.56%	285.71%
23	9	1	1.6	11.11%	17.22%	64.52%
24	10	3	2.2	30.00%	21.80%	137.61%
25	8	6	1.8	75.00%	21.88%	342.86%
26	5	1	1.7	20.00%	33.00%	60.61%
27	4	3	1.7	75.00%	41.25%	181.82%
28	1	1	0.2	100.00%	15.00%	666.67%
29	1	0	0.2	0.00%	15.00%	0.00%
30	1	1	0.2	100.00%	18.00%	555.56%
31	0	0	0.0	0.00%	0.00%	0.00%
32	1	1	1.0	100.00%	100.00%	100.00%
33	1	1	0.2	100.00%	20.00%	500.00%
34	0	0	0.0	0.00%	0.00%	0.00%
35+	2	1	2.0	50.00%	100.00%	50.00%
Grand Total	201	35	35.9	17.41%	17.88%	97.41%

Exhibit B – Section II - Retirement Rates

Actual 2012-2017 Experience Compared to Proposed Assumption

Class A

Service	# of Lives	Actual Retirements	Expected Retirements	Actual %	Expected %	Ratio: Actual over Expected
<15	51	0	0.0	0.00%	0.00%	0.00%
15	16	1	0.8	6.25%	5.00%	125.00%
16	14	1	0.7	7.14%	5.00%	142.86%
17	17	0	1.8	0.00%	10.59%	0.00%
18	16	1	0.8	6.25%	5.00%	125.00%
19	12	2	1.8	16.67%	15.00%	111.11%
20	14	3	3.5	21.43%	25.00%	85.71%
21	9	4	2.3	44.44%	25.00%	177.78%
22	9	4	2.3	44.44%	25.00%	177.78%
23	9	1	2.3	11.11%	25.00%	44.44%
24	10	3	3.0	30.00%	30.00%	100.00%
25	8	6	6.0	75.00%	75.00%	100.00%
26	5	1	3.0	20.00%	60.00%	33.33%
27	4	3	2.5	75.00%	62.50%	120.00%
28	1	1	0.5	100.00%	50.00%	200.00%
29	1	0	0.5	0.00%	50.00%	0.00%
30	1	1	0.8	100.00%	75.00%	133.33%
31	0	0	0.0	0.00%	0.00%	0.00%
32	1	1	1.0	100.00%	100.00%	100.00%
33	1	1	0.8	100.00%	75.00%	133.33%
34	0	0	0.0	0.00%	0.00%	0.00%
35+	2	1	2.0	50.00%	100.00%	50.00%
Grand Total	201	35	36.2	17.41%	17.99%	96.82%

Recommendation:

The proposed table was developed from the actual retirements from 2012-2017 and has rates that are based on service. Our recommendation is to adopt the proposed table.

Exhibit B – Section II - Retirement Rates

Actual 2012-2017 Experience Compared to Current Assumption

Class B

Age	# of Lives	Actual Retirements	Expected Retirements	Actual %	Expected %	Ratio: Actual over Expected
55	94	4	4.7	4.26%	5.00%	85.11%
56	94	6	4.7	6.38%	5.00%	127.66%
57	85	6	4.3	7.06%	5.00%	141.18%
58	78	5	3.9	6.41%	5.00%	128.21%
59	77	5	3.9	6.49%	5.00%	129.87%
60	75	4	7.5	5.33%	10.00%	53.33%
61	85	7	12.8	8.24%	15.00%	54.90%
62	74	12	14.8	16.22%	20.00%	81.08%
63	70	14	17.5	20.00%	25.00%	80.00%
64	61	17	15.3	27.87%	25.00%	111.48%
65	41	10	10.3	24.39%	25.00%	97.56%
66	31	13	6.2	41.94%	20.00%	209.68%
67	16	5	4.0	31.25%	25.00%	125.00%
68	8	2	1.6	25.00%	20.00%	125.00%
69	6	2	1.5	33.33%	25.00%	133.33%
70	2	0	2.0	0.00%	100.00%	0.00%
71	4	0	4.0	0.00%	100.00%	0.00%
72	4	0	4.0	0.00%	100.00%	0.00%
73	4	0	4.0	0.00%	100.00%	0.00%
74	4	2	4.0	50.00%	100.00%	50.00%
75+	20	3	20.0	15.00%	100.00%	15.00%
Grand Total	933	117	150.8	12.54%	16.16%	77.61%

Exhibit B – Section II - Retirement Rates

Actual 2012-2017 Experience Compared to Proposed Assumption

Class B

Age	# of Lives	Actual Retirements	Expected Retirements	Actual %	Expected %	Ratio: Actual over Expected
55	94	4	4.7	4.26%	5.00%	85.11%
56	94	6	4.7	6.38%	5.00%	127.66%
57	85	6	4.3	7.06%	5.00%	141.18%
58	78	5	3.9	6.41%	5.00%	128.21%
59	77	5	3.9	6.49%	5.00%	129.87%
60	75	4	5.6	5.33%	7.50%	71.11%
61	85	7	10.6	8.24%	12.50%	65.88%
62	74	12	13.3	16.22%	18.00%	90.09%
63	70	14	15.8	20.00%	22.50%	88.89%
64	61	17	15.3	27.87%	25.00%	111.48%
65	41	10	10.3	24.39%	25.00%	97.56%
66	31	13	9.3	41.94%	30.00%	139.78%
67	16	5	4.8	31.25%	30.00%	104.17%
68	8	2	2.4	25.00%	30.00%	83.33%
69	6	2	1.8	33.33%	30.00%	111.11%
70	2	0	1.0	0.00%	50.00%	0.00%
71	4	0	2.0	0.00%	50.00%	0.00%
72	4	0	2.0	0.00%	50.00%	0.00%
73	4	0	2.0	0.00%	50.00%	0.00%
74	4	2	2.0	50.00%	50.00%	100.00%
75+	20	3	20.0	15.00%	100.00%	15.00%
Grand Total	933	117	139.5	12.54%	14.95%	83.86%

Recommendation:

The proposed table was developed from the actual retirements from 2012-2017 and has rates that extend to age 75. Our recommendation is to adopt the proposed table.

