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New York State

Development of Recommended Actuarial Assumptions for Other Post Employment Benefit Plan Actuarial Valuations

Participating Agency Version

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AON
Empower Results®

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Section 1 – Executive Summary

At the request of the New York State Department of Civil Service (DCS), Aon has developed actuarial assumptions for use by New York State, NYSIF, and SUNY for the April 1, 2019 valuation of their obligation for postemployment benefits other than pension plans (OPEB) under Governmental Accounting Standard (GASB) Statement 75. The basis for the development of these assumptions is outlined in our report to New York State Department of Civil Service (DCS), ***New York State, SUNY, and NYSIF Development of Recommended Actuarial Assumptions for April 1, 2019 Other Post Employment Benefit Plans Actuarial Valuation.*** Employers who are Participating Agencies (PAs) of the New York State Health Insurance Program (NYSHIP) need to value their OPEB obligation under GASB 75. In order to assist PAs with their valuation, and at the request of DCS, Aon has prepared this separate report, which presents the excerpts of our reports that may be relevant to the PAs. The assumptions in this report are a Statement of Actuarial Opinion, prepared by Wil Ocasio, Jessica Fenske, and Betsy Hanson. Mr. Ocasio is an Associate in the Society of Actuaries. Ms. Fenske is a Fellow of the Society of Actuaries. Ms. Hanson is a Fellow of the Society of Actuaries and a Member of the American Academy of Actuaries. They collectively meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

The Actuarial Assumptions Section presents assumptions that we and/or DCS believe may be relevant to the PAs along with some basic rationale for many of the selections. The rest of the report provides more detail and support for development of certain major assumptions.

This report is being provided to PAs solely as guidance. Because Aon prepared assumptions strictly for use by the State, NYSIF, and SUNY in valuing their OPEB obligation, the assumptions discussed herein may or may not be appropriate for an individual PA. Each agency should assess its own demographics and health care environment in order to develop the actuarial assumptions most appropriate for its own population, in consultation with its own actuarial and financial advisors. Furthermore, because some agencies provide their retirees or other former employees with other post-employment benefits not through NYSHIP, such as dental and life insurance, each PA will need to determine its own actuarial assumptions appropriate for valuing these benefits.

Highlights of Changes since 2018:

Most key demographic assumptions are remaining the same as those used in the prior valuation. However, the discount rate and medical plan parameters are being updated to stay current with the most recent trends. Notable changes include:

- Discount rate – tied to the yield on high quality municipal general obligation bonds. The rate as of March 31, 2020 is 2.84%.
- Medical plan costs – rates shifted as actual usage by participants changed and members enrolled in different plans
- Health care inflation (Trend) – the trend rates were updated to reflect the most recent information available as outlined in Section 4 of this report.
- HMO rates were updated to reflect updated premium rates.
- Excise Tax- The excise tax was repealed as part of the SECURE Act passed in December 2020.

The 2019 valuation is being used to provide the basis for the accounting reporting under Government Accounting Standards Board Statement 75 (GASB 75).

Section 2 – Actuarial Assumptions

Actuarial assumptions are assumptions as to the occurrence of future events affecting OPEB costs. We performed the April 1, 2019 GASB 75 actuarial valuations for New York State, NYSIF, and SUNY based on the following Actuarial Assumptions:

ACTUARIAL METHOD: Entry Age Normal- Level Percentage of Payroll

VALUATION DATE: The valuation is performed as of April 1, 2019. All the cost information is as of this date.

MEASUREMENT DATE: GASB 75 provides that the expense and disclosure amounts can be computed as of a date no earlier than twelve months and one day before the fiscal year end. This approach is provided to allow employers to determine results in a timely fashion and to be prepared for the fiscal year end.

DISCOUNT RATE: Under GASB 75, the discount rate is determined as a blend of the long-term rate of return on assets set aside through a Trust fund to pay for future OPEB costs and, to the extent the long-term costs are not funded through a Trust, the current yield on high-quality municipal bonds. Since the plan is not pre-funded, New York State has elected to use the value of the Bond Buyer 20-Bond GO index closest to the measurement date. As of the March 31, 2020 measurement date, this rate is 2.84%.

PER-CAPITA PLAN COSTS: GASB 75 indicates that per capita plan costs should be based upon claim costs or age adjusted premiums. State enrollees comprise over 50% of the overall Empire Plan enrollment. Changes in the demographics of State employees and retirees more immediately affect overall Empire Plan costs than other, smaller groups. Therefore, we believe it is more appropriate to establish per capita plan costs for the State's valuation of its liability based on the underlying Empire Plan claim costs of the retiree groups being valued.

For retirees in the Empire PPO Plan, the per capita costs were based on 2018 incurred claims, paid through March 31, 2019, for the hospital, medical, MH/SA, and prescription drug benefit programs for retired participants in the State plan (excluding Participating Agency (PA) and Participating Entity (PE) participants), along with enrollment, split between Medicare eligible and non-Medicare eligible participants. The experience was projected to the period April 1, 2019 – March 31, 2020, and adjusted as shown in the detail in Exhibit 3-1. The age 65 rates are shown below:

		Medicare Eligible	
Coverage	Non- Medicare	Before	Reflects EGWP
Medical	$16,723	$1,304	$1,304
Drug	$3,931	$3,931	$3,021
Total	$20,654	$5,235	$4,325

Certain individuals are enrolled in Medicare Part D Prescription Drug Plans (generally low- income individuals who qualify for various federal additional benefits). NYSHIP does not currently provide drug benefits for these individuals.

Note for PAs: *In the past, many PAs utilized community rated premium rates. Based on ASOP 6, this is no longer appropriate. Plans should value the age-related costs.*

RETIREE CONTRIBUTIONS: The State sets retiree contributions as a percentage of premiums. Premiums are established for active employees and retirees combined. Retirees contribute varying percentages of premiums.

MEDICARE PART B PREMIUM: The State reimburses the Medicare Part B premium of Medicare eligible participants, including additional premiums for higher-income participants, the cost of which is socialized across all plan participants through plan premium rates. For Fiscal Year 2020, we project the average Medicare Part B premium to be $1,653.30 per Medicare eligible individual. This amount is based on the Part B premium rate for 2019 and 2020 for participants with income of less than $85,000. Note that fewer than 5% of enrolled individuals are expected to exceed this threshold.

MEDICARE COORDINATION: Medicare is assumed to remain the primary payor for current and future retirees and spouses who are at least age 65. Medicare can also be the primary payor for individuals under age 65 who have been eligible to receive Social Security Disability benefits for 24 months, which in turn starts after a waiting period of 5 months of disability. For valuation purposes, Medicare is assumed to be the primary payor for current retirees and spouses under age 65 if the census data indicated that Medicare is currently the primary payor.

Certain individuals who are at least age 65 as of the valuation date are not indicated as being on Medicare in the census data. For valuation purposes, we will assume individuals who have attained age 66 as of the valuation date never go onto Medicare. Individuals who are age 65 but not coded as being on Medicare will be assumed to be affected by an administrative lag and thus are assumed to enroll in Medicare immediately.

We reviewed the census data for disability retirees who have been retired long enough to qualify for Medicare. Based on that data, we have assumed that Medicare will ultimately be the primary payor for 40% of future disabled Police and Fire Retirement System (PFRS) participants and 80% of all other future disabled participants, up from 75% assumed last year. We have assumed for valuation purposes that the average period for qualifying for disability retirement is five months, thus we assume that Medicare commences for disability retirees once they have been on disability retirement for 24 months. We have also assumed that Medicare will be the primary payor for the same proportions of those disability retirees who have been retired less than 24 months once they have been on disability retirement for 24 months. For the remaining participants who are currently disabled or who become disabled, we have assumed that Medicare is the primary payor at age 65.

AGE RELATED MORBIDITY: To reflect the differences in covered healthcare expenses due to aging, the increase in the per-capita plan costs for each age is assumed to be as follows:

Age	Medical Costs	Rx
40-44	3.0%	4.8%
45-49	3.7%	4.7%
50-54	4.2%	4.7%
55-59	4.4%	4.6%
60-64	3.7%	4.6%
65-69	2.7%	3.8%
70-74	1.8%	2.5%
75-79	2.2%	0.8%
80-84	2.8%	0.2%
85-89	1.4%	0.1%
90+	0.0%	0.0%

The age-related morbidity factors are applied to the per-capita plan costs for the Empire Plan.

Note for PAs: *In the past, many PAs utilized community rated premium rates. Based on ASOP 6, this is no longer appropriate. Plans should value the age-related costs.*

HEALTH CARE COST TREND: Per-capita retiree plan costs and premiums used to establish retiree contribution rates are assumed to increase each year in accordance with the following schedule:

		Medical			EGWP
From year	To year	<65	65+	Rx	Revenue
2019/20 ==>	2020/21	5.75%	5.00%	8.00%	8.00%
2020/21 ==>	2021/22	5.75%	4.90%	7.00%	7.00%
2021/22 ==>	2022/23	5.50%	4.80%	6.00%	6.00%
2022/23 ==>	2023/24	5.25%	4.80%	5.50%	5.50%
2023/24 ==>	2024/25	5.00%	4.75%	5.25%	5.25%
2024/25 ==>	2025/26	5.00%	4.75%	5.00%	5.00%
2025/26 ==>	2026/27	4.75%	4.50%	4.50%	4.50%
2026/27+		4.50%	4.50%	4.50%	4.50%

The drug trend shown above applies to the drug costs and premiums associated with the Empire Plan. We assume that average fiscal year Medicare Part B premiums will increase at the same underlying health care trends as for Medical benefits to Medicare retirees.

Note for PAs*: The trend rates above may also be appropriate for PAs, however, PAs should reflect their own expectations of future medical plan costs.*

HIGH COST PLAN EXCISE TAX: The health care reform legislation added a new high cost plan excise tax (also known as the "Cadillac tax"). On December 18, 2015 President Obama signed the Consolidated Appropriations Act, 2016 into law. The new law included provisions which impact the excise tax on high-cost group health plans introduced by the Affordable Care Act, as it delayed implementation of the excise tax for two years (i.e., from 2018 to 2020) and allowed the excise tax to be deductible to the taxpayer. On January 22, 2018, Congress passed a short-term spending bill that will fund the government through February 8, 2018. This spending bill further delayed the effective date of the Cadillac tax until 2022. Finally, on December 20, 2019 President Trump signed the 2020 Federal Spending Package which repealed the ACA taxes, including Excise Tax, for all tax years beginning after December 31, 2019.

***Note for PAs**: PAs should consider the* measurement date of their valuation to determine if the excise tax impact should be included or excluded from the liability. See Exhibit 4-1 for the Medical Trend Assumption as Adjusted for Excise Tax Computations

MORTALITY: These assumptions are based on the experience under the New York State & Local Retirement System (ERS & PFRS) and the New York State Teachers' Retirement System (TRS).

In order to reflect future mortality improvement, the mortality is projected generationally using the MP-2018 projection scale[1]. The base tables are shown in Exhibit 2-3, which were published effective 2015 for the Employees' Retirement System (ERS) and the Police and Fire Retirement System (PFRS) and 2015 for TRS. All projections to each payment year start with these tables.

SUNY Campus employees who are not clearly identifiable as PFRS or TRS members are valued using ERS assumptions. This has been updated since the last valuation based on updated retirement system information for active employees.

***Note for PAs**: The Society of Actuaries released Public Sector specific mortality tables in January 2019 which may be used instead. PAs should reflect their own expectations of future mortality.*

WITHDRAWAL, DISABILITY, AND RETIREMENT: Rates of decrement as summarized in Exhibits 2-4 through 2-6. The rates are based on the experience under the New York State & Local Retirement System and the New York State Teachers' Retirement System, except as noted.

[1] New York State Local Retirement System updated the mortality improvement scale from MP-2014 to MP-2018 for this year. New York State Teachers' Retirement System did not make the same update, but for purposes of consistency, the MP-2018 improvement scale will be used for all participants.

SUNY Hospital employee withdrawal rates are based on actual SUNY Hospital experience. Retirement rates for SUNY Hospital employees have been modified to reflect SUNY experience. These assumptions were updated last in the 2016 valuation.

SUNY Campus employees who are not clearly identifiable as ERS, PFRS, or who are TIAA/CREF participants are valued using TRS assumptions. SUNY Hospital employee withdrawal rates are based on actual SUNY Hospital experience. Retirement rates for SUNY Hospital employees have been modified to reflect SUNY experience. These assumptions were updated last in the 2016 valuation.

Note for PAs: *Each individual PA should determine appropriate assumptions to use for its own valuation purposes. For more information on these assumptions, please see the discussion in the Demographic Assumptions Section.*

PROJECTED SALARY INCREASE ASSUMPTION: Based on the experience under the New York State & Local Retirement System and the New York State Teachers' Retirement System, as summarized in Exhibit 2-7.

GENERAL INFLATION: 2.50% assumed long-term inflation.

VESTEE COVERAGE: Vestees pay 100% of premium prior to eligibility for retiree medical benefits. Beginning at age 55, we value all vestees consistent with our valuation assumption for retirees.

For current vestees, we assume all will opt to switch from vestee status to retiree status at age 55.

For future vested terminations, we have assumed that the following percentage of terminated employees (excluding those terminated due to death, disability or retirement) will elect to remain in their current medical plan option as a vestee:

Age	Percent Electing
Under 40	0%
40-43	5%
44	20%
45-46	30%
47-48	40%
49	50%
50-51	80%
52-54	100%

PLAN ELECTIONS: 100% of future retirees who are currently participating in NYSHIP coverage are assumed to participate in the retiree medical program at retirement. 100% of Active participants in the NYSHIP opt-out program are assumed to be covered under NYSHIP in retirement. We assume that all retirees (i.e., current actives and current non-Medicare eligible retirees) will participate in their current medical plan option prior to Medicare eligibility, with the exception of active participants in the NYSHIP opt-out program. Those participants are assumed to elect coverage in the Empire Plan at retirement.

Note for PAs: *The NYSHIP opt-out program may or may not be applicable to certain PAs.*

For current non-Medicare eligible retirees and future retirees, all who currently participate in the Empire Plan are assumed to remain in the Empire Plan upon becoming eligible for Medicare. In all instances,

spouses are assumed to participate in the same medical plan option as the retiree. If the retiree is deceased, the spouse is assumed to participate in the same healthcare plan as the retiree would have been assumed to participate in if he or she were alive.

Note for PAs: *This assumption was based on the experience of the State and SUNY retirees. Plan elections and enrollment may differ for a different population.*

DEPENDENTS: For current retirees, actual data is used regarding dependent coverage. For future retirees, we modeled the percentage of active participants married as well as the age difference between the enrollee and spouse, based on data for older actives and recent retirees. We assume 60% of males and 35% of females will be married at retirement, and all married spouses will be covered under NYSHIP. Female spouses are assumed to be 3 years younger than their husbands, and male spouses are assumed to be 2 years older than their wives.

Note for PAs: *This assumption was based on the experience of the State and SUNY retirees. Each PA should consider the demographics of its own population when developing this assumption.*

ASSETS: We assume the State will not set aside any assets to prefund its retiree medical liabilities.

CENSUS DATA: Census data was provided by New York State Department of Civil Service as of April 1, 2019. Reasonable assumptions were made if any data elements are unavailable or if any data elements are not within a reasonable range.

Note for PAs: *Individual agency census data will be provided by DCS upon request.*

SUBSEQUENT EVENTS: The assumptions in this report were developed in November 2019. We have not revised the assumptions to reflect updated Empire Plan claim experience, Empire Plan premiums, or Medicare Part B premiums, nor any other more recent event except as noted.

