New York State

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

Participating Agency Version

June 2019

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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, 2018 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 January 4, 2019 report to New York State Department of Civil Service (DCS), ***New York State/SUNY Development of Recommended Actuarial Assumptions for 4/1/2018 Other Post Employment Benefit Plans Actuarial Valuations.*** 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 2017:

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, 2019 is 3.79%.
- 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 impact of the excise tax has been adjusted based on the delay in the effective date.
- Reduction of percentage of female employees assumed to be married based on a review of recent data

The 2018 valuation is being used to provide the basis for the accounting reporting under Government Accounting Standards Board Standard 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, 2018 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, 2018. 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, 2019 measurement date, this rate is 3.79%.

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 2017 incurred claims, paid through March 31, 2018, 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, 2018 – March 31, 2019, and adjusted as shown in the detail in Exhibit 3-1. The age 65 rates are shown below:

Coverage	Non- Medicare Eligible	Medicare Eligible Before EGWP	Medicare Eligible Reflects EGWP Revenue
Medical	$16,725	$1,266	$1,266
Drug	$3,729	$3,729	$2,859
Total	$20,454	$4,995	$4,125

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 2019, we project the average Medicare Part B premium to be $1,608 per Medicare eligible individual. This amount is based on the Part B premium rate for 2018 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 75% of all other future disabled participants. 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
2018/19==>	2019/20	6.25%	5.10%	9.00%	9.00%
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 the President signed the Consolidated Appropriations Act, 2016 into law. The new law includes provisions which impact the excise tax on high-cost group health plans introduced by the Affordable Care Act, as it will delay implementation of the excise tax for two years (i.e., from 2018 to 2020) and allow 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 delays the effective date of the Cadillac tax until 2022. For valuation purposes, we will assume that the value of the tax will be passed back to NYSHIP in higher premium rates and that this additional cost is also shared with the retiree using the same contribution percentages that are applied.

The tax is 40% of the excess of a) the cost of coverage over b) the limit. We will calculate "a" (the cost of coverage) using the premiums that are the basis of retiree contributions (i.e., based on Exhibit 2-2). We will calculate "b" (the limit) starting with the statutory limits ($10,200 single and $27,500 family in 2018), adjusted for the following:

- Limits will increase from 2018 to 2019 by 3.50% (CPI plus 1%);
- Limits will increase after 2019 by 2.50% (CPI); and
- For retirees over age 55 but not on Medicare, the limit will be increased additional dollar amount of $1,650 for single coverage, $3,450 for family coverage[1];

The impact of the excise tax on high cost plans is calculated as an adjustment to the trend rates. Exhibit 4-1 shows the adjusted trend rates due to the excise tax.

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-2014 projection scale. 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 members are valued using TRS assumptions.

Note for PAs: The Society of Actuaries released an exposure draft with Public Sector specific mortality tables in August 2018 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.

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[1] Additional Amounts are available at other ages for plans sponsored by an employer where the majority of employees are engaged in high risk professions including law enforcement officers. Since only a minority of the retirees in the NY State valuation are police, we are assuming this exception would not apply. However, it may be that a participating agency would qualify for this additional limit.

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, 2018. 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 August 2018. 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
4/1/2018-3/31/2019

Age	PPO claim costs			
	Medical	Rx	EGWP Revenue	Total
1	$3,646	$465	n/a	$4,111
2	$3,646	$465	n/a	$4,111
3	$3,646	$465	n/a	$4,111
4	$3,646	$465	n/a	$4,111
5	$3,646	$465	n/a	$4,111
6	$3,646	$465	n/a	$4,111
7	$3,646	$465	n/a	$4,111
8	$3,646	$465	n/a	$4,111
9	$3,646	$465	n/a	$4,111
10	$3,646	$465	n/a	$4,111
11	$3,646	$465	n/a	$4,111
12	$3,646	$465	n/a	$4,111
13	$3,646	$465	n/a	$4,111
14	$3,646	$465	n/a	$4,111
15	$3,646	$465	n/a	$4,111
16	$3,646	$465	n/a	$4,111
17	$3,646	$465	n/a	$4,111
18	$3,646	$465	n/a	$4,111
19	$3,646	$465	n/a	$4,111
20	$3,646	$465	n/a	$4,111
21	$3,755	$488	n/a	$4,243
22	$3,868	$511	n/a	$4,379
23	$3,984	$536	n/a	$4,520
24	$4,104	$561	n/a	$4,665
25	$4,227	$588	n/a	$4,815
26	$4,353	$617	n/a	$4,970
27	$4,484	$646	n/a	$5,130
28	$4,619	$677	n/a	$5,296
29	$4,757	$710	n/a	$5,467
30	$4,900	$744	n/a	$5,643
31	$5,047	$779	n/a	$5,826
32	$5,198	$817	n/a	$6,015
33	$5,354	$856	n/a	$6,210
34	$5,515	$897	n/a	$6,412
35	$5,680	$940	n/a	$6,620
36	$5,851	$985	n/a	$6,836
37	$6,026	$1,033	n/a	$7,059
38	$6,207	$1,082	n/a	$7,289
39	$6,393	$1,134	n/a	$7,527
40	$6,585	$1,189	n/a	$7,773