Exhibit B – Section III - Turnover Rates

Actual 2012-2017 Experience Compared to Current Assumption

Class A

Service	# of Lives	Actual Terminations	Expected Terminations	Actual %	Expected %	Ratio: Actual over Expected
0	28	2	2.1	7.14%	7.46%	95.69%
1	74	6	5.2	8.11%	7.07%	114.72%
2	60	3	4.1	5.00%	6.75%	74.07%
3	57	1	3.7	1.75%	6.40%	27.40%
4	51	6	3.1	11.76%	6.14%	191.69%
5	46	1	2.8	2.17%	6.02%	36.10%
6	39	2	2.3	5.13%	5.95%	86.21%
7	35	1	2.1	2.86%	5.94%	48.08%
8	34	3	2.0	8.82%	5.85%	150.75%
9	26	1	1.5	3.85%	5.77%	66.67%
10+	222	1	11.8	0.45%	5.31%	8.48%
Grand Total	672	27	40.6	4.02%	6.04%	66.50%

Exhibit B – Section III - Turnover Rates

Actual 2012-2017 Experience Compared to Proposed Assumption

Class A

Service	# of Lives	Actual Terminations	Expected Terminations	Actual %	Expected %	Ratio: Actual over Expected
0	28	2	2.2	7.14%	8.00%	89.29%
1	74	6	5.2	8.11%	7.00%	115.83%
2	60	3	3.6	5.00%	6.00%	83.33%
3	57	1	3.4	1.75%	6.00%	29.24%
4	51	6	3.1	11.76%	6.00%	196.08%
5	46	1	2.8	2.17%	6.00%	36.23%
6	39	2	2.3	5.13%	6.00%	85.47%
7	35	1	1.8	2.86%	5.00%	57.14%
8	34	3	1.5	8.82%	4.50%	196.08%
9	26	1	1.0	3.85%	4.00%	96.15%
10	222	1	0.0	0.45%	0.00%	0.00%
Grand Total	672	27	26.9	4.02%	4.01%	100.30%

Recommendation:

Actual experience from 2012-2017 suggests that employees generally do not terminate after attainment of 10 years of service.

Our recommendation is to adopt a revised table that does not assume any terminations for 10 years of service or later.

Exhibit B – Section III - Turnover Rates

Actual 2012-2017 Experience Compared to Current Assumption

Class B

Service	Age	# of Lives	Actual Terminations	Expected Terminations	Actual %	Expected %	Ratio: Actual over Expected
<3	<25	61	11	16.1	18.03%	26.44%	68.20%
	25-29	202	51	47.0	25.25%	23.25%	108.58%
	30-34	150	26	29.5	17.33%	19.64%	88.26%
	35-39	126	22	21.7	17.46%	17.18%	101.62%
	40-44	133	17	18.6	12.78%	13.95%	91.59%
	45-49	142	19	19.0	13.38%	13.41%	99.79%
	50-54	110	13	14.7	11.82%	13.32%	88.74%
	Subtotal	924	159	166.5	17.21%	18.02%	95.52%
3+	<25	5	0	0.8	0.00%	15.00%	0.00%
	25-29	51	6	6.9	11.76%	13.55%	86.83%
	30-34	144	15	15.9	10.42%	11.05%	94.28%
	35-39	201	18	15.4	8.96%	7.67%	116.73%
	40-44	215	17	8.6	7.91%	4.00%	197.44%
	45-49	328	16	13.1	4.88%	4.00%	121.86%
	50-54	485	24	19.4	4.95%	4.00%	123.71%
	Subtotal	1,429	96	80.1	6.72%	5.61%	119.81%
Total	<25	66	11	16.9	16.67%	25.58%	65.17%
	25-29	253	57	53.9	22.53%	21.30%	105.79%
	30-34	294	41	45.4	13.95%	15.43%	90.37%
	35-39	327	40	37.1	12.23%	11.34%	107.90%
	40-44	348	34	27.2	9.77%	7.81%	125.14%
	45-49	470	35	32.2	7.45%	6.84%	108.80%
	50-54	595	37	34.1	6.22%	5.72%	108.66%
Grand Total		2,353	255	246.6	10.84%	10.48%	103.41%

Exhibit B – Section III - Turnover Rates

Actual 2012-2017 Experience Compared to Proposed Assumption

Class B

Service	Age	# of Lives	Actual Terminations	Expected Terminations	Actual %	Expected %	Ratio: Actual over Expected
<3	<25	58	10	13.6	17.24%	23.38%	73.75%
	25-29	163	41	34.2	25.15%	20.98%	119.92%
	30-34	117	20	21.9	17.09%	18.73%	91.28%
	35-39	99	19	16.8	19.19%	16.97%	113.10%
	40-44	106	12	16.0	11.32%	15.06%	75.19%
	45-49	107	13	14.0	12.15%	13.12%	92.59%
	50-54	82	8	9.5	9.76%	11.57%	84.30%
	Subtotal	732	123	126.0	16.80%	17.21%	97.66%
3+	<25	8	1	1.6	12.50%	20.13%	62.11%
	25-29	90	16	13.7	17.78%	15.18%	117.13%
	30-34	177	21	20.8	11.86%	11.75%	101.01%
	35-39	228	21	21.5	9.21%	9.41%	97.90%
	40-44	242	22	19.1	9.09%	7.89%	115.24%
	45-49	363	22	24.0	6.06%	6.61%	91.67%
	50-54	513	29	27.2	5.65%	5.30%	106.66%
	Subtotal	1,621	132	127.8	8.14%	7.88%	103.29%
Total	<25	66	11	15.2	16.67%	22.98%	72.51%
	25-29	253	57	47.9	22.53%	18.91%	119.12%
	30-34	294	41	42.7	13.95%	14.52%	96.02%
	35-39	327	40	38.3	12.23%	11.70%	104.58%
	40-44	348	34	35.1	9.77%	10.07%	97.00%
	45-49	470	35	38.0	7.45%	8.09%	92.01%
	50-54	595	37	36.7	6.22%	6.16%	100.87%
Grand Total		2,353	255	253.7	10.84%	10.78%	100.50%