EXHIBIT 2-1 Per Capita Gross Plan Costs
4/1/2019-3/31/2020

	PPO claim costs			
Age	Medical	Rx	EGWP Revenue	Total
1	$3,645	$491	n/a	$4,136
2	$3,645	$491	n/a	$4,136
3	$3,645	$491	n/a	$4,136
4	$3,645	$491	n/a	$4,136
5	$3,645	$491	n/a	$4,136
6	$3,645	$491	n/a	$4,136
7	$3,645	$491	n/a	$4,136
8	$3,645	$491	n/a	$4,136
9	$3,645	$491	n/a	$4,136
10	$3,645	$491	n/a	$4,136
11	$3,645	$491	n/a	$4,136
12	$3,645	$491	n/a	$4,136
13	$3,645	$491	n/a	$4,136
14	$3,645	$491	n/a	$4,136
15	$3,645	$491	n/a	$4,136
16	$3,645	$491	n/a	$4,136
17	$3,645	$491	n/a	$4,136
18	$3,645	$491	n/a	$4,136
19	$3,645	$491	n/a	$4,136
20	$3,645	$491	n/a	$4,136
21	$3,755	$514	n/a	$4,269
22	$3,867	$539	n/a	$4,406
23	$3,984	$565	n/a	$4,548
24	$4,103	$592	n/a	$4,695
25	$4,226	$620	n/a	$4,846
26	$4,353	$650	n/a	$5,003
27	$4,483	$681	n/a	$5,165
28	$4,618	$714	n/a	$5,332
29	$4,757	$748	n/a	$5,505
30	$4,899	$784	n/a	$5,683
31	$5,046	$822	n/a	$5,868
32	$5,198	$861	n/a	$6,059
33	$5,354	$902	n/a	$6,256
34	$5,514	$946	n/a	$6,460
35	$5,680	$991	n/a	$6,671
36	$5,850	$1,039	n/a	$6,889
37	$6,025	$1,089	n/a	$7,114
38	$6,206	$1,141	n/a	$7,347
39	$6,392	$1,196	n/a	$7,588
40	$6,584	$1,253	n/a	$7,837

EXHIBIT 2-1 Per Capita Gross Plan Costs
4/1/2019-3/31/2020

	PPO claim costs			
Age	Medical	Rx	EGWP Revenue	Total
41	$6,782	$1,313	n/a	$8,095
42	$6,985	$1,376	n/a	$8,361
43	$7,195	$1,442	n/a	$8,637
44	$7,411	$1,511	n/a	$8,922
45	$7,633	$1,584	n/a	$9,217
46	$7,915	$1,658	n/a	$9,574
47	$8,208	$1,736	n/a	$9,944
48	$8,512	$1,818	n/a	$10,330
49	$8,827	$1,903	n/a	$10,730
50	$9,153	$1,993	n/a	$11,146
51	$9,538	$2,086	n/a	$11,624
52	$9,938	$2,184	n/a	$12,123
53	$10,356	$2,287	n/a	$12,643
54	$10,791	$2,395	n/a	$13,185
55	$11,244	$2,507	n/a	$13,751
56	$11,739	$2,623	n/a	$14,361
57	$12,255	$2,743	n/a	$14,998
58	$12,794	$2,869	n/a	$15,664
59	$13,357	$3,001	n/a	$16,359
60	$13,945	$3,139	n/a	$17,084
61	$14,461	$3,284	n/a	$17,745
62	$14,996	$3,435	n/a	$18,431
63	$15,551	$3,593	n/a	$19,144
64	$16,126	$3,758	n/a	$19,884
65	$1,304	$3,931	($910)	$4,325
66	$1,339	$4,080	($945)	$4,475
67	$1,375	$4,235	($980)	$4,630
68	$1,413	$4,396	($1,018)	$4,791
69	$1,451	$4,563	($1,056)	$4,958
70	$1,490	$4,737	($1,097)	$5,130
71	$1,517	$4,855	($1,124)	$5,248
72	$1,544	$4,977	($1,152)	$5,369
73	$1,572	$5,101	($1,181)	$5,492
74	$1,600	$5,229	($1,210)	$5,618
75	$1,629	$5,359	($1,241)	$5,747
76	$1,665	$5,402	($1,251)	$5,816
77	$1,701	$5,445	($1,261)	$5,886
78	$1,739	$5,489	($1,271)	$5,957
79	$1,777	$5,533	($1,281)	$6,029
80	$1,816	$5,577	($1,291)	$6,102

EXHIBIT 2-1 Per Capita Gross Plan Costs
4/1/2019-3/31/2020

	PPO claim costs			
Age	Medical	Rx	EGWP Revenue	Total
81	$1,867	$5,588	($1,294)	$6,162
82	$1,919	$5,599	($1,296)	$6,222
83	$1,973	$5,611	($1,299)	$6,285
84	$2,028	$5,622	($1,301)	$6,349
85	$2,085	$5,633	($1,304)	$6,414
86	$2,114	$5,639	($1,305)	$6,448
87	$2,144	$5,644	($1,307)	$6,481
88	$2,174	$5,650	($1,308)	$6,516
89	$2,204	$5,656	($1,309)	$6,551
90+	$2,235	$5,661	($1,311)	$6,586

Exhibit 2-2 Premium Used for Establishing Retiree Contributions
4/1/2019 - 3/31/2020

		Non-Medicare Eligible			Medicare Eligible		
Name	Code	NonRx	Rx	Total	NonRx	Rx	Total
Empire PPO	Retiree/SS	$6,597	$2,952	$9,549	$6,597	$2,952	$9,549
	Spouse	$10,808	$3,631	$14,440	$10,808	$3,631	$14,440

EXHIBIT 2-3 PRERETIREMENT MORTALITY RATES
MALES

	ERS		PFRS		TRS
Age	Accidental Death	All other Death	Accidental Death	All other Death	Death*
15	0.001%	0.036%	0.008%	0.033%	
16	0.001%	0.036%	0.008%	0.033%	
17	0.001%	0.036%	0.008%	0.033%	
18	0.001%	0.036%	0.008%	0.033%	
19	0.001%	0.036%	0.008%	0.033%	
20	0.001%	0.036%	0.008%	0.033%	0.0189%
21	0.001%	0.036%	0.008%	0.033%	0.0212%
22	0.001%	0.036%	0.008%	0.033%	0.0233%
23	0.001%	0.036%	0.008%	0.033%	0.0258%
24	0.001%	0.036%	0.008%	0.033%	0.0281%
25	0.001%	0.036%	0.008%	0.033%	0.0286%
26	0.001%	0.036%	0.008%	0.033%	0.0286%
27	0.001%	0.036%	0.008%	0.033%	0.0287%
28	0.001%	0.036%	0.008%	0.033%	0.0288%
29	0.001%	0.036%	0.008%	0.033%	0.0290%
30	0.001%	0.036%	0.008%	0.033%	0.0293%
31	0.001%	0.037%	0.008%	0.034%	0.0298%
32	0.001%	0.039%	0.008%	0.036%	0.0305%
33	0.001%	0.042%	0.008%	0.036%	0.0314%
34	0.001%	0.048%	0.008%	0.036%	0.0326%
35	0.001%	0.053%	0.008%	0.036%	0.0342%
36	0.001%	0.059%	0.008%	0.036%	0.0361%
37	0.001%	0.063%	0.008%	0.036%	0.0384%
38	0.001%	0.065%	0.008%	0.036%	0.0410%
39	0.001%	0.067%	0.008%	0.036%	0.0441%
40	0.001%	0.069%	0.008%	0.036%	0.0474%
41	0.001%	0.072%	0.008%	0.036%	0.0510%
42	0.001%	0.077%	0.008%	0.039%	0.0548%
43	0.001%	0.083%	0.008%	0.043%	0.0586%
44	0.001%	0.090%	0.008%	0.050%	0.0624%
45	0.001%	0.098%	0.008%	0.059%	0.0661%
46	0.001%	0.107%	0.008%	0.067%	0.0697%
47	0.001%	0.116%	0.008%	0.076%	0.0732%
48	0.001%	0.126%	0.008%	0.083%	0.0765%
49	0.001%	0.135%	0.008%	0.086%	0.0800%
50	0.001%	0.145%	0.008%	0.088%	0.0836%
51	0.001%	0.153%	0.006%	0.092%	0.0876%
52	0.001%	0.161%	0.006%	0.101%	0.0923%
53	0.001%	0.169%	0.006%	0.117%	0.0979%
54	0.001%	0.175%	0.006%	0.143%	0.1050%
55	0.001%	0.182%	0.006%	0.179%	0.1139%
56	0.001%	0.190%	0.006%	0.222%	0.1251%
57	0.001%	0.199%	0.006%	0.272%	0.1391%
58	0.001%	0.210%	0.006%	0.327%	0.1565%
59	0.001%	0.223%	0.006%	0.395%	0.1779%
60	0.001%	0.238%	0.006%	0.489%	0.2039%
61	0.001%	0.256%	0.006%	0.499%	0.2349%
62	0.001%	0.276%	0.006%	0.542%	0.2716%
63	0.001%	0.297%	0.006%	0.590%	0.3143%
64	0.001%	0.318%	0.006%	0.648%	0.3636%
65	0.001%	0.343%	0.006%	0.719%	0.4197%
66	0.001%	0.371%	0.006%	0.807%	0.4828%
67	0.001%	0.401%	0.006%	0.908%	0.5370%
68	0.001%	0.433%	0.006%	1.017%	0.6058%
69	0.001%	0.467%	0.006%	1.130%	0.6834%
70	0.000%	0.000%	0.006%	1.130%	0.7709%
71	0.000%	0.000%	0.006%	1.130%	0.8696%
72	0.000%	0.000%	0.006%	1.130%	0.9810%
73	0.000%	0.000%	0.006%	1.130%	1.1066%
74	0.000%	0.000%	0.006%	1.130%	1.2483%
75	0.000%	0.000%	0.006%	1.130%	1.4082%

*Assumed all deaths are non-accidental

EXHIBIT 2-3 PRERETIREMENT MORTALITY RATES

FEMALES

	ERS		PFRS		TRS
Age	Accidental Death	All other Death	Accidental Death	All other Death	Death*
15	0.001%	0.036%	0.008%	0.033%	
16	0.001%	0.036%	0.008%	0.033%	
17	0.001%	0.036%	0.008%	0.033%	
18	0.001%	0.036%	0.008%	0.033%	
19	0.001%	0.036%	0.008%	0.033%	
20	0.001%	0.036%	0.008%	0.033%	0.0108%
21	0.001%	0.036%	0.008%	0.033%	0.0112%
22	0.001%	0.036%	0.008%	0.033%	0.0112%
23	0.001%	0.036%	0.008%	0.033%	0.0112%
24	0.001%	0.036%	0.008%	0.033%	0.0112%
25	0.001%	0.036%	0.008%	0.033%	0.0112%
26	0.001%	0.036%	0.008%	0.033%	0.0112%
27	0.001%	0.036%	0.008%	0.033%	0.0112%
28	0.001%	0.036%	0.008%	0.033%	0.0119%
29	0.001%	0.036%	0.008%	0.033%	0.0124%
30	0.001%	0.036%	0.008%	0.033%	0.0129%
31	0.001%	0.037%	0.008%	0.034%	0.0132%
32	0.001%	0.039%	0.008%	0.036%	0.0135%
33	0.001%	0.042%	0.008%	0.036%	0.0137%
34	0.001%	0.048%	0.008%	0.036%	0.0140%
35	0.001%	0.053%	0.008%	0.036%	0.0144%
36	0.001%	0.059%	0.008%	0.036%	0.0151%
37	0.001%	0.063%	0.008%	0.036%	0.0160%
38	0.001%	0.065%	0.008%	0.036%	0.0174%
39	0.001%	0.067%	0.008%	0.036%	0.0191%
40	0.001%	0.069%	0.008%	0.036%	0.0213%
41	0.001%	0.072%	0.008%	0.036%	0.0239%
42	0.001%	0.077%	0.008%	0.039%	0.0269%
43	0.001%	0.083%	0.008%	0.043%	0.0302%
44	0.001%	0.090%	0.008%	0.050%	0.0338%
45	0.001%	0.098%	0.008%	0.059%	0.0374%
46	0.001%	0.107%	0.008%	0.067%	0.0412%
47	0.001%	0.116%	0.008%	0.076%	0.0450%
48	0.001%	0.126%	0.008%	0.083%	0.0487%
49	0.001%	0.135%	0.008%	0.086%	0.0523%
50	0.001%	0.145%	0.008%	0.088%	0.0559%
51	0.001%	0.153%	0.006%	0.092%	0.0595%
52	0.001%	0.161%	0.006%	0.101%	0.0632%
53	0.001%	0.169%	0.006%	0.117%	0.0671%
54	0.001%	0.175%	0.006%	0.143%	0.0711%
55	0.001%	0.182%	0.006%	0.179%	0.0755%
56	0.001%	0.190%	0.006%	0.222%	0.0802%
57	0.001%	0.199%	0.006%	0.272%	0.0854%
58	0.001%	0.210%	0.006%	0.327%	0.0911%
59	0.001%	0.223%	0.006%	0.395%	0.0973%
60	0.001%	0.238%	0.006%	0.489%	0.1042%
61	0.001%	0.256%	0.006%	0.499%	0.1117%
62	0.001%	0.276%	0.006%	0.542%	0.1199%
63	0.001%	0.297%	0.006%	0.590%	0.1291%
64	0.001%	0.318%	0.006%	0.648%	0.1393%
65	0.001%	0.343%	0.006%	0.719%	0.1509%
66	0.001%	0.371%	0.006%	0.807%	0.1642%
67	0.001%	0.401%	0.006%	0.908%	0.1797%
68	0.001%	0.433%	0.006%	1.017%	0.1981%
69	0.001%	0.467%	0.006%	1.130%	0.2350%
70	0.000%	0.000%	0.006%	1.130%	0.2550%
71	0.000%	0.000%	0.006%	1.130%	0.2864%
72	0.000%	0.000%	0.006%	1.130%	0.3217%
73	0.000%	0.000%	0.006%	1.130%	0.3613%
74	0.000%	0.000%	0.006%	1.130%	0.4058%
75	0.000%	0.000%	0.006%	1.130%	0.4558%