EXHIBIT 2-1 Per Capita Gross Plan Costs
4/1/2018-3/31/2019

| Age | PPO claim costs | | | |
	Medical	Rx	EGWP Revenue	Total
41	$6,782	$1,246	n/a	$8,028
42	$6,986	$1,305	n/a	$8,291
43	$7,196	$1,368	n/a	$8,564
44	$7,411	$1,434	n/a	$8,845
45	$7,634	$1,502	n/a	$9,136
46	$7,916	$1,573	n/a	$9,489
47	$8,209	$1,647	n/a	$9,856
48	$8,513	$1,724	n/a	$10,237
49	$8,828	$1,805	n/a	$10,633
50	$9,154	$1,890	n/a	$11,045
51	$9,539	$1,979	n/a	$11,518
52	$9,940	$2,072	n/a	$12,012
53	$10,357	$2,170	n/a	$12,527
54	$10,792	$2,272	n/a	$13,064
55	$11,245	$2,378	n/a	$13,624
56	$11,740	$2,488	n/a	$14,228
57	$12,257	$2,602	n/a	$14,859
58	$12,796	$2,722	n/a	$15,518
59	$13,359	$2,847	n/a	$16,206
60	$13,947	$2,978	n/a	$16,925
61	$14,463	$3,115	n/a	$17,578
62	$14,998	$3,258	n/a	$18,256
63	$15,553	$3,408	n/a	$18,961
64	$16,128	$3,565	n/a	$19,693
65	$1,266	$3,729	($870)	$4,125
66	$1,300	$3,871	($903)	$4,268
67	$1,335	$4,018	($937)	$4,416
68	$1,371	$4,170	($973)	$4,569
69	$1,408	$4,329	($1,010)	$4,727
70	$1,446	$4,493	($1,048)	$4,891
71	$1,472	$4,606	($1,075)	$5,004
72	$1,499	$4,721	($1,101)	$5,118
73	$1,526	$4,839	($1,129)	$5,236
74	$1,553	$4,960	($1,157)	$5,356
75	$1,581	$5,084	($1,186)	$5,479
76	$1,616	$5,125	($1,196)	$5,545
77	$1,652	$5,166	($1,205)	$5,612
78	$1,688	$5,207	($1,215)	$5,680
79	$1,725	$5,249	($1,225)	$5,749
80	$1,763	$5,291	($1,234)	$5,819

EXHIBIT 2-1 Per Capita Gross Plan Costs
4/1/2018-3/31/2019

Age	PPO claim costs			
	Medical	**Rx**	**EGWP Revenue**	**Total**
81	$1,812	$5,301	($1,237)	$5,877
82	$1,863	$5,312	($1,239)	$5,936
83	$1,915	$5,322	($1,242)	$5,996
84	$1,969	$5,333	($1,244)	$6,058
85	$2,024	$5,344	($1,247)	$6,121
86	$2,052	$5,349	($1,248)	$6,154
87	$2,081	$5,354	($1,249)	$6,186
88	$2,110	$5,360	($1,250)	$6,220
89	$2,140	$5,365	($1,252)	$6,253
90+	$2,170	$5,370	($1,253)	$6,287

Exhibit 2-2 Premium Used for Establishing Retiree Contributions
4/1/2018 - 3/31/2019

Name	Code	Non-Medicare Eligible			Medicare Eligible		
		NonRx	Rx	Total	NonRx	Rx	Total
Empire PPO	Retiree/SS	$6,716	$2,813	$9,529	$6,716	$2,813	$9,529
	Spouse	$10,917	$3,396	$14,313	$10,917	$3,396	$14,313

EXHIBIT 2-3 PRERETIREMENT MORTALITY RATES
MALES

Age	ERS Accidental Death	ERS All other Death	PFRS Accidental Death	PFRS All other Death	TRS 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

Age	ERS Accidental Death	ERS All other Death	PFRS Accidental Death	PFRS All other Death	TRS 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* Healthy Males	ERS* Healthy Females	ERS* Disabled Males	ERS* Disabled Females	PFRS* Healthy	PFRS* 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 2014 on a generational basis with base year of 2014