Recommendation:

Actual experience from 2012-2017 suggests that the current assumption should remain a select and ultimate table but that the assumed rates should be updated. We recommend adopting 100% of the Vaughn Select & Ultimate Withdrawal Table for service prior to 3 years and 130% of the Vaughn Select & Ultimate Withdrawal Table thereafter.

Exhibit B – Section IV - Disability Rates

Actual 2012-2017 Experience Compared to Current Assumption

Class A

Age	# of Lives	Actual Disabilities	Expected Disabilities	Actual %	Expected %	Ratio: Actual over Expected
<25	41	0	0.1	0.00%	0.22%	0.00%
25-29	148	0	0.4	0.00%	0.25%	0.00%
30-34	192	0	0.6	0.00%	0.33%	0.00%
35-39	170	0	0.7	0.00%	0.42%	0.00%
40-44	158	0	0.9	0.00%	0.59%	0.00%
45-49	111	2	1.0	1.80%	0.89%	202.02%
50-54	31	0	0.5	0.00%	1.48%	0.00%
55+	22	0	0.0	0.00%	0.00%	0.00%
Grand Total	873	2	4.2	0.23%	0.48%	47.85%

Exhibit B – Section IV - Disability Rates

Actual 2012-2017 Experience Compared to Proposed Assumption

Class A

Age	# of Lives	Actual Disabilities	Expected Disabilities	Actual %	Expected %	Ratio: Actual over Expected
<25	41	0	0.0	0.00%	0.07%	0.00%
25-29	148	0	0.2	0.00%	0.11%	0.00%
30-34	192	0	0.3	0.00%	0.17%	0.00%
35-39	170	0	0.4	0.00%	0.24%	0.00%
40-44	158	0	0.6	0.00%	0.39%	0.00%
45-49	111	2	0.7	1.80%	0.60%	298.51%
50-54	31	0	0.3	0.00%	0.97%	0.00%
55+	22	0	0.3	0.00%	1.27%	0.00%
Grand Total	873	2	2.8	0.23%	0.32%	71.94%

Recommendation:

The 2012-2017 actual experience shows that there were fewer disabilities than expected. Also, since there was a relatively low number of exposures, a standard disability table should be used.

Our recommendation is to adopt the 1985 Pension Disability Study Class 2 Table for Males and Females.

Exhibit B – Section IV - Disability Rates

Actual 2012-2017 Experience Compared to Current Assumption

Class B

Age	# of Lives	Actual Disabilities	Expected Disabilities	Actual %	Expected %	Ratio: Actual over Expected
<25	66	0	0.1	0.00%	0.09%	0.00%
25-29	253	0	0.2	0.00%	0.09%	0.00%
30-34	294	0	0.4	0.00%	0.13%	0.00%
35-39	327	0	0.5	0.00%	0.16%	0.00%
40-44	348	0	0.8	0.00%	0.23%	0.00%
45-49	470	0	1.7	0.00%	0.37%	0.00%
50-54	595	2	3.8	0.34%	0.64%	52.22%
55-59	534	8	6.3	1.50%	1.18%	126.58%
60-64	416	6	10.1	1.44%	2.42%	59.58%
65+	152	0	0.0	0.00%	0.00%	0.00%
Grand Total	3,455	16	23.9	0.46%	0.69%	66.83%

Exhibit B – Section IV - Disability Rates

Actual 2012-2017 Experience Compared to Proposed Assumption

Class B

Age	# of Lives	Actual Disabilities	Expected Disabilities	Actual %	Expected %	Ratio: Actual over Expected
<25	66	0	0.0	0.00%	0.03%	0.00%
25-29	253	0	0.1	0.00%	0.05%	0.00%
30-34	294	0	0.2	0.00%	0.07%	0.00%
35-39	327	0	0.4	0.00%	0.12%	0.00%
40-44	348	0	0.7	0.00%	0.19%	0.00%
45-49	470	0	1.5	0.00%	0.31%	0.00%
50-54	595	2	3.4	0.34%	0.56%	59.70%
55-59	534	8	5.3	1.50%	0.99%	152.09%
60-64	416	6	5.6	1.44%	1.35%	106.76%
65+	152	0	2.0	0.00%	1.28%	0.00%
Grand Total	3,455	16	19.1	0.46%	0.55%	83.90%

Recommendation:

The 2012-2017 actual experience shows that there were fewer disabilities than expected. Also, since there was a relatively low number of exposures, a standard disability table should be used.

Our recommendation is to adopt the 1985 Pension Disability Study Class 1 Table for Males and Females.