*Assumed all deaths are non-accidental

EXHIBIT 2-3 POSTRETIREMENT MORTALITY RATES
BASE TABLES

Age	ERS*				PFRS*	
	Healthy		Disabled			
	Males	Females	Males	Females	Healthy	Disabled
15	0.0331%	0.0331%	0.3305%	0.3311%	0.0305%	0.1221%
16	0.0331%	0.0331%	0.3305%	0.3311%	0.0305%	0.1221%
17	0.0331%	0.0331%	0.3305%	0.3311%	0.0305%	0.1221%
18	0.0331%	0.0331%	0.3305%	0.3311%	0.0305%	0.1221%
19	0.0331%	0.0331%	0.3305%	0.3311%	0.0305%	0.1221%
20	0.0331%	0.0331%	0.3305%	0.3311%	0.0305%	0.1221%
21	0.0333%	0.0334%	0.3324%	0.3335%	0.0307%	0.1228%
22	0.0334%	0.0336%	0.3341%	0.3357%	0.0308%	0.1234%
23	0.0336%	0.0338%	0.3357%	0.3378%	0.0310%	0.1240%
24	0.0337%	0.0340%	0.3370%	0.3397%	0.0311%	0.1245%
25	0.0339%	0.0342%	0.3382%	0.3415%	0.0312%	0.1249%
26	0.3400%	0.0345%	0.3395%	0.3447%	0.0313%	0.1254%
27	0.0342%	0.0349%	0.3411%	0.3487%	0.0315%	0.1260%
28	0.0344%	0.0353%	0.3432%	0.3530%	0.0317%	0.1268%
29	0.0346%	0.0357%	0.3452%	0.3571%	0.0319%	0.1275%
30	0.0347%	0.0360%	0.3468%	0.3599%	0.0320%	0.1281%
31	0.0353%	0.0367%	0.3536%	0.3674%	0.0321%	0.1285%
32	0.0374%	0.0388%	0.3742%	0.3885%	0.0331%	0.1322%
33	0.0041%	0.0425%	0.4105%	0.4252%	0.0349%	0.1397%
34	0.0461%	0.0474%	0.4610%	0.4740%	0.0350%	0.1400%
35	0.0516%	0.0527%	0.5160%	0.5268%	0.0350%	0.1400%
36	0.0566%	0.0574%	0.5775%	0.6493%	0.0349%	0.1397%
37	0.0604%	0.0609%	0.6371%	0.7687%	0.0318%	0.1391%
38	0.0627%	0.0630%	0.6951%	0.8854%	0.0345%	0.1382%
39	0.0640%	0.0620%	0.7513%	1.0001%	0.0343%	0.1371%
40	0.0653%	0.0654%	0.8066%	1.1135%	0.0340%	0.1361%
41	0.0677%	0.0678%	0.8313%	1.2492%	0.0338%	0.1354%
42	0.0715%	0.0717%	0.9202%	1.4185%	0.0337%	0.1348%
43	0.0769%	0.0774%	1.0004%	1.5438%	0.0362%	0.1450%
44	0.0834%	0.0842%	1.0731%	1.6430%	0.0397%	0.1586%
45	0.0907%	0.0919%	1.2040%	1.7878%	0.0466%	0.1864%
46	0.0986%	0.1004%	1.3228%	1.9295%	0.0771%	0.2068%
47	0.1071%	0.1094%	1.4548%	2.0830%	0.1076%	0.2275%
48	0.1161%	0.1193%	1.5936%	2.2372%	0.1384%	0.2484%
49	0.1254%	0.1296%	1.7420%	2.3755%	0.1694%	0.2695%
50	0.1346%	0.1397%	1.8645%	2.4882%	0.2007%	0.2911%
51	0.2058%	2.0680%	1.9939%	2.5897%	0.2055%	0.2971%
52	0.2776%	0.2747%	2.1284%	2.6748%	0.2148%	0.3100%
53	0.3515%	0.3426%	2.2741%	2.7365%	0.2296%	0.3303%
54	0.4270%	0.4104%	2.4226%	2.7776%	0.2499%	0.3569%
55	0.5036%	0.4776%	2.5497%	2.7968%	0.2756%	0.3889%
56	0.5477%	0.5143%	2.6583%	2.7845%	0.3066%	0.4256%
57	0.5889%	0.5512%	2.7587%	2.7540%	0.3427%	0.4662%
58	0.6267%	0.5882%	2.8418%	2.7106%	0.3836%	0.5103%
59	0.6610%	0.6258%	2.9190%	2.6647%	0.4291%	0.5579%
60	0.6921%	0.6645%	2.9974%	2.6127%	0.4787%	0.6090%
61	0.7212%	0.7050%	3.0752%	2.5670%	0.5324%	0.6643%
62	0.7502%	0.7486%	3.1503%	2.5246%	0.5897%	0.7249%
63	0.7816%	0.7965%	3.2265%	2.4973%	0.6510%	0.7920%
64	0.8187%	0.8493%	3.3030%	2.4864%	0.7174%	0.8675%
65	0.8658%	0.9085%	3.3905%	2.4928%	0.7909%	0.9537%
66	0.9260%	0.9750%	3.4775%	2.5188%	0.8733%	1.0534%
67	1.0034%	1.0505%	3.5862%	2.5681%	0.9673%	1.1701%
68	0.0110%	1.1356%	3.7039%	2.6400%	1.0749%	1.3073%
69	1.2201%	1.2327%	3.8327%	2.7366%	1.1980%	1.4685%
70	1.3631%	1.3426%	3.9633%	2.8598%	1.3389%	1.6575%
71	1.5304%	1.4682%	4.1292%	3.0106%	1.5002%	1.8777%
72	1.7227%	1.6119%	4.2901%	3.1924%	1.6852%	2.1326%
73	1.9404%	1.7760%	4.4839%	3.4122%	1.8980%	2.4248%
74	2.1846%	1.9635%	4.7064%	3.6659%	2.1439%	2.7575%
75	2.4567%	2.1769%	4.9841%	3.9514%	2.4284%	3.1330%

EXHIBIT 2-3 POSTRETIREMENT MORTALITY RATES
BASE TABLES

Age	ERS*				PFRS*	
	Healthy		Disabled			
	Males	Females	Males	Females	Healthy	Disabled
76	2.7602%	2.4197%	5.3277%	4.2849%	2.7579%	3.5541%
77	3.0998%	2.6961%	5.7124%	4.6665%	3.1396%	4.0242%
78	3.4805%	3.0095%	6.1621%	5.0826%	3.5812%	4.5451%
79	3.9111%	3.3647%	6.6938%	5.5549%	4.0934%	5.1217%
80	4.3999%	3.7662%	7.3020%	6.0952%	4.6887%	5.7566%
81	4.9564%	4.2183%	7.9750%	6.6731%	5.3726%	6.4536%
82	5.5894%	4.7263%	8.7512%	7.3143%	6.9767%	7.2151%
83	6.3095%	5.2960%	9.6250%	8.0202%	7.0655%	8.0457%
84	7.1243%	5.9308%	10.6067%	8.7900%	8.0925%	8.9469%
85	8.0425%	6.6371%	11.7086%	9.6310%	9.2516%	9.9219%
86	9.0707%	7.4190%	12.8992%	10.5424%	10.5503%	10.9731%
87	10.2131%	8.2806%	14.2045%	11.5489%	11.9938%	12.1011%
88	11.4750%	9.2282%	15.6553%	12.6556%	13.5891%	13.3088%
89	12.8614%	10.2657%	17.3219%	13.8609%	15.3431%	14.5996%
90	14.3730%	11.3895%	19.0518%	15.0870%	17.2570%	15.9722%
91	16.0158%	12.6011%	20.7882%	16.3519%	19.3388%	17.4321%
92	17.7946%	13.9012%	22.5917%	17.7138%	21.5942%	18.9824%
93	19.7128%	15.2916%	24.8256%	19.2931%	24.0275%	20.6256%
94	21.7727%	16.7700%	26.9264%	20.7091%	26.6413%	22.3622%
95	23.9776%	18.3370%	29.1577%	22.0705%	29.4396%	24.1942%
96	26.2486%	20.7467%	31.2819%	24.3758%	31.5559%	26.4591%
97	28.6010%	23.2480%	33.4811%	26.7685%	33.7467%	28.8050%
98	30.9594%	25.7644%	35.6845%	29.1754%	35.9416%	31.1570%
99	33.3377%	28.2941%	37.9080%	31.5947%	38.1568%	33.5288%
100	35.7231%	30.8415%	40.1372%	34.0311%	40.3774%	35.9077%
101	38.2685%	33.5587%	42.5154%	36.6290%	42.7465%	38.4460%
102	41.0416%	36.5254%	45.1045%	39.4642%	45.3256%	41.2116%
103	44.1890%	39.8932%	48.0400%	42.6801%	48.2496%	44.3501%
104	47.8689%	43.8353%	51.4705%	46.4433%	51.6665%	48.0195%
105	52.2186%	48.4940%	55.5212%	50.8864%	55.7010%	52.3567%
106	57.5299%	54.2034%	60.4620%	56.3289%	60.6217%	57.6525%
107	64.1286%	61.2796%	66.5983%	63.0705%	66.7328%	64.2318%
108	72.5904%	70.3711%	74.4609%	71.7282%	74.5628%	72.6687%
109	83.7452%	82.3560%	84.8199%	83.1367%	84.8784%	83.7901%
110	100.0000%	100.0000%	100.0000%	100.0000%	100.0000%	100.0000%

*Apply scale MP 2018 on a generational basis with base year of 2015

EXHIBIT 2-3 POSTRETIREMENT MORTALITY RATES
BASE TABLE

Age	Healthy		Disabled	
	Male	Female	Male	Female
1	0.041%	0.036%		
2	0.028%	0.024%		
3	0.023%	0.018%		
4	0.018%	0.013%		
5	0.016%	0.012%		
6	0.014%	0.011%		
7	0.012%	0.010%		
8	0.011%	0.009%		
9	0.009%	0.009%		
10	0.007%	0.008%		
11	0.008%	0.008%		
12	0.011%	0.010%		
13	0.015%	0.011%		
14	0.018%	0.012%		
15	0.022%	0.013%		
16	0.025%	0.014%		
17	0.029%	0.015%		
18	0.026%	0.014%		
19	0.029%	0.015%		
20	0.032%	0.015%		
21	0.035%	0.015%		
22	0.038%	0.015%		
23	0.040%	0.015%		
24	0.040%	0.016%		
25	0.038%	0.016%		
26	0.036%	0.016%		
27	0.035%	0.017%		
28	0.035%	0.018%		
29	0.035%	0.019%		
30	0.035%	0.020%	18.001%	10.649%
31	0.036%	0.021%	18.001%	10.649%
32	0.037%	0.022%	18.001%	10.649%
33	0.038%	0.024%	18.001%	10.328%
34	0.040%	0.025%	17.327%	10.008%
35	0.041%	0.026%	16.652%	9.691%
36	0.042%	0.028%	15.977%	9.376%
37	0.043%	0.029%	15.302%	9.068%
38	0.045%	0.031%	14.628%	8.767%
39	0.046%	0.033%	13.958%	8.475%
40	0.049%	0.036%	13.294%	8.193%
41	0.052%	0.040%	12.640%	7.920%
42	0.057%	0.044%	12.001%	7.655%
43	0.062%	0.048%	11.380%	7.397%
44	0.068%	0.054%	10.780%	7.143%
45	0.076%	0.060%	10.203%	6.894%
46	0.085%	0.067%	9.650%	6.648%
47	0.095%	0.075%	9.124%	6.406%
48	0.106%	0.083%	8.623%	6.168%
49	0.118%	0.092%	8.148%	5.931%
50	0.132%	0.101%	7.696%	5.695%
51	0.146%	0.110%	7.264%	5.454%
52	0.162%	0.120%	6.849%	5.205%
53	0.195%	0.142%	6.450%	4.942%
54	0.231%	0.165%	6.064%	4.666%
55	0.252%	0.181%	5.694%	4.381%

EXHIBIT 2-3 POSTRETIREMENT MORTALITY RATES
BASE TABLES

	TRS			
	Healthy		Disabled	
Age	Male	Female	Male	Female
56	0.275%	0.198%	5.344%	4.095%
57	0.300%	0.217%	5.022%	3.817%
58	0.328%	0.238%	4.731%	3.558%
59	0.358%	0.261%	4.476%	3.325%
60	0.391%	0.287%	4.260%	3.126%
61	0.426%	0.305%	4.083%	2.967%
62	0.465%	0.330%	3.946%	2.852%
63	0.505%	0.360%	3.846%	2.785%
64	0.556%	0.398%	3.783%	2.766%
65	0.620%	0.442%	3.755%	2.796%
66	0.698%	0.493%	3.762%	2.870%
67	0.789%	0.552%	3.804%	2.985%
68	0.894%	0.620%	3.880%	3.135%
69	1.015%	0.698%	3.989%	3.314%
70	1.152%	0.786%	4.133%	3.520%
71	1.307%	0.887%	4.314%	3.751%
72	1.482%	1.003%	4.534%	4.008%
73	1.679%	1.135%	4.793%	4.294%
74	1.901%	1.286%	5.089%	4.611%
75	2.152%	1.460%	5.422%	4.963%
76	2.438%	1.660%	5.788%	5.356%
77	2.763%	1.891%	6.187%	5.793%
78	3.135%	2.157%	6.616%	6.279%
79	3.559%	2.463%	7.074%	6.816%
80	4.045%	2.816%	7.560%	7.400%
81	4.600%	3.223%	8.073%	8.029%
82	5.234%	3.690%	8.613%	8.696%
83	5.959%	4.227%	8.793%	9.397%
84	6.784%	4.841%	10.004%	10.132%
85	7.725%	5.542%	11.374%	10.902%
86	8.793%	6.340%	12.921%	11.707%
87	10.004%	7.247%	14.171%	12.204%
88	11.374%	8.272%	15.813%	13.852%
89	12.921%	9.431%	17.529%	15.700%
90	14.171%	10.736%	19.313%	17.770%
91	15.813%	12.204%	21.167%	19.148%
92	17.529%	13.852%	23.098%	21.024%
93	19.313%	15.700%	25.111%	23.000%
94	21.167%	17.770%	27.211%	25.072%
95	23.098%	19.148%	29.385%	27.086%
96	25.111%	21.024%	31.399%	29.104%
97	27.211%	23.000%	33.437%	31.144%
98	29.385%	25.072%	35.460%	33.190%
99	31.399%	27.086%	37.452%	35.223%
100	33.437%	29.104%	39.398%	37.227%
101	35.460%	31.144%	41.283%	39.186%
102	37.452%	33.190%	43.095%	41.085%
103	39.398%	35.223%	44.823%	42.911%
104	41.283%	37.227%	46.459%	44.654%
105	43.095%	39.186%	47.999%	46.306%
106	44.823%	41.085%	49.438%	47.860%
107	46.459%	42.911%	50.000%	47.860%
108	47.999%	44.654%	50.000%	47.860%
109	49.438%	46.306%	50.000%	47.860%
110+	50.000%	47.860%	50.000%	47.860%