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

	ERS					
	Years of Service					
Age	< 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

Age	Brooklyn Hospital & Stony Brook Hospital Years of Service					
	< 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	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
						Campus - ORD					
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 Accidental Disability Tiers 1 & 2	ERS Accidental Disability Tiers 3, 4, 5	ERS All Other Disability	PFRS Accidental Disability*	PFRS All Other Disability	TRS Male Disability **	TRS Female 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

Age	ERS – Tier 1 Years of Service			Age	ERS Tiers 2, 3 & 4 Years of Service		
	<20	20-29.99	> = 30		<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%

Age	ERS – Tier 5 Years of Service			Age	ERS-Tier 6 Years of Service		
	<20	20-29.99	> = 30		<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

Age	PFRS – Tier 1 Years of Service			Age	PFRS Tiers 2+ Years of Service		
	<20	**20-29.99**	**> = 30**		**<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%

Age	Campus- ORD Gender	
	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

	Stony Brook Hospital and Brooklyn Hospital Years of Service				Syracuse Hospital Years of Service		
Age	**<20**	**20-29.99**	**> = 30**	**Age**	**<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	
	Males	Females	Males	Females	Males	Females
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 FY2019 costs by:

- Calculating claims incurred for 2017 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 FY2019.

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 2017.

As noted on the bottom of Exhibit 3-1, the results are below expected trend for medical but higher than expected trend for Rx relative to the per capita costs from the 4/1/2017 valuation.

Exhibit 3-1 Development of Empire Plan Retiree Gross Per Capita Plan Cost
States -- 4/1/2018 - 3/31/2019

				__Non-Medicare__	__Medicare__	__Total__
2017 Claims Incurred			Hospital	$273,125,098	$73,491,603	$346,616,701
Before Adjustments			Medical	$252,112,286	94,082,052	346,194,338
			MH/SA	15,502,731	2,497,052	17,999,782
			Total Medical	$540,740,115	$170,070,707	$710,810,822
			Rx	170,165,026	592,973,644	763,138,670
			Total Medical & Rx	$710,905,141	$763,044,351	$1,473,949,492
Basic Medical Fee			Medical	$2,670,751	$0	$2,670,751
2017 Claims Incurred			Hospital	$273,125,098	$73,491,603	$346,616,701
After Adjustments			Medical	254,783,037	94,082,052	348,865,089
			MH/SA	15,502,731	2,497,052	17,999,782
			Total Medical	$543,410,866	$170,070,707	$713,481,573
			Rx	170,165,026	592,973,644	763,138,670
			Total Medical & Rx	$713,575,892	$763,044,351	$1,476,620,243
2017 Average			Hospital	44,959	146,895	191,853
Enrollment			Medical	46,461	142,256	188,717
			MH/SA	47,479	137,214	184,693
			Rx	47,833	141,015	188,848
2017 Claims PMPM			Hospital	$506.25	$41.69	$ 150.55
			Medical	456.98	55.11	154.05
			MH/SA	27.21	1.52	8.12
			Total Medical	$990.44	$98.32	$ 312.73
			Rx	296.45	350.42	336.75
			Total Medical & Rx	$ 1,286.89	$ 448.74	$ 649.48
	15 Months Trend					
4/1/2018 - 3/31/2019	8.36%	8.36%	Hospital	$548.59	$45.18	$ 163.14
PMPM	8.93%	8.93%	Medical	497.78	60.03	167.80
	9.62%	9.62%	MH/SA	29.83	1.67	8.91
			Total Medical	$ 1,076.19	$ 106.87	$ 339.85
	14.73%	14.73%	Rx	340.12	402.04	386.36
			Total Medical & Rx	$ 1,416.31	$ 508.91	$ 726.21
	Adjustment %					
4/1/2018 - 3/31/2019	0.00%	0.00%	Hospital	$548.59	$45.18	$163.14
PMPM After Plan	0.00%	0.00%	Medical	$497.78	$60.03	167.80
Changes	0.00%	0.00%	MH/SA	29.83	1.67	8.91
			Total Medical	$1,076.19	$106.87	$339.85
	0.00%	0.00%	Rx	340.12	402.04	386.36
			Total Medical & Rx	$1,416.31	$508.91	$726.21

Exhibit 3-1 Development of Empire Plan Retiree Gross Per Capita Plan Cost
States -- 4/1/2018 – 3/31/2019