Exhibit B – Section V – Rate of Compensation Increase

Actual 2012-2017 Experience Compared to Current Assumption

Class A

Service	# of Lives	Prior Year Salaries	Actual Salaries	Expected Salaries	Ratio: Actual over Expected
<1	94	2,655,845	4,153,024	2,849,486	145.75%
1	57	2,472,592	2,700,812	2,651,319	101.87%
2	56	2,511,525	2,695,271	2,686,533	100.33%
3	45	2,269,816	2,368,425	2,426,620	97.60%
4	45	2,265,473	2,378,355	2,419,897	98.28%
5	37	1,944,949	2,048,564	2,076,282	98.67%
6	34	1,763,918	1,803,233	1,880,735	95.88%
7	32	1,709,079	1,885,243	1,810,979	104.10%
8	26	1,497,457	1,604,637	1,583,415	101.34%
9	29	1,692,072	1,736,561	1,787,949	97.13%
10	33	1,943,942	2,019,895	2,047,719	98.64%
11	38	2,281,761	2,356,212	2,398,506	98.24%
12	41	2,537,625	2,645,430	2,664,540	99.28%
13	46	2,877,443	3,030,364	3,011,441	100.63%
14	38	2,548,945	2,653,251	2,670,699	99.35%
15	36	2,224,902	2,359,122	2,330,758	101.22%
16	33	1,912,379	2,007,974	1,996,205	100.59%
17	26	1,421,334	1,479,561	1,479,741	99.99%
18	16	804,258	853,235	836,711	101.97%
19	12	526,420	547,615	548,641	99.81%
20+	35	979,831	1,027,884	1,017,744	101.00%
Grand Total	809	40,841,566	44,354,668	43,175,920	102.73%

Exhibit B – Section V - Rate of Compensation Increase

Actual 2012-2017 Experience Compared to Proposed Assumption

Class A

Service	# of Lives	Prior Year Salaries	Actual Salaries	Expected Salaries	Ratio: Actual over Expected
<1	94	2,655,845	4,153,024	2,921,429	142.16%
1	57	2,472,592	2,700,812	2,682,762	100.67%
2	56	2,511,525	2,695,271	2,694,866	100.02%
3	45	2,269,816	2,368,424	2,412,815	98.16%
4	45	2,265,473	2,378,355	2,399,136	99.13%
5	37	1,944,949	2,048,564	2,053,866	99.74%
6	34	1,763,918	1,803,233	1,859,170	96.99%
7	32	1,709,079	1,885,243	1,797,951	104.86%
8	26	1,497,457	1,604,637	1,572,330	102.05%
9	29	1,692,072	1,736,561	1,773,291	97.93%
10	33	1,943,942	2,019,895	2,035,307	99.24%
11	38	2,281,761	2,356,212	2,386,722	98.72%
12	41	2,537,625	2,645,430	2,651,818	99.76%
13	46	2,877,443	3,030,364	3,004,051	100.88%
14	38	2,548,945	2,653,251	2,658,550	99.80%
15	36	2,224,902	2,359,122	2,318,348	101.76%
16	33	1,912,379	2,007,974	1,988,875	100.96%
17	26	1,421,334	1,479,561	1,475,345	100.29%
18	16	804,258	853,235	834,015	102.30%
19	12	526,420	547,615	545,371	100.41%
20+	35	979,831	1,027,884	1,014,125	101.36%
Grand Total	809	40,841,566	44,354,667	43,080,143	102.96%

Recommendation:

Plan experience suggests a change to rates based on years of service, rather than age.

Our recommendation is to adopt the proposed merit table, which includes an updated long-term inflation assumption of 2.60%.

Exhibit B – Section V - Rate of Compensation Increase

Actual 2012-2017 Experience Compared to Current Assumption

Class B

Service	# of Lives	Prior Year Salaries	Actual Salaries	Expected Salaries	Ratio: Actual over Expected
<1	456	10,579,447	16,750,669	11,155,549	150.16%
1	242	8,919,844	9,504,853	9,399,191	101.12%
2	190	7,601,278	7,989,931	8,004,783	99.81%
3	163	6,911,001	7,320,631	7,269,646	100.70%
4	145	5,869,801	6,225,283	6,173,749	100.83%
5	144	5,943,054	6,092,295	6,244,222	97.57%
6	129	5,658,733	5,826,517	5,935,108	98.17%
7	117	5,123,520	5,361,936	5,369,059	99.87%
8	108	4,745,805	4,906,755	4,967,797	98.77%
9	102	4,292,151	4,443,586	4,493,832	98.88%
10	95	3,973,410	4,140,768	4,156,111	99.63%
11	85	3,826,279	4,001,284	4,000,796	100.01%
12	88	4,092,975	4,216,673	4,278,089	98.56%
13	88	4,109,096	4,272,289	4,293,760	99.50%
14	81	3,862,962	3,962,622	4,031,591	98.29%
15	72	3,394,080	3,546,706	3,539,559	100.20%
16	72	3,618,283	3,753,550	3,771,369	99.53%
17	62	3,162,535	3,248,638	3,296,018	98.56%
18	53	2,836,916	2,921,970	2,955,849	98.85%
19	43	2,493,360	2,551,421	2,596,688	98.26%
20+	511	25,454,064	26,144,965	26,492,920	98.69%
Grand Total	3,046	126,468,594	137,183,342	132,425,686	103.59%

Exhibit B – Section V – Rate of Compensation Increase

Actual 2012-2017 Experience Compared to Proposed Assumption

Class B

Service	# of Lives	Prior Year Salaries	Actual Salaries	Expected Salaries	Ratio: Actual over Expected
<1	456	10,579,447	16,750,669	11,277,691	148.53%
1	242	8,919,844	9,504,853	9,455,035	100.53%
2	190	7,601,278	7,989,931	8,019,348	99.63%
3	163	6,911,001	7,320,631	7,263,462	100.79%
4	145	5,869,801	6,225,283	6,157,422	101.10%
5	144	5,943,054	6,092,295	6,222,378	97.91%
6	129	5,658,733	5,826,517	5,913,376	98.53%
7	117	5,123,520	5,361,936	5,348,955	100.24%
8	108	4,745,805	4,906,755	4,949,874	99.13%
9	102	4,292,151	4,443,586	4,476,713	99.26%
10	95	3,973,410	4,140,768	4,140,293	100.01%
11	85	3,826,279	4,001,284	3,986,983	100.36%
12	88	4,092,975	4,216,673	4,260,787	98.96%
13	88	4,109,096	4,272,289	4,273,460	99.97%
14	81	3,862,962	3,962,622	4,013,617	98.73%
15	72	3,394,080	3,546,706	3,523,055	100.67%
16	72	3,618,283	3,753,550	3,755,778	99.94%
17	62	3,162,535	3,248,638	3,282,712	98.96%
18	53	2,836,916	2,921,970	2,941,882	99.32%
19	43	2,493,360	2,551,421	2,583,120	98.77%
20+	511	25,454,064	26,144,965	26,344,957	99.24%
Grand Total	3,046	126,468,594	137,183,342	132,190,898	103.78%

Recommendation:

Our recommendation is to adopt the proposed merit table, which includes an updated long-term inflation assumption of 2.60%.