EXHIBIT 2-4 WITHDRAWAL RATES

Age	ERS Years of Service < 2	2 - 2.99	3 - 3.99	4 - 4.99	5 - 9.99	> = 10
15	25.066%	12.991%	7.721%	6.550%	4.365%	1.510%
16	25.066%	12.991%	7.721%	6.550%	4.365%	1.510%
17	25.066%	12.991%	7.721%	6.550%	4.365%	1.510%
18	25.066%	12.991%	7.721%	6.550%	4.365%	1.510%
19	25.066%	12.991%	7.721%	6.550%	4.365%	1.510%
20	25.050%	12.991%	7.721%	6.550%	4.365%	1.510%
21	24.783%	12.991%	7.721%	6.550%	4.365%	1.510%
22	24.260%	12.991%	7.721%	6.550%	4.365%	1.510%
23	23.454%	13.701%	9.013%	6.943%	4.456%	1.510%
24	22.346%	14.193%	9.850%	7.243%	4.510%	1.510%
25	20.978%	0.145%	10.279%	7.437%	4.528%	1.510%
26	19.494%	14.689%	10.441%	7.543%	4.516%	1.510%
27	18.113%	14.683%	10.472%	7.601%	4.481%	1.510%
28	17.029%	14.473%	10.452%	7.643%	4.434%	1.510%
29	16.305%	14.055%	10.406%	7.684%	4.386%	1.523%
30	15.870%	13.472%	10.331%	7.712%	4.347%	1.558%
31	15.602%	12.814%	10.215%	7.702%	4.325%	1.618%
32	15.404%	12.190%	10.052%	7.623%	4.328%	1.700%
33	15.239%	11.689%	9.838%	7.454%	4.355%	1.793%
34	15.102%	11.330%	9.573%	7.197%	4.398%	1.877%
35	14.988%	11.073%	9.256%	6.877%	4.439%	1.934%
36	14.874%	10.849%	8.888%	6.536%	4.454%	1.950%
37	14.723%	10.603%	8.481%	6.223%	4.421%	1.921%
38	14.516%	10.318%	8.058%	5.972%	4.332%	1.856%
39	14.261%	10.012%	7.649%	5.793%	4.200%	1.773%
40	13.991%	9.714%	7.283%	5.674%	4.048%	1.692%
41	13.741%	9.446%	6.981%	5.594%	3.905%	1.630%
42	13.530%	9.211%	6.753%	5.535%	3.790%	1.594%
43	13.363%	9.004%	6.595%	5.488%	3.709%	1.582%
44	13.237%	8.819%	6.494%	5.449%	3.655%	1.583%
45	13.150%	8.652%	6.433%	5.413%	3.614%	1.582%
46	13.108%	8.506%	6.395%	5.375%	3.571%	1.561%
47	13.123%	8.382%	6.365%	5.325%	3.515%	1.515%
48	13.199%	8.279%	6.339%	5.260%	3.443%	1.448%
49	13.328%	8.198%	6.316%	5.180%	3.362%	1.374%
50	13.485%	8.135%	6.301%	5.101%	3.283%	1.308%
51	13.633%	8.089%	6.301%	5.038%	3.219%	1.260%
52	13.733%	8.060%	6.320%	5.010%	3.187%	1.229%
53	13.762%	8.048%	6.362%	5.026%	3.199%	1.211%
54	13.721%	8.056%	6.427%	5.086%	3.253%	1.202%
55	13.641%	8.095%	6.520%	5.181%	3.320%	1.198%
56	13.571%	8.188%	6.645%	5.298%	3.337%	1.196%
57	13.573%	8.364%	6.810%	5.424%	3.247%	1.196%
58	13.702%	8.653%	7.024%	5.553%	3.033%	1.196%
59	13.993%	9.081%	7.293%	5.684%	2.720%	1.196%
60	14.448%	9.655%	7.617%	5.821%	2.363%	1.196%
61	15.016%	10.356%	7.985%	5.962%	2.045%	1.196%
62	15.582%	11.118%	8.365%	6.096%	1.874%	1.196%
63	15.971%	11.118%	8.365%	6.096%	1.874%	1.196%
64	15.971%	11.118%	8.365%	6.096%	1.874%	1.196%
65	15.971%	11.118%	8.365%	6.096%	1.874%	1.196%
66	15.971%	11.118%	8.365%	6.096%	1.874%	1.196%
67	15.971%	11.118%	8.365%	6.096%	1.874%	1.196%
68	15.971%	11.118%	8.365%	6.096%	1.874%	1.196%
69	15.971%	11.118%	8.365%	6.096%	1.874%	1.196%
70	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%

Note for Tiers 5 and up, for Service=5-9.99, multiply the above rate by 0.6. For Service=10, multiply by 2

EXHIBIT 2-4 WITHDRAWAL RATES

Age	Upstate (Syracuse) Medical Center Years of Service					
	< 2	2 - 2.99	3 - 3.99	4 - 4.99	5 - 9.99	> = 10
15	21.00%	22.00%	26.00%	24.00%	16.00%	7.00%
16	21.00%	22.00%	26.00%	24.00%	16.00%	7.00%
17	21.00%	22.00%	26.00%	24.00%	16.00%	7.00%
18	21.00%	22.00%	26.00%	24.00%	16.00%	7.00%
19	21.00%	22.00%	26.00%	24.00%	16.00%	7.00%
20	21.00%	22.00%	26.00%	24.00%	16.00%	7.00%
21	20.00%	22.00%	26.00%	24.00%	16.00%	7.00%
22	20.00%	22.00%	26.00%	24.00%	16.00%	7.00%
23	20.00%	24.00%	40.00%	24.00%	16.00%	7.00%
24	20.00%	24.00%	40.00%	20.00%	16.00%	7.00%
25	20.00%	24.00%	40.00%	20.00%	16.00%	7.00%
26	20.00%	24.00%	40.00%	20.00%	16.00%	7.00%
27	16.00%	24.00%	40.00%	19.60%	15.00%	7.00%
28	16.00%	24.00%	40.00%	12.60%	15.00%	7.00%
29	16.00%	24.00%	40.00%	40.00%	15.00%	7.00%
30	16.00%	15.70%	40.00%	59.20%	20.00%	7.00%
31	16.00%	15.70%	40.00%	45.20%	20.00%	7.00%
32	16.00%	15.70%	40.00%	51.50%	20.00%	6.90%
33	16.00%	15.70%	40.00%	45.20%	20.00%	6.70%
34	16.50%	15.70%	40.00%	32.50%	20.00%	6.50%
35	16.50%	15.70%	40.00%	32.50%	18.00%	6.30%
36	16.50%	15.70%	40.00%	22.50%	18.00%	6.10%
37	16.50%	15.70%	40.00%	24.40%	18.00%	5.80%
38	16.50%	15.70%	40.00%	46.50%	18.00%	5.40%
39	16.50%	15.70%	40.00%	45.20%	9.00%	5.00%
40	16.50%	15.70%	40.00%	38.80%	9.00%	4.60%
41	16.50%	15.70%	40.00%	13.40%	9.00%	4.20%
42	16.50%	15.70%	27.50%	10.60%	9.00%	4.00%
43	16.50%	12.50%	35.00%	10.60%	9.00%	4.00%
44	16.50%	12.50%	24.00%	15.00%	9.00%	4.00%
45	16.50%	12.50%	24.00%	25.00%	9.00%	6.00%
46	16.50%	12.50%	24.00%	25.00%	9.00%	6.00%
47	16.50%	12.50%	24.00%	25.00%	9.00%	6.00%
48	16.50%	8.00%	24.00%	19.40%	9.00%	6.00%
49	16.50%	8.00%	15.50%	19.40%	9.00%	6.00%
50	16.50%	8.00%	15.50%	19.40%	9.00%	6.00%
51	16.50%	8.00%	15.50%	19.40%	5.00%	6.00%
52	10.00%	8.00%	15.50%	19.40%	5.00%	6.00%
53	10.00%	8.00%	15.50%	14.70%	5.00%	6.00%
54	10.00%	8.00%	15.50%	5.70%	5.00%	6.00%
55	10.00%	8.00%	15.50%	30.00%	5.00%	0.00%
56	10.00%	8.00%	15.50%	30.00%	5.00%	0.00%
57	10.00%	8.00%	17.00%	12.50%	3.50%	0.00%
58	8.00%	8.00%	17.00%	12.50%	3.50%	0.00%
59	8.00%	8.00%	17.00%	12.50%	3.50%	0.00%
60	8.00%	11.00%	17.00%	12.50%	3.50%	0.00%
61	8.00%	11.00%	17.00%	12.50%	3.50%	0.00%
62	8.00%	11.00%	17.00%	12.50%	3.50%	0.00%
63	3.90%	11.00%	17.00%	12.50%	3.50%	0.00%
64	3.90%	11.00%	17.00%	12.50%	3.50%	0.00%
65	3.90%	11.00%	4.50%	3.50%	3.50%	0.00%
66	3.90%	11.00%	4.50%	3.50%	3.50%	0.00%
67	3.90%	11.00%	4.50%	3.50%	3.50%	0.00%
68	3.90%	11.00%	4.50%	3.50%	3.50%	0.00%
69	3.90%	11.00%	4.50%	3.50%	3.50%	0.00%
70	0.00%	0.00%	4.50%	0.00%	0.00%	0.00%

EXHIBIT 2-4 WITHDRAWAL RATES

	Brooklyn Hospital & Stony Brook Hospital Years of Service					
Age	< 2	2 - 2.99	3 - 3.99	4 - 4.99	5 - 9.99	> = 10
15	11.00%	28.00%	15.00%	16.00%	15.00%	7.00%
16	11.00%	28.00%	15.00%	16.00%	15.00%	7.00%
17	11.00%	28.00%	15.00%	16.00%	15.00%	7.00%
18	11.00%	28.00%	15.00%	16.00%	15.00%	7.00%
19	11.00%	28.00%	15.00%	16.00%	15.00%	7.00%
20	11.00%	28.00%	15.00%	16.00%	15.00%	7.00%
21	10.00%	30.00%	15.00%	16.00%	15.00%	7.00%
22	10.00%	30.00%	15.00%	16.00%	15.00%	7.00%
23	10.00%	30.00%	15.00%	16.00%	15.00%	7.00%
24	10.00%	30.00%	15.00%	16.00%	15.00%	7.00%
25	13.00%	30.00%	15.00%	16.00%	15.00%	7.00%
26	13.00%	40.00%	15.00%	22.00%	15.00%	7.00%
27	13.00%	40.00%	44.00%	40.00%	11.00%	7.00%
28	13.00%	40.00%	44.00%	40.00%	10.00%	7.00%
29	13.00%	38.00%	44.00%	40.00%	10.00%	7.00%
30	18.00%	40.00%	44.00%	40.00%	11.00%	6.00%
31	18.00%	50.00%	50.00%	34.00%	12.00%	5.80%
32	18.00%	50.00%	50.00%	34.00%	18.00%	5.60%
33	13.00%	36.00%	44.00%	34.00%	18.00%	5.40%
34	13.00%	36.00%	44.00%	34.00%	17.00%	4.80%
35	13.00%	36.00%	44.00%	34.00%	18.00%	4.20%
36	13.00%	26.00%	44.00%	34.00%	18.00%	3.60%
37	13.00%	26.00%	30.00%	30.00%	18.00%	3.00%
38	13.00%	24.00%	28.00%	29.00%	18.00%	3.00%
39	8.00%	24.00%	28.00%	29.00%	10.00%	3.00%
40	8.00%	24.00%	28.00%	18.00%	10.00%	3.00%
41	8.00%	24.00%	28.00%	18.00%	10.00%	3.00%
42	7.00%	24.00%	28.00%	17.00%	10.00%	3.00%
43	7.00%	24.00%	25.00%	17.00%	10.00%	3.00%
44	7.00%	24.00%	25.00%	17.00%	10.00%	3.00%
45	5.50%	20.00%	25.00%	17.00%	10.00%	3.00%
46	5.50%	20.00%	12.50%	17.00%	10.00%	3.00%
47	5.50%	20.00%	12.50%	16.00%	10.00%	3.00%
48	5.50%	20.00%	12.50%	16.00%	8.00%	3.00%
49	4.00%	18.00%	9.80%	16.00%	8.00%	3.00%
50	4.00%	15.00%	9.80%	16.00%	8.00%	3.00%
51	4.00%	14.00%	9.80%	15.00%	8.00%	3.00%
52	4.00%	14.00%	9.80%	15.00%	8.00%	3.00%
53	3.00%	14.00%	8.00%	15.00%	8.00%	3.00%
54	3.00%	16.00%	8.00%	5.70%	8.00%	3.00%
55	3.00%	16.00%	8.00%	13.40%	8.00%	0.00%
56	2.00%	20.00%	8.00%	5.00%	7.00%	0.00%
57	2.00%	20.00%	8.00%	5.00%	7.00%	0.00%
58	2.00%	20.00%	8.00%	5.00%	7.00%	0.00%
59	2.00%	20.00%	8.00%	5.00%	5.00%	0.00%
60	2.00%	20.00%	8.00%	5.00%	5.00%	0.00%
61	2.00%	4.00%	8.00%	5.00%	5.00%	0.00%
62	2.00%	4.00%	8.00%	5.00%	5.00%	0.00%
63	1.75%	4.00%	8.00%	5.00%	5.00%	0.00%
64	1.75%	4.00%	8.00%	5.00%	5.00%	0.00%
65	1.75%	4.00%	8.00%	5.00%	5.00%	0.00%
66	1.75%	4.00%	8.00%	5.00%	5.00%	0.00%
67	1.75%	4.00%	8.00%	5.00%	5.00%	0.00%
68	1.75%	4.00%	8.00%	5.00%	5.00%	0.00%
69	1.75%	4.00%	8.00%	5.00%	5.00%	0.00%
70	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

EXHIBIT 2-4 WITHDRAWAL RATES

Years of Service	PRFS
0	7.107%
1	4.974%
2	3.305%
3	2.203%
4	1.557%
5	1.175%
6	0.941%
7	0.792%
8	0.695%
9	0.622%
10	0.550%
11	0.474%
12	0.402%
13	0.345%
14	0.303%
15	0.277%
16	0.254%
17	0.233%
18	0.221%
19	0.221%
20	0.221%
21	0.221%
22	0.221%
23	0.221%
24	0.221%
25	0.221%
26	0.221%
27	0.221%
28	0.221%
29	0.221%
30	0.221%
31	0.221%
32	0.221%
33	0.221%
34	0.221%
35	0.221%
36	0.221%
37	0.221%
38	0.221%
39	0.221%
41	0.221%
42	0.221%
43	0.221%
44	0.221%
45	0.221%
46	0.221%
47	0.221%
48	0.221%
49	0.221%
50	0.221%