Exhibit B – Section VI – COLA (Benefit Accrual Rate)

For both Class A and Class B, 85% of retiring members are assumed to elect the no COLA benefit accrual rate and 15% of retiring members are assumed to elect the full COLA benefit accrual rate.

For members that retired during the 2012-2017 measurement period, the COLA elected was as follows:

COLA Selection	Class A	Class B
Full COLA	8.3%	28.9%
Half COLA	2.8%	5.4%
No COLA	88.9%	65.8%

Recommendation:

We recommend retaining the Class A assumption. We recommend changing the Class B assumption so that 75% of retiring members are assumed to elect the no COLA benefit accrual rate and 25% of retiring members are assumed to elect the full COLA benefit accrual rate.

Exhibit B – Section VII - Investment Return Assumption

Expected Long-Term Return Based on Asset Allocation

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return*	Weighting
US Large Cap	30.09%	4.50%	1.35%
US Mid Cap	8.99%	5.00%	0.45%
US Small Cap	8.99%	5.00%	0.45%
MSCI EAFE	9.31%	5.25%	0.49%
MSCI Emerging Markets	10.40%	6.25%	0.65%
Intermediate Government Credit	27.74%	1.50%	0.42%
Real Estate	2.08%	4.50%	0.09%
Private Equity	1.56%	6.25%	0.10%
Cash	0.84%	0.25%	0.00%
	100.00%		4.00%
Long-Term Inflation Expectation			2.60%
Long-Term Expected Nominal Return			6.60%

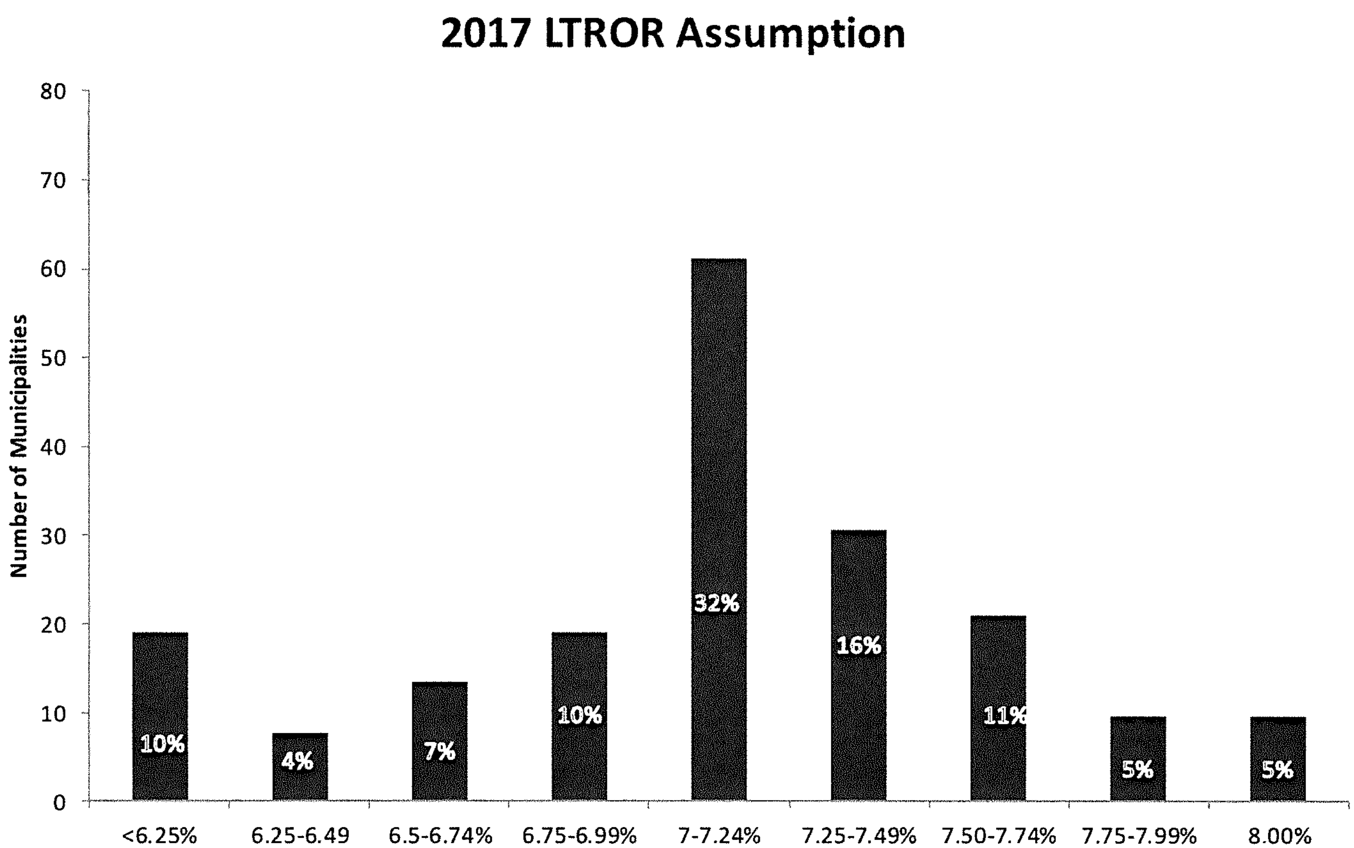
**Long-Term Expected Real Rates of Return are provided by H&H Investment Advisors. The returns are geometric means.*

The long-term expected rate of return on pension plan investments was determined using a building block method in which best-estimate ranges of expected future real rates of return are developed. Best estimates of the real rates of return for each major asset class are included in the pension plan's target asset allocation.

The information above is based on geometric means and does not reflect additional returns through investment selection, asset allocation and rebalancing. The results support a rate between 6.60% and 7.10%.

Exhibit B – Section VII - Investment Return Assumption

Survey of Long-Term Rate of Return Assumption, based on FYE 2017 CAFRs*



** This information comes from 191 Connecticut plans that we gathered data on.*

Recommendation:

The plan's current asset allocation combined with updated long term capital market expectations (H&H Investment Advisors, 2018) that assume 2.60% inflation support an investment return assumption in the range of 6.60% to 7.10%.

As a result, our recommendation is to change the current assumption of 8.00% to 7.10% or lower. However, the final rate should be selected in consultation with the plan's investment advisor.

Draft
December 06, 2018
Burlington Employees' Retirement Board
City Hall, Conference Room 12

Board Members Present:

- Ben O'Brien
- Beth Anderson
- Robert Hooper
- Matt Dow
- Pat Robins (exit 10:15am)
- Dan Gilligan
- Munir Kasti

Others Present:

- Stephanie Hanker
- Kim Sturtevant (Phone 8:40am)
- Barry Bryant – Dahab Associates

Called to order at 8:31am

1. ***Agenda***:
   No changes to presented agenda

2. ***Public Forum***:
   No Public Present

3. ***Approval Minutes of October 18, 2018:***
   Beth Anderson moved to approve the minutes as presented. Benjamin O'Brien 2nd.
   Motion carries 7:0

4. **Approval of Retirement Application**
   Benjamin O'Brien moved to approve the applications presented. Daniel Gilligan 2nd. Motion carries 7:0

5. ***Ratify Refund and Rollovers:***
   Daniel Gilligan moved to approve presented bills. Benjamin O'Brien 2nd.
   Motion carries 7:0

6. ***Approve Retirement Office Bills:***
Munir Kasti moved to approve presented bills. Matthew Dow 2nd. Motion carries 7:0

7. ***Presentation – Performance – Dahab Associates:***
Barry Bryant presented the Quarter 3 performance. Barry Bryant stated the portfolio returned 3.4%, which was 0.1% below the Burlington Policy Index's return of 3.5% and ranked in the 48th percentile of the Public Fund Universe. Barry Bryant stated over the trailing year, the portfolio returned 9.2%, which was .02% below the benchmark's 9.4% return, ranking in the 38th percentile.

   Barry Bryant presented the board with a sample presentation for an RFP for core fixed income manager search. Barry Bryant stated he would like to bring in three candidates for presentations. Munir Kasti stated that only the top three selections should be brought in. Beth Anderson stated she would like to see the criteria that candidates would be selected on. Barry Bryant stated that their firm has a product that and strongly recommends using the book format that he has provided. Barry Bryant stated he will provide the board with selection criteria at the next meeting he attends.

8. ***Asset Allocation with inverted Yield Curve***
Barry Bryant presented to the Board with a handout outlining possible allocation mixes at the request of the board to assist in preparing for a possible recession. Beth Anderson asked what other public plans were doing. Barry Bryant stated some are lowering assumptions and rate of return and de-risking.

9. ***Presentation – Fees – Dahab Associates:***
Barry Bryant presented a handout quarterly fees as of June 2018.

10. ***Discussion of Rate of Return:***
Tabled

11. ***Other Business:***
Bob Hooper stated he would like to change the regular meeting schedule of the Board to every third Wednesday. Board agreed beginning in January.
Board asked that RFP for Consulting Discussion be placed on the next agenda.
Board suggests a subcommittee to discuss future asset allocation and asked to be put on the following agenda.

12. ***Adjourn:***
Ben O'Brien moved to adjourn. Munir Kasti 2nd. Motion carries 6:0 Meeting closed 10:35am.

City of Burlington Vermont

BURLINGTON EMPLOYEES' RETIREMENT SYSTEM

Robert Hooper
Chairman of the Board
Munir Kasti
Vice-Chairman

Stephanie Hanker
Retirement Administr
802-865-7097
Dial 7-1-1 (TTY)

January 2019
Retiree Approval List

Name	Class	Type	Monthly Amount	Effective Date
Deborah Rangel	B	Vested Retirement	$537.04	08/04/2018
Dana Dean	B	Vested Late Retirement	$335.35	12/01/2018
Timothy Barden	B	Vested Retirement	$96.19	11/30/2018
George D. Baron	B	Vested Retirement	$636.34	01/04/2019
Dennis Collins	B	Early Service Retirement	$2,431.48	12/04/2018
Bradley Trombley	A	Early Service Retirement	$4,400.66	11/29/2018
Lisa Chicoine	B	Vested Early Retirement	$1,010.77	12/18/2018

City of Burlington Vermont

BURLINGTON EMPLOYEES' RETIREMENT SYSTEM

Robert Hooper
Chairman of the Board
Munir Kasti
Vice-Chairman

Stephanie Hanker
Retirement Administrato
802-865-7097
TTY Dial 7-1-1

TO: Retirement Board Members

FROM: Stephanie Hanker

DATE: January 15, 2019

SUBJECT: Class "A and B" Refund's January 2019

Following our usual procedure, this is to notify you that checks have been processed for Class "A" or Class "B" employees who have requested a refund or rollover.