EXHIBIT 2-4 WITHDRAWAL RATES

Age	Campus - ORD										
	0 Years of Service	1 Year of Service	2 Years of Service	3 Years of Service	4 Years of Service	5 Years of Service	6 Years of Service	7 Years of Service	8 Years of Service	9 Years of Service	At least 10 Years of Service
15	32.0%	32.0%	32.0%	32.0%	32.0%	28.0%	28.0%	24.0%	24.0%	22.0%	15.0%
16	32.0%	32.0%	32.0%	32.0%	32.0%	28.0%	28.0%	24.0%	24.0%	22.0%	15.0%
17	32.0%	32.0%	32.0%	32.0%	32.0%	28.0%	28.0%	24.0%	24.0%	22.0%	15.0%
18	32.0%	32.0%	32.0%	32.0%	32.0%	28.0%	28.0%	24.0%	24.0%	22.0%	15.0%
19	32.0%	32.0%	32.0%	32.0%	32.0%	28.0%	28.0%	24.0%	24.0%	22.0%	15.0%
20	32.0%	32.0%	32.0%	32.0%	32.0%	28.0%	28.0%	24.0%	24.0%	22.0%	15.0%
21	32.0%	32.0%	32.0%	32.0%	32.0%	28.0%	28.0%	24.0%	24.0%	22.0%	15.0%
22	32.0%	32.0%	32.0%	32.0%	32.0%	28.0%	28.0%	24.0%	24.0%	22.0%	15.0%
23	32.0%	32.0%	32.0%	32.0%	32.0%	28.0%	28.0%	24.0%	24.0%	22.0%	15.0%
24	32.0%	32.0%	32.0%	32.0%	32.0%	28.0%	28.0%	24.0%	24.0%	22.0%	15.0%
25	32.0%	32.0%	32.0%	32.0%	32.0%	28.0%	28.0%	24.0%	24.0%	22.0%	15.0%
26	32.0%	32.0%	32.0%	32.0%	32.0%	28.0%	28.0%	24.0%	24.0%	22.0%	15.0%
27	32.0%	32.0%	32.0%	32.0%	32.0%	28.0%	28.0%	24.0%	24.0%	22.0%	15.0%
28	19.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	24.0%	24.0%	22.0%	15.0%
29	19.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	24.0%	22.0%	15.0%
30	19.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	24.0%	22.0%	13.0%
31	19.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	24.0%	22.0%	13.0%
32	17.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	24.0%	22.0%	13.0%
33	17.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	24.0%	22.0%	13.0%
34	17.0%	28.0%	28.0%	28.0%	24.0%	24.0%	25.0%	26.0%	24.0%	22.0%	13.0%
35	14.0%	28.0%	28.0%	28.0%	24.0%	24.0%	25.0%	26.0%	24.0%	22.0%	13.0%
36	14.0%	28.0%	28.0%	28.0%	24.0%	24.0%	25.0%	26.0%	24.0%	17.0%	13.0%
37	14.0%	28.0%	28.0%	28.0%	24.0%	24.0%	25.0%	26.0%	24.0%	17.0%	13.0%
38	14.0%	28.0%	28.0%	28.0%	24.0%	24.0%	25.0%	26.0%	22.0%	17.0%	13.0%
39	14.0%	28.0%	28.0%	28.0%	21.0%	21.0%	25.0%	21.0%	21.0%	17.0%	13.0%
40	14.0%	28.0%	28.0%	28.0%	21.0%	21.0%	21.0%	21.0%	21.0%	17.0%	13.0%
41	14.0%	28.0%	28.0%	28.0%	21.0%	21.0%	21.0%	21.0%	21.0%	17.0%	13.0%
42	22.0%	28.0%	28.0%	28.0%	21.0%	21.0%	21.0%	21.0%	21.0%	17.0%	13.0%
43	22.0%	28.0%	28.0%	28.0%	21.0%	21.0%	21.0%	21.0%	21.0%	17.0%	13.0%
44	22.0%	28.0%	28.0%	28.0%	21.0%	21.0%	21.0%	21.0%	21.0%	17.0%	13.0%
45	22.0%	26.0%	26.0%	25.0%	21.0%	21.0%	20.0%	21.0%	19.0%	13.0%	13.0%
46	22.0%	26.0%	26.0%	25.0%	21.0%	21.0%	20.0%	21.0%	19.0%	13.0%	13.0%
47	22.0%	26.0%	26.0%	25.0%	21.0%	21.0%	20.0%	21.0%	19.0%	13.0%	13.0%
48	22.0%	26.0%	26.0%	25.0%	21.0%	22.0%	20.0%	21.0%	19.0%	13.0%	13.0%
49	22.0%	26.0%	26.0%	25.0%	21.0%	22.0%	20.0%	21.0%	19.0%	13.0%	13.0%
50	22.0%	26.0%	26.0%	25.0%	21.0%	22.0%	20.0%	21.0%	19.0%	13.0%	13.0%
51	22.0%	26.0%	26.0%	25.0%	21.0%	22.0%	20.0%	21.0%	19.0%	13.0%	13.0%
52	22.0%	26.0%	26.0%	25.0%	21.0%	22.0%	20.0%	21.0%	19.0%	10.0%	12.0%
53	22.0%	26.0%	26.0%	25.0%	21.0%	22.0%	20.0%	21.0%	19.0%	10.0%	12.0%
54	22.0%	26.0%	26.0%	26.0%	21.0%	22.0%	20.0%	23.0%	19.0%	10.0%	12.0%
55	22.0%	26.0%	26.0%	26.0%	21.0%	22.0%	20.0%	23.0%	19.0%	10.0%	0.0%
56	22.0%	26.0%	26.0%	26.0%	21.0%	22.0%	20.0%	23.0%	19.0%	10.0%	0.0%
57	21.0%	21.0%	21.0%	20.0%	21.0%	22.0%	21.0%	20.0%	19.0%	10.0%	0.0%
58	21.0%	21.0%	21.0%	20.0%	21.0%	22.0%	21.0%	20.0%	19.0%	10.0%	0.0%
59	21.0%	21.0%	21.0%	20.0%	21.0%	22.0%	21.0%	20.0%	19.0%	10.0%	0.0%
60	19.0%	21.0%	21.0%	20.0%	21.0%	22.0%	21.0%	20.0%	19.0%	10.0%	0.0%
61	19.0%	21.0%	21.0%	13.0%	21.0%	22.0%	21.0%	13.0%	13.0%	10.0%	0.0%
62	19.0%	21.0%	21.0%	13.0%	21.0%	22.0%	21.0%	13.0%	13.0%	10.0%	0.0%
63	19.0%	17.0%	17.0%	13.0%	21.0%	20.0%	21.0%	13.0%	13.0%	10.0%	0.0%
64	19.0%	17.0%	17.0%	13.0%	21.0%	20.0%	21.0%	13.0%	13.0%	10.0%	0.0%
65	19.0%	17.0%	17.0%	13.0%	21.0%	20.0%	20.0%	13.0%	13.0%	10.0%	0.0%
66	19.0%	17.0%	17.0%	13.0%	21.0%	20.0%	20.0%	13.0%	13.0%	10.0%	0.0%
67	19.0%	17.0%	17.0%	13.0%	21.0%	20.0%	20.0%	13.0%	13.0%	10.0%	0.0%
68	19.0%	17.0%	17.0%	13.0%	21.0%	20.0%	20.0%	13.0%	13.0%	10.0%	0.0%
69	19.0%	17.0%	17.0%	13.0%	21.0%	20.0%	20.0%	13.0%	13.0%	10.0%	0.0%
70	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

EXHIBIT 2-4 WITHDRAWAL RATES

Age	TRS-Male										
	0 Years of Service	1 Year of Service	2 Years of Service	3 Years of Service	4 Years of Service	5 Years of Service	6 Years of Service	7 Years of Service	8 Years of Service	9 Years of Service	At least 10 Years of Service
20	25.4275%	16.5892%	11.6327%	9.4647%	5.7858%	3.5354%	2.0319%	1.1763%	1.0924%	0.7796%	0.8873%
21	25.4275%	13.9607%	11.6327%	9.4647%	5.7858%	3.5354%	2.0319%	1.1763%	1.0924%	0.7796%	0.8873%
22	25.8777%	12.6464%	11.6327%	9.4647%	5.7858%	3.5354%	2.0319%	1.1763%	1.0924%	0.7796%	0.8873%
23	26.7780%	12.4274%	11.6327%	9.4647%	5.7858%	3.5354%	2.0319%	1.1763%	1.0924%	0.7796%	0.8873%
24	28.1285%	13.3035%	11.9082%	8.8647%	5.7858%	3.5354%	2.0319%	1.1763%	1.0924%	0.7796%	0.8873%
25	29.4790%	16.8083%	12.4171%	8.1761%	5.7858%	3.5354%	2.0319%	1.1763%	1.0924%	0.7796%	0.8873%
26	30.8295%	18.5606%	12.8845%	7.7761%	5.7858%	3.6379%	2.0319%	1.1763%	1.1922%	0.7796%	0.8873%
27	31.9549%	19.4368%	13.1962%	8.0715%	5.9296%	3.6635%	2.0319%	1.1763%	1.2975%	0.7796%	0.8873%
28	32.5176%	19.6558%	13.4039%	8.3668%	6.1071%	3.6892%	2.0319%	1.1763%	1.3931%	0.7796%	0.8873%
29	32.8927%	19.4368%	13.5424%	8.6621%	6.4622%	3.7533%	2.1368%	1.2912%	1.4537%	0.7796%	0.8873%
30	33.0803%	19.0091%	13.6168%	8.9575%	6.8227%	4.0481%	2.5825%	1.9809%	1.5106%	0.7796%	0.8873%
31	32.2070%	18.7568%	13.1286%	9.3049%	6.9540%	4.3533%	3.1397%	2.2317%	1.5955%	0.7796%	0.8873%
32	31.3337%	18.5045%	12.5654%	9.6523%	7.0854%	4.6585%	3.6969%	2.3571%	1.8078%	0.7796%	0.8873%
33	30.4605%	18.2523%	12.3777%	9.9997%	7.2167%	4.9638%	3.9754%	2.3884%	2.0201%	0.8513%	0.8873%
34	29.5872%	18.0000%	12.6812%	10.3470%	7.3481%	5.2690%	4.1147%	2.3963%	2.2323%	1.1216%	0.8873%
35	28.7140%	17.7477%	13.3047%	10.5207%	7.4794%	5.5742%	4.1993%	2.3963%	2.3738%	1.5946%	0.8508%
36	28.6690%	17.1821%	13.8075%	10.4196%	7.7092%	6.0321%	4.1209%	2.3963%	2.4021%	1.9585%	0.8299%
37	28.6241%	16.6165%	13.5561%	10.1447%	7.6326%	6.4899%	4.0425%	2.3963%	2.4163%	2.0908%	0.8091%
38	28.5791%	16.0509%	13.0616%	9.8699%	7.5560%	6.7189%	3.9641%	2.5293%	2.4233%	2.1664%	0.7882%
39	28.5342%	15.4853%	13.0202%	9.5950%	7.4219%	6.7761%	3.8857%	3.4440%	2.4269%	2.1916%	0.7673%
40	28.4892%	15.2025%	12.9787%	9.3202%	6.9959%	6.7904%	3.8073%	3.7085%	2.5711%	2.1664%	0.7464%
41	28.9068%	15.2732%	13.2358%	9.4006%	6.7933%	6.4863%	3.5133%	3.7747%	2.7438%	2.1286%	0.7534%
42	29.3244%	15.6266%	13.4928%	9.4810%	6.6920%	5.7260%	3.3664%	3.7747%	2.9166%	2.0625%	0.7638%
43	29.7420%	15.9800%	13.7499%	9.5614%	6.5907%	5.3458%	3.5133%	3.7747%	3.0893%	1.8971%	0.7795%
44	30.1596%	16.3334%	14.0070%	9.6418%	6.4894%	5.2983%	3.8073%	3.7747%	3.2620%	1.6781%	0.8147%
45	30.3684%	16.6868%	14.2640%	8.6769%	6.3881%	5.2698%	4.5610%	3.7747%	3.3484%	1.5314%	0.8659%
46	29.7917%	16.9216%	14.2902%	7.7120%	6.4110%	5.4366%	5.3147%	3.7747%	3.2404%	1.4047%	0.8915%
47	29.0062%	17.1564%	14.3164%	7.3904%	6.7541%	5.5072%	6.0684%	3.7747%	2.9166%	1.4943%	0.9043%
48	28.2207%	17.3912%	14.3426%	7.7120%	7.0973%	5.7785%	6.4453%	3.8438%	2.7546%	2.0435%	0.9106%
49	27.4352%	17.6260%	14.3687%	9.2398%	7.2689%	5.9956%	6.5709%	4.2311%	2.8356%	2.2630%	0.9170%
50	26.6497%	17.8609%	14.3949%	9.9585%	7.2689%	6.1041%	6.5709%	4.4893%	3.2404%	2.3728%	0.9227%
51	25.8643%	17.8609%	14.4211%	10.6772%	7.2689%	6.1041%	6.5709%	4.5754%	3.6452%	2.3728%	0.9227%
52	25.0788%	17.8609%	14.4211%	11.0366%	7.2689%	6.1041%	6.5709%	4.7475%	3.7465%	2.3728%	0.9227%
53	24.6860%	17.8609%	14.4211%	11.0366%	7.2689%	6.1041%	6.5709%	4.8336%	3.7754%	2.3728%	0.9227%
54+	24.6860%	17.8609%	14.4211%	11.0366%	7.2689%	6.1041%	6.5709%	5.1133%	3.7754%	2.3728%	0.9227%

EXHIBIT 2-4 WITHDRAWAL RATES

Age	TRS -Female										
	0 Years of Service	1 Year of Service	2 Years of Service	3 Years of Service	4 Years of Service	5 Years of Service	6 Years of Service	7 Years of Service	8 Years of Service	9 Years of Service	At least 10 Years of Service
20	22.1624%	11.1743%	10.0290%	5.9871%	7.9156%	5.7015%	4.1279%	3.0151%	3.7037%	2.2766%	1.9527%
21	22.2584%	10.2302%	10.0290%	5.9871%	7.9156%	5.7015%	4.1279%	3.0151%	3.7037%	2.2766%	1.9527%
22	22.7539%	10.0414%	10.0290%	5.9871%	7.9156%	5.7015%	4.1279%	3.0151%	3.7037%	2.2766%	1.9527%
23	24.1991%	10.7967%	10.0290%	5.9871%	7.9156%	5.7015%	4.1279%	3.0151%	3.7037%	2.2766%	1.9527%
24	30.6350%	13.0625%	10.0290%	5.9474%	7.9156%	5.7015%	4.1279%	3.0151%	3.7037%	2.2766%	1.9527%
25	33.2325%	17.5943%	10.2290%	6.4680%	4.2156%	5.1015%	4.0469%	3.0151%	3.7037%	2.2766%	1.9527%
26	35.3217%	18.9852%	10.6684%	7.2489%	4.8382%	4.7684%	3.9012%	3.0151%	3.7037%	2.2766%	1.9527%
27	36.0933%	19.8520%	12.7538%	8.0297%	5.1495%	3.9255%	3.7846%	3.0151%	3.7037%	2.2766%	1.9527%
28	36.0817%	20.2853%	14.1441%	8.8106%	5.4608%	4.2029%	3.7458%	3.0151%	3.5810%	2.2766%	1.9527%
29	35.4235%	20.5020%	14.1602%	9.5915%	5.7721%	4.8963%	3.9012%	3.1232%	3.2407%	2.2766%	1.9527%
30	34.6747%	20.2316%	13.9988%	9.9819%	7.3286%	5.3123%	4.2120%	3.3722%	2.9005%	2.2766%	1.9527%
31	34.3752%	19.9612%	13.6830%	10.6115%	7.6094%	6.0404%	5.1611%	3.6984%	2.9725%	2.4035%	1.9527%
32	33.5848%	19.5888%	13.3673%	10.9263%	7.8901%	6.7684%	5.6356%	4.0686%	3.2607%	2.6574%	1.9527%
33	32.7944%	19.2164%	13.0516%	11.2411%	8.1709%	7.1845%	5.8505%	4.3387%	3.5489%	2.7589%	1.9527%
34	32.0040%	18.8440%	12.7358%	11.3290%	8.4516%	7.2885%	6.0654%	4.5088%	3.8371%	3.0635%	1.9527%
35	31.2137%	18.1656%	12.4201%	11.3729%	8.7323%	7.3130%	6.1088%	4.6793%	3.9811%	3.3681%	1.8793%
36	30.4496%	17.4543%	12.2312%	11.0640%	8.6076%	7.0552%	5.8894%	4.8497%	4.0833%	3.5204%	1.7327%
37	29.6856%	16.7429%	12.0422%	10.5598%	8.4828%	6.7974%	5.6701%	4.8838%	4.0413%	3.4443%	1.5860%
38	28.9215%	16.0316%	11.8533%	10.0557%	8.2956%	6.5396%	5.4507%	4.9179%	3.9994%	3.3681%	1.4393%
39	28.1575%	15.3202%	11.6644%	9.5515%	8.0149%	6.2819%	5.2314%	4.9213%	3.9574%	3.1777%	1.2192%
40	27.3935%	14.6089%	11.4754%	9.2994%	7.3750%	6.0241%	5.0120%	4.9359%	3.9155%	3.0254%	1.1459%
41	26.9779%	14.4793%	11.1172%	9.1252%	7.4162%	5.9860%	4.8675%	4.4929%	3.7437%	3.0242%	1.1182%
42	26.5623%	14.3498%	10.7590%	9.2030%	7.4575%	5.9479%	4.7230%	4.0499%	3.5718%	3.0230%	1.0905%
43	26.1467%	14.2203%	10.4009%	9.2809%	7.4987%	5.9098%	4.5785%	3.6070%	3.4000%	3.0218%	1.0628%
44	25.7311%	14.0908%	10.0427%	9.3587%	7.5400%	5.8717%	4.4339%	3.5516%	3.2282%	3.0207%	1.0351%
45	25.3155%	14.0260%	9.8636%	9.4366%	7.5812%	5.8336%	4.3617%	3.8284%	3.0564%	3.0195%	1.0074%
46	25.7124%	14.2616%	9.9349%	9.5174%	7.4383%	5.8048%	4.4604%	3.8381%	3.0284%	2.9256%	0.9941%
47	26.7047%	14.3794%	10.1854%	9.5983%	7.2954%	5.7761%	4.6315%	3.8478%	3.0004%	2.8317%	0.9808%
48	27.6970%	14.7033%	10.4358%	9.6791%	7.1525%	5.7474%	4.8025%	3.8574%	2.9724%	2.7377%	0.9675%
49	28.6893%	15.1626%	10.6862%	9.7600%	7.0096%	5.7187%	4.9735%	3.8671%	2.9444%	2.6438%	0.9542%
50	29.6815%	15.4630%	10.9367%	9.8408%	6.8667%	5.6900%	5.1446%	3.8767%	2.9164%	2.5499%	0.9409%
51	29.9296%	15.7633%	11.1871%	9.8408%	6.7238%	5.6900%	5.1446%	3.8767%	2.9164%	2.5499%	0.9409%
52	29.9296%	16.0636%	11.1871%	9.8408%	6.7238%	5.6900%	5.1446%	3.8767%	2.9164%	2.5499%	0.9409%
53	29.9296%	16.2138%	11.1871%	9.8408%	6.7238%	5.6900%	5.1446%	3.8767%	2.9164%	2.5499%	0.9409%
54+	29.9296%	16.2138%	11.1871%	9.8408%	6.7238%	5.6900%	5.1446%	3.8767%	2.9164%	2.5499%	0.9409%