Brian Croteau, a former Class B employee, took a refund of their retirement contributions in the gross amount of $10,229.16.

Robert Meyer, a former Class A employee, took a rollover of their retirement contributions in the gross amount of $23,096.80.

Anthea Dexter-Cooper, a former Class B employee, took a rollover of their retirement contributions in the gross amount of $5,330.85.

City of Burlington Vermont

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802-865-7097
7-1-1 (TTY)

CITY COUNCIL REPORT

FOR June 2018

MISSION
The mission of the Retirement Board as defined by the Ordinance is to be trustees of the funds of the retirement system. The Board has the authority to invest funds, determine asset allocation within guidelines, develop the guidelines, and hire such managers and consultants as may be needed. The Board also sets policy and oversees the general administration of, and has the responsibility for, the proper operation of the retirement system. The Board makes decisions on disability applications and follow-ups.

HIGHLIGHTS
The market value of assets as of June 30, 2018 was $191,480,598 compared to a market value as of June 30, 2017 was $175,690,863. Investment performance, gross of fees, for the fiscal year was approximately 9.8% putting us in the 19th percentile of public funds for the year. On a net basis our percentile ranking would be even better. As of June 30, 2018 our asset totals were comprised of equity totaling 68.9%, real assets totaled 10.1%, the fixed income component was19.3%, while the remaining 1.6% is cash and equivalents

The board continues to seek information and recommendations on the best representation of our Assumed Rate of Return, with many board members feeling it represents an overly inflated estimate of our potential long term earnings. However, we remain acutely aware of the overall impact on the Burlington Tax Payer of inappropriately adjusting the rate too quickly or excessively. Our annual rate of return for this period and our peer ranking were excellent, but overall we feel that in a correcting market such earnings may be difficult to maintain. We are consulting with our plan advisors currently to determine a point for discussion on this topic. I would remind Council that the rate is intended to reflect the LONG TERM potential for the earnings of a plan, and not indicate an expected annual result. Still, consensus of our board and other public plans trends downward from the 8% we currently designate. I would anticipate discussion with the appropriate Council committee chair before a final decision is made.

Significantly, the Board approved the City's sending out an RFP for Actuary Services. This RFP resulted in the selection of Hooker and Holcombe and as a result the department should see a significant savings for provided actuarial services to the system. Hooker and Holcombe has been instrumental in assisting in the future expected service improvements to the members of the system.

At the time of this writing there are 933 active members of the Retirement System, 714 retirees and beneficiaries, and 355 members who have left service with vested benefits. Pension benefits average about 1,277,540 per month.

The FY 2018 members of the Board were James Strouse (now resigned), Robert Hooper and Roger Stone (now resigned), who are appointed by the City Council with Mayor presiding, Beth Anderson, Chief Administrative Officer, who is the Ex-Officio member, Lt. Benjamin O'Brien, Fire and Cpl. Daniel Gilligan, Police who are elected by the Class "A" employees and Munir Kasti and Matthew Dow, who are elected by the Class "B" members.

Robert Hooper, Chairperson	Date

Draft
January 15, 2019
Burlington Employees' Retirement Board
City Hall, Conference Room 12

Board Members Present:
- Ben O'Brien
- Beth Anderson
- Robert Hooper (exit 10:15am)
- Matt Dow
- Pat Robins
- Dan Gilligan
- Munir Kasti
- David Mount

Others Present:
- Stephanie Hanker
- Kim Sturtevant (10:21 enter)
- Jim Strouse (Phone)
- Steven Lemanksi – H&H
- Robert Lessard – H&H

Called to order at 10:05am

1. ***Agenda***:
   No changes to presented agenda

2. ***Public Forum***:
   No Public Present

3. ***Presentation – Experience Study – Hooker and Holcombe***
   Steven Lemanksi and Robert Lessard presented the board with a draft experience study for review period July 01, 2012 – June 30, 2017. A summary of current assumptions and proposed assumptions were provided to the Board.

BURLINGTON EMPLOYEES' RETIREMENT SYSTEM (BERS)
2018 EXPERIENCE STUDY

CURRENT AND PROPOSED ACTUARIAL ASSUMPTIONS

The current actuarial assumptions used in the 2017 BERS actuarial valuation plus the proposed changes in actuarial assumptions are compared as follows:

		Current Assumption	Proposed Assumption	Comments
Mortality (Non-Disabled)				
	Class A	105% of the RP-2000 Mortality Table, combined table for non-annuitants and annuitants.	RP-2014 Mortality Table, separate tables for non-annuitants and annuitants.	The proposed table is consistent with the latest study published by the Society of Actuaries (SOA) for non-disabled lives.
	Class B	Same as Class A.	RP-2014 Mortality Table, set forward 2 years, separate tables for non-annuitants and annuitants.	An age set forward is proposed for Class B, since mortality was greater than expected.
Mortality (Disabled)		105% of the RP-2000 Mortality Table, combined table for non-annuitants.	RP-2014 Disabled Mortality Table.	The proposed table is consistent with the latest study published by the SOA for disabled lives.
Mortality Improvement		Generational projection per Scale BB.	Generational projection per Scale MP-2018.	The proposed improvement scale is consistent with the latest study published by the SOA.
Retirement				
	Class A	Age-based rates from age 45 to age 60.	Service-based rates from 15 years of service to 35 years of service. In addition, compulsory retirement is assumed at age 60.	Class A retirement suggests a change to a table based on years of service, rather than age.
	Class B	Age-based rates from age 55 to age 70.	Age-based rates from age 55 to age 75.	Class B experience indicates that members are retiring later than expected, on average.
Turnover				
	Class A	Age-based rates to age 54. 0% assumed at age 55+.	Service-based rates to 9 years of service. 0% assumed at 10+ years of service.	Class A retirement suggests a change to a table based on years of service, rather than age.
	Class B	Select and ultimate age-based rates to age 69.	Select and ultimate age-based rates to age 54. (100% of the Vaughn table prior to 2 years of service; 100% of the Vaughn Table for 3+ years of service).	A select-and-ultimate table remains appropriate for Class B; however, the current rates should be updated.