EXHIBIT 2-5 DISABILITY RATES

Age	ERS			PFRS		TRS	
	Accidental Disability		All Other	Accidental	All Other	Male	Female
	Tiers 1 & 2	Tiers 3, 4, 5	Disability	Disability*	Disability	Disability **	Disability **
15	0.020%	0.001%	0.049%	0.053%	0.047%		
16	0.020%	0.001%	0.049%	0.053%	0.047%		
17	0.020%	0.001%	0.049%	0.053%	0.047%		
18	0.020%	0.001%	0.049%	0.053%	0.047%		
19	0.020%	0.001%	0.049%	0.053%	0.047%		
20	0.020%	0.001%	0.049%	0.053%	0.047%		
21	0.020%	0.001%	0.049%	0.053%	0.047%		
22	0.020%	0.001%	0.049%	0.053%	0.047%		
23	0.020%	0.001%	0.049%	0.053%	0.047%		
24	0.020%	0.001%	0.049%	0.053%	0.047%		
25	0.020%	0.001%	0.049%	0.053%	0.047%		
26	0.020%	0.001%	0.049%	0.053%	0.047%		
27	0.020%	0.001%	0.049%	0.053%	0.047%		
28	0.020%	0.001%	0.049%	0.056%	0.047%		
29	0.020%	0.001%	0.049%	0.060%	0.047%		
30	0.020%	0.001%	0.049%	0.065%	0.047%	0.0003%	0.0005%
31	0.020%	0.001%	0.049%	0.087%	0.047%	0.0008%	0.0008%
32	0.020%	0.001%	0.055%	0.114%	0.047%	0.0015%	0.0010%
33	0.020%	0.001%	0.065%	0.146%	0.047%	0.0024%	0.0037%
34	0.020%	0.001%	0.077%	0.181%	0.047%	0.0040%	0.0076%
35	0.020%	0.003%	0.087%	0.219%	0.047%	0.0062%	0.0098%
36	0.020%	0.004%	0.095%	0.261%	0.047%	0.0091%	0.0102%
37	0.020%	0.004%	0.099%	0.303%	0.047%	0.0126%	0.0105%
38	0.020%	0.004%	0.101%	0.345%	0.047%	0.0164%	0.0126%
39	0.020%	0.004%	0.103%	0.386%	0.047%	0.0196%	0.0159%
40	0.020%	0.004%	0.108%	0.424%	0.038%	0.0226%	0.0214%
41	0.020%	0.004%	0.119%	0.464%	0.032%	0.0245%	0.0274%
42	0.020%	0.004%	0.137%	0.507%	0.029%	0.0278%	0.0310%
43	0.020%	0.004%	0.160%	0.555%	0.031%	0.0330%	0.0376%
44	0.020%	0.004%	0.185%	0.610%	0.037%	0.0398%	0.0452%
45	0.020%	0.005%	0.212%	0.666%	0.047%	0.0470%	0.0501%
46	0.020%	0.005%	0.240%	0.714%	0.059%	0.0530%	0.0522%
47	0.020%	0.006%	0.270%	0.747%	0.073%	0.0569%	0.0568%
48	0.020%	0.006%	0.299%	0.758%	0.079%	0.0611%	0.0666%
49	0.020%	0.006%	0.326%	0.763%	0.086%	0.0707%	0.0818%
50	0.020%	0.005%	0.348%	0.762%	0.092%	0.0889%	0.0986%
51	0.020%	0.005%	0.364%	0.758%	0.100%	0.1091%	0.1187%
52	0.020%	0.005%	0.374%	0.754%	0.108%	0.1190%	0.1325%
53	0.020%	0.004%	0.404%	0.751%	0.116%	0.1250%	0.1380%
54	0.020%	0.004%	4.370%	0.748%	0.126%	0.1225%	0.1375%
55	0.015%	0.003%	0.472%	0.745%	0.136%		
56	0.015%	0.002%	0.509%	0.743%	0.147%		
57	0.015%	0.002%	0.550%	0.742%	0.158%		
58	0.015%	0.001%	0.594%	0.742%	0.171%		
59	0.015%	0.001%	0.642%	0.742%	0.185%		
60	0.015%	0.001%	0.693%	0.742%	0.200%		
61	0.015%	0.001%	0.748%	0.742%	0.216%		
62	0.015%	0.001%	0.808%	0.742%	0.233%		
63	0.015%	0.001%	0.873%	0.742%	0.251%		
64	0.015%	0.001%	0.943%	0.742%	0.272%		
65	0.015%	0.001%	1.018%	0.742%	0.293%		
66	0.015%	0.001%	1.100%	0.742%	0.317%		
67	0.015%	0.001%	1.188%	0.742%	0.342%		
68	0.015%	0.001%	1.283%	0.742%	0.369%		
69	0.015%	0.001%	1.385%	0.742%	0.399%		
70	0.000%	0.000%	0.000%	0.000%	0.000%		

* Includes performance of duty
** Assumes all disabilities are non-coincidental

EXHIBIT 2-6 RETIREMENT RATES

	ERS – Tier 1 Years of Service				ERS Tiers 2, 3 & 4 Years of Service		
Age	<20	20-29.99	> = 30	Age	<20	20-29.99	> = 30
55	16.985%	34.977%	77.499%	55	5.709%	9.699%	49.644%
56	9.286%	13.929%	26.808%	56	3.790%	5.833%	18.949%
57	7.541%	11.619%	23.320%	57	3.798%	6.138%	19.353%
58	9.055%	12.956%	21.587%	58	4.130%	6.845%	18.667%
59	10.371%	15.469%	21.164%	59	4.706%	7.568%	20.626%
60	10.331%	17.394%	21.365%	60	5.402%	8.467%	21.232%
61	13.785%	21.229%	24.184%	61	8.467%	18.948%	25.166%
62	19.152%	34.528%	35.390%	62	14.854%	37.678%	34.932%
63	15.155%	25.017%	23.024%	63	11.136%	24.518%	26.016%
64	17.236%	29.052%	23.115%	64	12.653%	24.300%	22.955%
65	22.845%	29.262%	26.254%	65	16.595%	28.931%	22.940%
66	23.898%	31.788%	26.292%	66	18.398%	32.495%	26.979%
67	19.844%	28.362%	22.238%	67	16.206%	27.929%	25.803%
68	15.865%	31.095%	20.547%	68	15.145%	27.447%	22.906%
69	19.512%	26.244%	18.605%	69	15.375%	26.557%	24.605%
70	100.000%	100.000%	100.000%	70	100.000%	100.000%	100.000%

	ERS – Tier 5 Years of Service				ERS-Tier 6 Years of Service		
Age	<20	20-29.99	> = 30	Age	<20	20-29.99	> = 30
55	4.567%	7.759%	9.699%	55	4.567%	7.759%	9.699%
56	3.032%	4.666%	5.833%	56	3.032%	4.666%	5.833%
57	3.038%	4.910%	6.138%	57	3.038%	4.910%	6.138%
58	3.304%	5.476%	6.845%	58	3.304%	5.476%	6.845%
59	3.765%	6.054%	7.568%	59	3.765%	6.054%	7.568%
60	4.322%	6.774%	8.467%	60	4.322%	6.774%	8.467%
61	6.774%	15.158%	18.948%	61	6.774%	15.158%	18.948%
62	34.854%	47.678%	42.932%	62	9.854%	17.678%	27.678%
63	11.136%	24.518%	26.016%	63	36.136%	54.518%	35.016%
64	12.653%	24.300%	22.955%	64	12.653%	24.300%	22.955%
65	16.595%	28.931%	22.940%	65	16.595%	28.931%	22.940%
66	18.398%	32.495%	26.979%	66	18.398%	32.495%	26.979%
67	16.206%	27.929%	25.803%	67	16.206%	27.929%	25.803%
68	15.145%	27.447%	22.906%	68	15.145%	27.447%	22.906%
69	15.375%	26.557%	24.605%	69	15.375%	26.557%	24.605%
70	100.000%	100.000%	100.000%	70	100.000%	100.000%	100.000%

EXHIBIT 2-6 RETIREMENT RATES

	PFRS – Tier 1 Years of Service				PFRS Tiers 2+ Years of Service		
Age	<20	20-29.99	> = 30	Age	<20	20-29.99	> = 30
55	16.985%	34.977%	77.499%	55	16.9850%	34.9770%	34.9770%
56	9.286%	13.929%	26.808%	56	9.2860%	13.9290%	13.9290%
57	7.541%	11.619%	23.320%	57	7.5410%	11.6190%	11.6190%
58	9.055%	12.956%	21.587%	58	9.0550%	12.9560%	12.9560%
59	10.371%	15.469%	21.164%	59	10.3710%	15.4690%	15.4690%
60	10.331%	17.394%	21.365%	60	10.3310%	17.3940%	17.3940%
61	13.785%	21.229%	24.184%	61	13.7850%	21.2290%	21.2290%
62	19.152%	34.528%	35.390%	62	19.1520%	34.5280%	34.5280%
63	15.155%	25.017%	23.024%	63	15.1550%	25.0170%	25.0170%
64	17.236%	29.052%	23.115%	64	17.2360%	29.0520%	29.0520%
65	22.845%	29.262%	26.254%	65	22.8450%	29.2620%	29.2620%
66	23.898%	31.788%	26.292%	66	23.8980%	31.7880%	31.7880%
67	19.844%	28.362%	22.238%	67	19.8440%	28.3620%	28.3620%
68	15.865%	31.095%	20.547%	68	15.8650%	31.0950%	31.0950%
69	19.512%	26.244%	18.605%	69	19.5120%	26.2440%	26.2440%
70	100.000%	100.000%	100.000%	70	100.000%	100.000%	100.000%

	Campus- ORD Gender	
Age	Male	Female
55	14.9660%	42.3520%
56	15.6730%	6.8110%
57	13.7650%	11.3590%
58	14.1260%	15.3500%
59	8.7310%	14.7200%
60	15.9830%	32.1530%
61	9.1370%	7.2390%
62	23.2370%	45.4750%
63	30.2020%	33.5850%
64	25.3080%	23.1600%
65	37.7420%	53.2100%
66	80.4840%	74.4940%
67	71.5000%	78.2187%
68	45.7670%	82.1296%
69	53.2900%	86.2361%
70	100.0000%	100.0000%

EXHIBIT 2-6 RETIREMENT RATES

Age	Stony Brook Hospital and Brooklyn Hospital Years of Service <20	20-29.99	> = 30	Age	Syracuse Hospital Years of Service <20	20-29.99	> = 30
55	3.638%	6.021%	11.535%	55	3.280%	8.177%	45.994%
56	2.598%	3.479%	7.116%	56	2.667%	6.296%	20.528%
57	0.749%	2.088%	16.905%	57	5.452%	11.468%	23.624%
58	3.227%	4.447%	10.315%	58	6.580%	14.904%	10.557%
59	1.988%	3.078%	9.547%	59	4.765%	4.257%	16.795%
60	3.316%	4.060%	7.418%	60	6.750%	15.016%	18.350%
61	3.506%	1.826%	15.485%	61	17.361%	1.192%	16.334%
62	16.651%	27.625%	19.936%	62	35.591%	37.295%	57.204%
63	10.340%	5.067%	17.625%	63	22.540%	19.553%	42.265%
64	16.173%	11.397%	25.838%	64	29.289%	23.624%	42.265%
65	17.935%	16.318%	33.333%	65	47.777%	29.289%	13.397%
66	19.936%	52.860%	51.962%	66	47.777%	62.204%	39.706%
67	35.242%	8.974%	15.485%	67	13.397%	42.265%	29.289%
68	18.350%	57.360%	46.548%	68	29.289%	21.250%	20.472%
69	24.407%	10.557%	45.870%	69	29.289%	21.250%	20.472%
70	100.000%	100.000%	100.000%	70	100.000%	100.000%	100.000%

Years of Service	ERS (Corrections) Tiers 1 & 2	ERS (Corrections) Tier 3
25	20.915%	28.858%
26	22.135%	20.282%
27	22.418%	15.548%
28	21.834%	14.194%
29	20.314%	14.808%
30	18.023%	15.703%
31	15.638%	15.953%
32	15.787%	15.952%
33	18.173%	16.334%
34	20.559%	17.794%
35	23.067%	20.875%
36	27.093%	25.848%
37	33.205%	32.815%
38	38.247%	32.815%
39	39.053%	32.815%
40	39.053%	32.815%
41	39.053%	32.815%
42	39.053%	32.815%
43	39.053%	32.815%
44	39.053%	32.815%
45	39.053%	32.815%
46	39.053%	32.815%
47	39.053%	32.815%
48	39.053%	32.815%
49	39.053%	32.815%
50	100.000%	100.000%

EXHIBIT 2-6 RETIREMENT RATES

Age	Tier 1		TRS Tiers 2, 3, 4, SVC<30		Tiers 2, 3, 4, SVC=30+	
	Males	Females	Males	Females	Males	Females
55	30.6695%	31.3992%	3.1965%	3.4565%	30.6695%	31.3992%
56	28.0779%	28.8116%	3.1782%	3.5761%	28.0779%	28.8116%
57	25.2448%	26.9473%	3.6262%	4.1750%	25.2448%	26.9473%
58	25.9437%	26.1016%	4.3899%	4.6349%	25.9437%	26.1016%
59	28.6545%	26.8785%	5.6398%	6.0339%	28.6545%	26.8785%
60	31.1011%	27.9410%	6.3578%	7.0415%	31.1011%	27.9410%
61	32.0232%	27.7166%	7.2217%	8.2590%	32.0232%	27.7166%
62	27.0303%	25.7157%	27.0303%	25.7157%	27.0303%	25.7157%
63	22.9352%	23.2947%	22.9352%	23.2947%	22.9352%	23.2947%
64	20.6863%	21.9224%	20.6863%	21.9224%	20.6863%	21.9224%
65	20.9678%	23.8272%	20.9678%	23.8272%	20.9678%	23.8272%
66	21.7437%	24.4523%	21.7437%	24.4523%	21.7437%	24.4523%
67	21.6934%	23.6791%	21.6934%	23.6791%	21.6934%	23.6791%
68	20.8294%	22.0367%	20.8294%	22.0367%	20.8294%	22.0367%
69	18.7086%	23.0935%	18.7086%	23.0935%	18.7086%	23.0935%
70	16.3555%	22.9295%	16.3555%	22.9295%	16.3555%	22.9295%
71	14.6721%	21.2056%	14.6721%	21.2056%	14.6721%	21.2056%
72	16.9602%	18.0451%	16.9602%	18.0451%	16.9602%	18.0451%
73	16.7377%	18.3107%	16.7377%	18.3107%	16.7377%	18.3107%
74	16.4226%	19.2125%	16.4226%	19.2125%	16.4226%	19.2125%
75	13.3890%	19.0633%	13.3890%	19.0633%	13.3890%	19.0633%
76	100.0000%	100.0000%	100.0000%	100.0000%	100.0000%	100.0000%

Age	Tier 5, SVC<30		TRS Tier 5, SVC=30+		Tier 6	
55	1.5983%	1.7283%	1.5983%	1.7283%	1.5983%	1.7283%
56	1.5891%	1.7881%	1.5891%	1.7881%	1.5891%	1.7881%
57	1.8131%	2.0875%	30.6695%	31.3992%	1.8131%	2.0875%
58	2.1950%	2.3175%	28.0779%	28.8116%	2.1950%	2.3175%
59	2.8199%	3.0170%	25.2448%	26.9473%	2.8199%	3.0170%
60	3.1789%	3.5208%	25.9437%	26.1016%	3.1789%	3.5208%
61	3.6109%	4.1295%	28.6545%	26.8785%	3.6109%	4.1295%
62	27.0303%	25.7157%	27.0303%	25.7157%	3.9942%	4.6683%
63	22.9352%	23.2947%	22.9352%	23.2947%	30.6695%	31.3992%
64	20.6863%	21.9224%	20.6863%	21.9224%	28.0779%	28.8116%
65	20.9678%	23.8272%	20.9678%	23.8272%	25.2448%	26.9473%
66	21.7437%	24.4523%	21.7437%	24.4523%	25.9437%	26.1016%
67	21.6934%	23.6791%	21.6934%	23.6791%	28.6545%	26.8785%
68	20.8294%	22.0367%	20.8294%	22.0367%	31.1011%	27.9410%
69	18.7086%	23.0935%	18.7086%	23.0935%	32.0232%	27.7166%
70	16.3555%	22.9295%	16.3555%	22.9295%	27.0303%	25.7157%
71	14.6721%	21.2056%	14.6721%	21.2056%	22.9352%	23.2947%
72	16.9602%	18.0451%	16.9602%	18.0451%	20.6863%	21.9224%
73	16.7377%	18.3107%	16.7377%	18.3107%	20.9678%	23.8272%
74	16.4226%	19.2125%	16.4226%	19.2125%	21.7437%	24.4523%
75	13.3890%	19.0633%	13.3890%	19.0633%	21.6934%	23.6791%
76	100.0000%	100.0000%	100.0000%	100.0000%	100.0000%	100.0000%

EXHIBIT 2-7 SALARY SCALE

Service	ERS	PFRS
0	8.00%	27.00%
1	8.00%	27.00%
2	7.00%	13.50%
3	6.00%	11.50%
4	5.00%	9.50%
5	4.50%	7.50%
6	4.20%	5.30%
7	4.10%	4.40%
8	4.00%	4.30%
9	3.90%	4.20%
10	3.80%	4.10%
11	3.70%	4.00%
12	3.60%	3.90%
13	3.50%	3.80%
14	3.40%	3.70%
15	3.30%	3.60%
16	3.20%	3.50%
17	3.10%	3.40%
18	3.00%	3.30%
19	3.00%	3.30%
20	3.00%	3.30%
21	3.00%	3.30%
22	3.00%	3.30%
23	3.00%	3.30%
24	3.00%	3.30%
25	3.00%	3.30%
26	3.00%	3.30%
27	3.00%	3.30%
28	3.00%	3.30%
29	3.00%	3.30%
30	3.00%	3.30%
31	3.00%	3.30%
32	3.00%	3.30%
33	3.00%	3.30%
34	3.00%	3.30%
35	3.00%	3.30%
36	3.00%	3.30%
37	3.00%	3.30%
38	3.00%	3.30%
39	3.00%	3.30%
40	3.00%	3.30%
41	3.00%	3.30%
42	3.00%	3.30%
43	3.00%	3.30%
44	3.00%	3.30%
45	3.00%	3.30%
46	3.00%	3.30%
47	3.00%	3.30%
48	3.00%	3.30%
49	3.00%	3.30%
50	3.00%	3.30%
51	3.00%	3.30%
52	3.00%	3.30%
53	3.00%	3.30%
54	3.00%	3.30%
55	3.00%	3.30%

EXHIBIT 2-7 SALARY SCALE

Duration	TRS Rate
1	10.00%
2	7.00%
3	6.06%
4	5.22%
5	4.72%
6	4.45%
7	4.31%
8	4.22%
9	4.15%
10	4.07%
11	3.98%
12	3.87%
13	3.75%
14	3.61%
15	3.46%
16	3.31%
17	3.17%
18	3.04%
19	2.93%
20	2.82%
21	2.72%
22	2.63%
23	2.54%
24	2.45%
25	2.37%
26	2.29%
27	2.22%
28	2.15%
29	2.10%
30	2.06%
31	2.02%
32	2.00%
33	1.95%
34	1.93%
35	1.90%
36	1.86%
37	1.80%
38	1.76%
39	1.76%

Section 3 – Per Capita Plan Costs

Exhibit 3-1 provides support for the development of the recommended Empire Plan per capita plan costs. We developed the FY2020 costs by:

- Calculating claims incurred for 2018 separately by program and for non-Medicare vs. Medicare eligible retirees for State retirees.
- In the case of Medical Program claims, adjusting claims for the impact of credits (primarily claims paid outside the claim system) and Basic Medical network access fees;
- Increasing the claim costs for administrative expenses and risk charges;
- Increasing the claim costs for New York State indigent care and GME surcharges;
- Lowering the drug claim costs for manufacturer rebates; and
- Trending the results 15 months to FY2020.

Using the aging factors, we adjusted the resulting costs to age 65 for valuation purposes. Drug costs for non-Medicare and Medicare eligibles were blended for age adjustment to keep values consistent. EGWP revenue estimates were made based on Caremark reports for 2018.

As noted on the bottom of Exhibit 3-1, the results are below expected trend for medical and Rx relative to the per capita costs from the 4/1/2018 valuation.

Exhibit 3-1 Development of Empire Plan Retiree Gross Per Capita Plan Cost
States -- 4/1/2019 - 3/31/2020

				Non-Medicare	Medicare	Total
2018 Claims Incurred Before Adjustments			Hospital	$272,947,782	$78,961,008	$351,908,791
			Medical	$257,082,967	98,840,895	355,923,862
			MH/SA	14,781,419	2,351,432	17,132,851
			Total Medical	$544,812,168	$180,153,335	$724,965,504
			Rx	191,932,119	672,186,200	864,118,319
			Total Medical & Rx	$736,744,288	$852,339,536	$1,589,083,823
Basic Medical Fee			Medical	$2,830,171	$0	$2,830,171
2018 Claims Incurred After Adjustments			Hospital	$272,947,782	$78,961,008	$351,908,791
			Medical	259,913,138	98,840,895	358,754,033
			MH/SA	14,781,419	2,351,432	17,132,851
			Total Medical	$547,642,340	$180,153,335	$727,795,675
			Rx	191,932,119	672,186,200	864,118,319
			Total Medical & Rx	$739,574,459	$852,339,536	$1,591,913,995
2018 Average Enrollment			Hospital	44,881	147,903	192,784
			Medical	46,238	145,565	191,803
			MH/SA	46,853	140,231	187,084
			Rx	47,751	141,983	189,734
2018 Claims PMPM			Hospital	$506.80	$44.49	$ 152.12
			Medical	468.43	56.58	155.87
			MH/SA	26.29	1.40	7.63
			Total Medical	$ 1,001.52	$ 102.47	$ 315.62
			Rx	334.95	394.52	379.53
			Total Medical & Rx	$ 1,336.47	$ 496.99	$ 695.14
	15 Months Trend					
4/1/2019 - 3/31/2020 PMPM	9.11%	9.11%	Hospital	$552.99	$48.54	$165.98
	7.17%	7.17%	Medical	$502.00	$60.63	167.04
	12.08%	12.08%	MH/SA	29.47	1.57	8.56
			Total Medical	$1,084.46	$110.75	$341.57
	11.37%	11.37%	Rx	373.05	439.39	422.69
			Total Medical & Rx	$1,457.50	$550.14	$764.27
	Adjustment %					
4/1/2019 - 3/31/2020 PMPM After Plan Changes	0.00%	0.00%	Hospital	$552.99	$48.54	$165.98
	-1.17%%	-1.17%%	Medical	$496.12	$59.92	165.08
	0.00%	0.00%	MH/SA	29.47	1.57	8.56
			Total Medical	$1,078.57	$110.04	$339.62
	0.00%	0.00%	Rx	373.05	439.39	422.69
			Total Medical & Rx	$1,451.62	$549.43	$762.31

Exhibit 3-1 Development of Empire Plan Retiree Gross Per Capita Plan Cost
States -- 4/1/2019 – 3/31/2020

	% Claims		Non-Medicare	Medicare	Total
Retention [1]	4.6%	Hospital	$6.56	$8.00	$7.66
	10.6%	Medical	15.19	18.51	17.71
	15.2%	MH/SA	1.12	1.37	1.30
		Total Medical	$22.87	$27.87	$26.67
	0.9%	Rx	1.48	4.44	3.69
		Total Medical & Rx	$24.35	$32.31	$30.37
	% Claims				
Indigent Care Surcharge [1]	4.2%	Hospital	$22.87	$0.00	$6.94
	0.4%	Medical	1.48	0.00	0.69
	1.3%	MH/SA	$22.87	0.00	0.11
		Total Medical	$33.13	$0.00	$7.75
	0.0%	Rx	0.00	0.00	0.00
		Total Medical & Rx	$33.13	$0.00	$7.75
Graduate Medical		Hospital	$4.88	$0.00	$1.14
Expense Assessment [1]		Medical	0.00	0.00	0.00
		MH/SA	0.00	0.00	0.00
		Total Medical	$4.88	$0.00	$1.14
		Rx	0.00	0.00	0.00
		Total Medical & Rx	$4.88	$0.00	$1.14
	% Claims				
Rx Rebates [1, 2]	-11.5%	Rx	($35.46)	($52.77)	($48.41)
4/1/2019 - 3/31/2020 Gross		Hospital	$594.24	$56.54	$181.72
Cost PMPM		Medical	514.18	78.43	183.48
Before NYBEAS		MH/SA	31.04	2.94	9.97
		Total Medical	$1,139.45	$137.91	$375.17
		Rx	339.07	391.06	377.98
		Total Medical & Rx	$1,478.52	$528.97	$753.14
NYBEAS Admin Fee		Total Medical	($0.02)	($0.02)	($0.02)
4/1/2019 - 3/31/2020 Gross		Total Medical	$1,139.43	$137.88	$375.15
Cost PMPM		Rx	339.07	391.06	377.98
After NYBEAS		Total Medical & Rx	$1,478.50	$528.94	$753.12
Aging Factor (to age 65)			0.81763	1.26913	1.15371
4/1/2019 - 3/31/2020 Gross		Total Medical	$1,393.57	$108.65	
Cost PMPM		Rx			$327.62
After NYBEAS					

1 Based on projected figures for 2019 and 2020
2 Percentage of claims before adjustment for plan changes

Exhibit 3-1 Development of Empire Plan Retiree Gross Per Capita Plan Cost
States -- 4/1/2019 – 3/31/2020

			Non-Medicare	Medicare
@ Age 65		Total Medical	$16,723	$1,304
PMPY Before EGWP Revenue		Rx	3,931	3,931
		Total Medical & Rx	$20,654	$5,235
		% Drug	19%	75%
EGWP Revenue @ Average Age				
		Direct Subsidy		($116)
		Coverage Gap		(619)
		Catastrophic		(430)
		Total EGWP Revenue		($1,165)
Aging Factor				1.27993
EGWP @ Age 65				($910)
@ Age 65		Total Medical	$16,723	$1,304
For Valuation (PMPY)		Rx	3,931	3,021
		Total Medical & Rx	$20,654	$4,325
		% Drug	19%	70%
4/1/2018 - 3/31/2019 Gross		Total Medical	$16,725	$1,266
Cost PMPY After NYBEAS		Rx	$3,729	$2,859
@ Age 65 (reflects EGWP Revenue)		Total Medical & Rx	$20,454	$4,125
Trend	**2018 / 2019**	Total Medical	6.25%	5.10%
		Rx	9.00%	9.00%
Expected 4/1/2019 - 3/31/2020 Gross after EGWP Revenue		Total Medical	$17,770	$1,331
		Rx	$4,065	$3,116
		Total Medical & Rx	$21,835	$4,447
Actual Reflecting EGWP Revenue / Expected		Total Medical	-5.9%	-2.0%
		Rx	-3.3%	-3.0%
		Total Medical & Rx	-5.4%	-2.7%

Exhibit 3-2 Empire Plan Changes effective 1/1/2019

	Effective 1-1-19	Prior to 1-1-19
Hospital		
Network		
Outpatient Services* (includes Lab and Radiology)	$50/$40	$40/$30
Urgent Care*	$50/$40	$40/$30
Outpatient Emergency Room*	$100/$90	$70/$60
Outpatient Surgery*	$95/$75	$60/$40
Outpatient Physical Therapy	$25	$20
Out of Network		
Coinsurance Max - 1/2 SG ≤6 - Not Subject to CPI-W	$3,750	$3,000
Other		
Skilled Nursing Facility Benefit Days	120	365
Medical		
In-Network (Copay stacking to remain in place)		
Primary Care Provider copay	$25	$20
Specialty Provider Copay	$25	$20
Urgent Care	$30	$20
Ambulatory Surgery Center Copay	$50	$30
Ambulance Services	$70	$35
PT, Chiropractic Services	$25	$20
Out of Network		
Deductible (1/2 SG≤6 - Not Subject to CPI-W)	$1,250	$1,000
Coins Max (1/2 SG≤6 - Not Subject to CPI-W)	$3,750	$3,000
Prescription Drug		
Copays - Est. Savings are w/out Behavioral Shift		
Retail 30 Day Supply (Level 1-3)	$5, $30, $60	$5, $25, $45
Retail 31-90 Day Supply (Level 1-3)	$10, $60, $120	$10, $50, $90
Mail 30 Day Supply (Level 1-3)	$5, $30, $60	$5, $25, $45
Mail 31-90 Day Supply (Level 1-3)	$5, $55, $110	$5, $50, $90
New to You Program	Eliminate	Active
Flexible Formulary Side Letter Change (change will enable the plan to exclude a drug that is therapeutically equivalent to, "or" has the same active ingredient of, another covered drug.	Replace "and" with "or"	"and"
MHSA		
In-Network		
Office Visit and Outpatient Services	$25	$20
Out of Network		
Deductible (1/2 SG≤6 - Not Subject to CPI-W)	$1,250	$1,000
Coins Max (1/2 SG≤6 - Not Subject to CPI-W)	$3,750	$3,000 - No CPI-M

Section 4 – Health Care Trend

The Health Care Cost Trend assumption is used to project the current year per capita plan costs, premium rates, and Medicare Part B premiums into the future. These costs are applied to the surviving covered population to determine the stream of future payments.