BURLINGTON EMPLOYEES' RETIREMENT SYSTEM (BERS)
2018 EXPERIENCE STUDY

CURRENT AND PROPOSED ACTUARIAL ASSUMPTIONS

The current actuarial assumptions used in the 2017 BERS actuarial valuation plus the proposed changes in actuarial assumptions are compared as follows:

		Current Assumption	Proposed Assumption	Comments
Disability				
	Class A	Age-based rates to age 54.	1985 Pension Disability Study (Class 2) Table.	Experience for both Class A and Class B indicates that there were fewer disabilities than expected, and the proposed tables contain lower assumed rates of disability.
	Class B	Age-based rates to age 64.	1985 Pension Disability Study (Class 1) Table.	See comment for Class A.
Inflation		3.00%.	2.60%.	The proposed assumption is consistent with Social Security's best estimate of the ultimate long-term (75-year horizon) annual percentage increase in CPI, as published in the 2018 OASDI Trustees Report.
Cost of Living Adjustment		3.00% for members retiring on or prior to July 1, 2017, and 2.75% for members retiring after July 1, 2017.	2.60% for all members.	The proposed assumption is consistent with the recommended inflation assumption.
Rate of Compensation Increase				
	Class A	Age-based rates, grading down from 8.8% at age 25 to 3.8% at age 69+.	Service-based rates, grading down from 10.0% for <1 year of service to 3.5% for 20+ years of service.	Plan experience for both Class A and Class B suggests a change to rates based on years of service, rather than age. The proposed tables also include an updated long-term inflation assumption of 2.60%.
	Class B	Same as Class A.	Service-based rates, grading down from 6.6% for <1 year of service to 3.5% for 20+ years of service.	See comment for Class A.

BURLINGTON EMPLOYEES' RETIREMENT SYSTEM (BERS)
2018 EXPERIENCE STUDY

CURRENT AND PROPOSED ACTUARIAL ASSUMPTIONS

The current actuarial assumptions used in the 2017 BERS actuarial valuation plus the proposed changes in actuarial assumptions are compared as follows:

		Current Assumption	Proposed Assumption	Comments
Payroll Growth		3.50%.	3.00%.	We recommend a reduction in this assumption, consistent with our recommendation to lower the inflation assumption.
COLA (Benefit Accrual Rate) Election				
	Class A	85% of retiring members are assumed to elect the no COLA benefit accrual rate, and 15% of retiring members are assumed to elect the full COLA benefit accrual rate.	No change.	Applies to Police members hired prior to July 1, 2006, and Fire members hired prior to January 1, 2007.
	Class B	Same as Class A.	75% of retiring members are assumed to elect the no COLA benefit accrual rate, and 25% of retiring members are assumed to elect the full COLA benefit accrual rate.	Applies to members hired prior to July 1, 2006 (for IBEW, hired prior to May 5, 2008).
Investment Return		8.00%, net of investment expenses.	7.10% or lower, net of investment expenses.	The proposed assumption is based on our updated capital market assumptions (H&H Investment Advisors, 2018). However, the final assumed long-term rate of return should be selected in consultation with the plan's investment advisor.

On the topic of investment return Beth Anderson stated that the current assumption of 8% almost caused a qualified audit because current rate effects credit rating, bonding, banking and not GAP approved as well as the investment consultant states that assumption is not attainable. Steven Lemanski also stated that if not changed he would have to also issue a qualified report in the future. Steven Lemanski stated that at 7.58% assumption that would be okay to start with but would like to see a plan to get to 7.1% in five years. Steven Lemanski will provide another breakdown of the effect on funded ratio and fund costs using the completed 2018 valuation numbers.

4. **<u>Approve Minutes – December 06, 2018:</u>**
   Beth Anderson moved to approve the minutes presented. Daniel Gilligan 2nd. Motion carries 7:0

5. ***<u>Approval of Retirement Application:</u>***
   Benjamin O'Brien moved to approve presented applications. Daniel Gilligan 2nd. Motion carries 7:0

6. ***<u>Ratify Refunds and Rollovers:</u>***
   Daniel Gilligan moved to ratify the presented refunds and rollovers. Matthew Dow 2nd. Motion carries 7:0

7. ***Review and Approve Annual Board Report to City Council:***
   Stephanie Hanker stated that the last paragraph should state Jim Strouse "term expired". Munir Kasti stated to put a space in last sentence paragraph 2. Beth Anderson stated to change the RFP of H&H to "awarded in 2018". Benjamin O'Brien moved to approve the Annual Board Report to the City Council with the requested changes. Daniel Gilligan 2nd. Motion carries 7:0

8. ***Discussion Regarding Possible RFP for consulting Services:***
   Beth Anderson stated that an RFP should be conducted for invested management services to keep in line with the City's policy regarding RFP's since it has been some time since one has been done.

9. ***Discussion Regarding Subcommittee for Future Asset Allocation:***
   The Board will have a subcommittee for to study future asset allocations. David Mount, Matt Dow, Munir Kasti and Beth Anderson volunteered. Beth Anderson stated we should check with Bob Hooper to see if he would like to also be a part of the subcommittee.

10. ***Other Business:***
    Next 4 Meetings need to be changed to Monday's due to Bob Hooper's schedule. Will schedule each individually. Next Meeting time certain Monday February 11, 2019 9:15am – 10:30am.

11. ***Adjourn:***
    Ben O'Brien moved to adjourn. Matthew Dow 2nd. Motion carries 6:0
    Meeting closed 11:35am.