Increases in medical costs can be volatile, as a result, this assumption is subject to wide variation and there can be a wide range of acceptable assumptions. In addition, our experience has shown that past cost increases are not necessarily indicative of future cost increases. Therefore, judgment is required in developing this assumption.

Based on a detailed analysis of the trend assumption, which considered the Actuarial Standard of Practice No. 6 (ASOP #6) - *Measuring Retiree Group Benefit Obligations*, research published by the Society of Actuaries entitled *Modeling Long Term Healthcare Cost Trends*, and other publications by actuaries and health care professionals regarding short-term medical cost increases and expected long-term health care spending, we believe that an appropriate trend assumption for valuing retiree health care liabilities should:

- Consider separate short-term trend rates for major cost components such as medical and prescription drug services;
- Be based primarily on the "core" trend components - medical inflation, utilization, and intensity of services, and exclude the impact of the aging of the covered population;
- Include short-term rates established with an emphasis towards the influences of the health care marketplace as a whole, while also considering the cost characteristics of the plan;
- Assume that over the long-term, health care costs ultimately will be constrained by the public's ability and willingness to pay the higher cost of medical services; and
- Reflect the effect of future technology improvements on the long-term health care costs.

A typical retiree medical valuation uses health care trend rates that initially reflect recent experience in conjunction with the overall health care marketplace. Estimated marketplace trends are developed using a consistent series of market-wide data including: S&P Healthcare Economic Index, Carrier Surveys, CMS National Health Expenditures, Client Experience Monitoring Reports, CMS Trustees Report, Healthcare Components of CPI-W, and Pharmacy Benefit Manager Trend Reports. A separate trend assumption has been added to estimate the growth in expected EGWP revenue.

Initial trend rates are then assumed to grade down to an ultimate level that implies the National Health Expenditure (NHE) stabilizes as a percentage of Gross Domestic Product (GDP). In other words, the ultimate trend rate is equal to price inflation plus real GDP growth plus any allowances for leveraging of plan design variables, Medicare integration, and other cost drivers. The length of the select period — the period of time before the ultimate trend rate is reached — and the trend rate pattern during the select period have been developed by taking into account reasonable expectations for the ultimate portion of GDP consumed by the Health Care sector.

Exhibit 4-1 Medical Trend Assumption as Adjusted for Excise Tax Computations

NYS Empire Plan

	Adjusted Trend				
	Pre-65		Post-65		
Year	Med	RX	Med	RX	EGWP
2019/20	5.75%	8.00%	5.00%	8.00%	8.00%
2020/21	5.75%	7.00%	4.90%	7.00%	7.00%
2021/22	5.50%	6.00%	4.80%	6.00%	6.00%
2022/23	5.25%	5.50%	4.80%	5.50%	5.50%
2023/24	5.00%	5.25%	4.75%	5.25%	5.25%
2024/25	5.00%	5.00%	4.75%	5.00%	5.00%
2025/26	4.75%	4.50%	4.50%	4.50%	4.50%
2026/27	4.50%	4.50%	4.50%	4.50%	4.50%
2027/28	4.50%	4.50%	4.50%	4.50%	4.50%
2028/29	4.50%	4.50%	4.50%	4.50%	4.50%
2029/30	4.50%	4.50%	4.50%	4.50%	4.50%
2030/31	4.50%	4.50%	4.50%	4.50%	4.50%
2031/32	4.50%	4.50%	4.50%	4.50%	4.50%
2032/33	4.50%	4.50%	4.50%	4.50%	4.50%
2033/34	4.50%	4.50%	4.50%	4.50%	4.50%
2034/35	4.50%	4.50%	4.50%	4.50%	4.50%
2035/36	4.50%	4.50%	4.50%	4.50%	4.50%
2036/37	4.70%	4.70%	4.90%	4.50%	4.50%
2037/38	4.80%	4.80%	5.00%	4.50%	4.50%
2038/39	5.30%	5.30%	5.30%	4.50%	4.50%
2039/40	5.30%	5.30%	5.30%	4.50%	4.50%
2040/41	5.30%	5.30%	5.30%	4.50%	4.50%
2041/42	5.30%	5.30%	5.20%	4.50%	4.50%
2042/43	5.20%	5.20%	5.20%	4.50%	4.50%
2043/44	5.20%	5.20%	5.20%	4.50%	4.50%
2044/45	5.20%	5.20%	5.20%	4.50%	4.50%
2045/46	5.20%	5.20%	5.20%	4.50%	4.50%
2046/47	5.20%	5.20%	5.20%	4.50%	4.50%
2047/48	5.10%	5.10%	5.10%	4.50%	4.50%

Exhibit 4-1 Medical Trend Assumption as Adjusted for Excise Tax Computations

NYS Empire Plan

	Adjusted Trend				
	Pre-65		Post-65		
Year	Med	RX	Med	RX	EGWP
2048/49	5.10%	5.10%	5.10%	4.50%	4.50%
2049/50	5.10%	5.10%	5.10%	4.50%	4.50%
2050/51	5.10%	5.10%	5.10%	4.50%	4.50%
2051/52	5.10%	5.10%	5.10%	4.50%	4.50%
2052/53	5.10%	5.10%	5.10%	4.50%	4.50%
2053/54	5.10%	5.10%	5.00%	4.50%	4.50%
2054/55	5.00%	5.00%	5.00%	4.50%	4.50%
2055/56	5.00%	5.00%	5.00%	4.50%	4.50%
2056/57	5.00%	5.00%	5.00%	4.50%	4.50%
2057/58	5.00%	5.00%	5.00%	4.50%	4.50%
2058/59	5.00%	5.00%	5.00%	4.50%	4.50%
2059/60	5.00%	5.00%	5.00%	4.50%	4.50%
2060/61	5.00%	5.00%	5.00%	4.50%	4.50%
2061/62	5.00%	5.00%	4.90%	4.50%	4.50%
2062/63	4.90%	4.90%	4.90%	4.50%	4.50%
2063/64	4.90%	4.90%	4.90%	4.50%	4.50%
2064/65	4.90%	4.90%	4.90%	4.50%	4.50%
2065/66	4.90%	4.90%	4.90%	4.50%	4.50%
2066/67	4.90%	4.90%	4.90%	4.50%	4.50%
2067/68	4.90%	4.90%	4.90%	4.50%	4.50%
2068/69	4.90%	4.90%	4.90%	4.50%	4.50%
2069/70	4.90%	4.90%	4.90%	4.50%	4.50%
2070/71	4.90%	4.90%	4.90%	4.50%	4.50%
2071/72	4.90%	4.90%	4.90%	4.50%	4.50%
2072/73	4.80%	4.80%	4.80%	4.50%	4.50%
2073/74	4.80%	4.80%	4.80%	4.50%	4.50%
2074/75	4.80%	4.80%	4.80%	4.50%	4.50%
2075/76	4.80%	4.80%	4.80%	4.50%	4.50%
2076/77	4.80%	4.80%	4.80%	4.50%	4.50%
2077/78	4.80%	4.80%	4.80%	4.50%	4.50%
2078/79	4.80%	4.80%	4.80%	4.50%	4.50%
2079/80	4.80%	4.80%	4.80%	4.50%	4.50%
2080/81	4.80%	4.80%	4.80%	4.50%	4.50%

Exhibit 4-1 Medical Trend Assumption as Adjusted for Excise Tax Computations

NYS Empire Plan

	Adjusted Trend				
	Pre-65		Post-65		
Year	Med	RX	Med	RX	EGWP
2081/82	4.80%	4.80%	4.80%	4.50%	4.50%
2082/83	4.80%	4.80%	4.80%	4.50%	4.50%
2083/84	4.80%	4.80%	4.80%	4.50%	4.50%
2084/85	4.80%	4.80%	4.80%	4.50%	4.50%
2085/86	4.80%	4.80%	4.80%	4.50%	4.50%
2086/87	4.80%	4.80%	4.70%	4.50%	4.50%
2087/88	4.70%	4.70%	4.70%	4.50%	4.50%
2088/89	4.70%	4.70%	4.70%	4.50%	4.50%
2089/90	4.70%	4.70%	4.70%	4.50%	4.50%
2090/91	4.70%	4.70%	4.70%	4.50%	4.50%
2091/92	4.70%	4.70%	4.70%	4.50%	4.50%
2092/93	4.70%	4.70%	4.70%	4.50%	4.50%
2093/94	4.70%	4.70%	4.70%	4.50%	4.50%
2094/95	4.70%	4.70%	4.70%	4.50%	4.50%
2095/96	4.70%	4.70%	4.70%	4.50%	4.50%
2096/97	4.70%	4.70%	4.70%	4.50%	4.50%
2097/98	4.70%	4.70%	4.70%	4.50%	4.50%
2098/99	4.70%	4.70%	4.70%	4.50%	4.50%
2099/100	4.70%	4.70%	4.70%	4.50%	4.50%

Section 5 – Demographic Assumptions

Demographic assumptions are rates of mortality, disability, withdrawal, and retirement. With the exception of SUNY Campus employees, most State employees are covered by the ERS and, to a lesser extent, by the PFRS. We reviewed the 2015 demographic assumptions adopted for use by the New York State & Local Retirement System to value participants in ERS and PFRS and concluded that these assumptions generally form a reasonable basis for our valuation. These assumptions the same as were used in prior valuations, reflecting a study of the experience from April 1, 2010 through March 31, 2015.

Note for PAs: *The New York State & Local Retirement System applied mortality improvement by projecting the rates using Scale MP 2018 generationally for the mortality of current retirees. Each individual PA should determine the assumption about mortality improvement after consulting with their actuary.*

We did not examine the detailed experience underlying the development of those assumptions. The assumptions were based on the experience of ERS and PFRS as a whole, and do not reflect any potential differences in termination rates between State employees and employees of PAs and PEs. No adjustments were made for the possibility that an employee could terminate from the State but remain covered under ERS or PFRS with a different employer.

Since census data relating to job type was not readily available to Aon, we used a blended postretirement mortality assumption in past years by assuming that retirees were split as follows:

Gender	Clerks	Laborers
Males	85.0%	15.0%
Females	92.5%	7.5%

Note for PAs*: These blended assumptions were based on the proportion of State retirees who were clerks as compared to laborers and may differ for a particular PA.*

The New York State & Local Retirement System actuary determined this population split.

The New York State & Local Retirement System values ERS and PFRS beneficiaries using a separate mortality table. However, because the beneficiary population is not fully credible and because beneficiaries under a retirement plan can be other than the retiree's spouse, we did not use the beneficiary mortality table but rather used the retiree table.

At the request of SUNY, for the 2016 valuation, the plan performed a study of the withdrawal and retirement rates for the three SUNY hospitals. The hospitals proved to have significantly higher withdrawal rates than would have been expected based on the overall experience under the New York State & Local Retirement System, even after adjusting for the anticipated numbers of terminations due to death or disability. The overall number of terminations for each hospital was credible, although the various age and service cells were not necessarily credible on their own. Based on the separate data provided, but with consideration of the experience at the other hospitals and of NYS ERS rates used in 2016, the plan developed three separate withdrawal assumption tables. SUNY Hospital specific tables are included in Exhibit 2-4. We will continue using separate assumptions for these populations for the April 1, 2019 valuation.

Given the relative smaller number of SUNY hospital employees who terminated with age and service that would qualify them for retirement benefits, the plan has not developed a complete set of retirement rates for each of the three hospitals for each tier level. The rates developed combine Brooklyn Hospital and Stony Brook Hospital. The rates for Syracuse Hospital remain separate since they differ enough from the other hospitals

While some SUNY campus employees – primarily staff and not the professors – are in ERS, many are in the New York State Teachers' Retirement System (TRS), with the majority purchasing an annuity from TIAA-CREF. The plan completed an experience study of the withdrawal and retirement rates for SUNY Campus-ORD members who participate in TIAA/CREF and has developed separate tables for this population for the 2016 valuation. These group specific tables will be used for participants who are specifically noted as TIAA/CREF in the data. We will continue to recommend using the TRS assumptions for valuing SUNY Campus employees who are not clearly identified as ERS, PFRS, or TIAA/CREF.

Note for PAs: *The SUNY Hospital and SUNY Campus-ORD assumptions are based on the experience of these particular employers and are not likely to be representative of the experience of any other particular PA.*

Section 6 – Health Care Reform Considerations

The Patient Protection and Affordable Care Act (PPACA), was signed March 23, 2010, with further changes enacted by the Health Care and Education Reconciliation Act (HCERA), signed March 30, 2010. This report has discussed various assumptions that were modified based on considerations under Health Care Reform legislation. This section discusses particular legislative changes that were reflected in our assumptions. We have not identified any other specific provision of Health Care Reform that would be expected to have a significant impact on the measured obligation. As additional guidance on the legislation is issued, we will continue to monitor any potential impacts.

Expansion of Child Coverage to Age 26 — Health Care Reform mandates that coverage be offered to any child, dependent or not, through age 26, consistent with coverage for any other dependent. New York State insurance law mandates coverage to age 29, but on a fully contributory basis. We have assumed that the impact of this increase is reflected in the underlying rates and the claims experience.

High Cost Plan Excise Tax — The health care reform legislation added a new high cost plan excise tax (also known as the “Cadillac tax”). On December 18, 2015 President Obama signed the Consolidated Appropriations Act, 2016 into law. The new law included provisions which impact the excise tax on high-cost group health plans introduced by the Affordable Care Act, as it delayed implementation of the excise tax for two years (i.e., from 2018 to 2020) and allowed the excise tax to be deductible to the taxpayer. On January 22, 2018, Congress passed a short-term spending bill that will fund the government through February 8, 2018. This spending bill further delayed the effective date of the Cadillac tax until 2022. Finally, on December 20, 2019 President Trump signed the 2020 Federal Spending Package which repealed the ACA taxes, including Excise Tax, for all tax years beginning after December 31, 2019.

Section 7 – Qualifications

Aon has developed these recommended actuarial assumptions solely for the purpose of enabling New York State to value its obligation under GASB 75. Use of this report for any other purpose may not be appropriate and may result in mistaken conclusions due to failure to understand applicable assumptions, methodologies, or inapplicability of the report for that purpose. No one may make any representations or warranties based on any statements or conclusions contained in this report without the written consent of Aon.

Our projections are based on plan provisions, premium, claim and enrollment data provided to us by the Department of Civil Service and the four Empire Plan insurers. In selecting the demographic assumptions, we relied upon analyses of historic experience and recommendations for assumptions under the New York State Employees Retirement System and the New York State Teachers' Retirement System prepared by the actuaries for those Systems, as well as census information provided to us by SUNY.

The recommendations in this report are a Statement of Actuarial Opinion, prepared by Wil Ocasio, Jessica Fenske, and Betsy Hanson. Mr. Ocasio is an Associate in the Society of Actuaries. Ms. Fenske is a Fellow of the Society of Actuaries. Ms. Hanson is a Fellow of the Society of Actuaries and a Member of the American Academy of Actuaries. They collectively meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.