	% Claims		Non-Medicare	Medicare	Total
Retention [1]	4.7%	Hospital	$6.60	$8.04	$7.71
	10.3%	Medical	14.89	18.14	17.34
	14.6%	MH/SA	1.12	1.36	1.30
		Total Medical	$22.61	$27.55	$26.35
	0.9%	Rx	1.50	4.38	3.65
		Total Medical & Rx	$24.10	$31.93	$30.00
	% Claims				
Indigent Care Surcharge [1]	4.0%	Hospital	$27.91	$0.00	$6.54
	0.5%	Medical	3.17	0.00	0.78
	1.4%	MH/SA	0.49	0.00	0.13
		Total Medical	$31.57	$0.00	$7.45
	0.0%	Rx	0.00	0.00	0.00
		Total Medical & Rx	$31.57	$0.00	$7.45
Graduate Medical		Hospital	$5.23	$0.00	$1.23
Expense Assessment [1]		Medical	0.00	0.00	0.00
		MH/SA	0.00	0.00	0.00
		Total Medical	$5.23	$0.00	$1.23
		Rx	0.00	0.00	0.00
		Total Medical & Rx	$5.23	$0.00	$1.23
	% Claims				
Rx Rebates [1,2]	-8.3%	Rx	($23.84)	($34.64)	($31.91)
4/1/2018 - 3/31/2019 Gross		Hospital	$588.32	$53.22	$178.62
Cost PMPM		Medical	515.84	78.17	185.93
Before NYBEAS		MH/SA	31.44	3.03	10.33
		Total Medical	$1,135.60	$134.42	$374.87
		Rx	317.77	371.78	358.10
		Total Medical & Rx	$1,453.37	$506.20	$732.97
NYBEAS Admin Fee		Total Medical	$0.04	$0.04	$0.04
4/1/2018 - 3/31/2019 Gross		Total Medical	$1,135.64	$134.46	$374.91
Cost PMPM		Rx	317.77	371.78	358.10
After NYBEAS		Total Medical & Rx	$1,453.41	$506.24	$733.01
Aging Factor (to age 65)			0.81480	1.27463	1.15250
4/1/2018 - 3/31/2019 Gross		Total Medical	$1,393.76	$105.49	
Cost PMPM		Rx			$310.71
After NYBEAS					

[1]   Based on projected figures for 2018 and 2019
[2]   Percentage of claims before adjustment for plan changes

Exhibit 3-1 Development of Empire Plan Retiree Gross Per Capita Plan Cost
States -- 4/1/2018 – 3/31/2019

			Non-Medicare	**Medicare**
@ Age 65		Total Medical	$16,725	$1,266
PMPY Before EGWP Revenue		Rx	3,729	3,729
		Total Medical & Rx	$20,454	$4,995
		% Drug	18%	75%
EGWP Revenue @ Average Age				
		Direct Subsidy		($164)
		Coverage Gap		(565)
		Catastrophic		(385)
		Total EGWP Revenue		($1,114)
Aging Factor				1.28044
EGWP @ Age 65				($870)
@ Age 65		Total Medical	$16,725	$1,266
For Valuation (PMPY)		Rx	3,729	2,859
		Total Medical & Rx	$20,454	$4,125
		% Drug	18%	69%
4/1/2017 - 3/31/2018 Gross		Total Medical	$15,696	$1,260
Cost PMPY After NYBEAS		Rx	$3,553	$2,582
@ Age 65 (reflects EGWP Revenue)		Total Medical & Rx	$19,249	$3,842
Trend	**2017 / 2018**	Total Medical	6.75%	5.30%
		Rx	10.00%	10.00%
Expected 4/1/2018 - 3/31/2019 Gross after EGWP Revenue		Total Medical	$16,755	$1,327
		Rx	$3,908	$2,840
		Total Medical & Rx	$20,663	$4,167
Actual Reflecting EGWP Revenue / Expected		Total Medical	-0.2%	-4.6%
		Rx	-4.6%	0.7%
		Total Medical & Rx	-1.0%	-1.0%

Exhibit 3-2 Empire Plan Changes

- **In-network Out-of-Pocket Limit** – For 2018, the maximum out-of-pocket limit for covered, in-network services under The Empire Plan was updated from $7,150 to $7,350 for Individual Coverage and from $14,300 to $14,700 for Family coverage, split between the Hospital, Medical/Surgical, Mental Health and Substance Abuse and Prescription Drug Programs

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

| Year | Adjusted Trend | | | | |
| | Pre-65 | | Post-65 | | |
	Med	RX	Med	RX	EGWP
2018/19	6.25%	9.00%	5.10%	9.00%	9.00%
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	4.50%	4.50%	4.50%	4.50%	4.50%
2037/38	4.50%	4.50%	4.60%	4.50%	4.50%
2038/39	4.70%	4.70%	4.90%	4.50%	4.50%
2039/40	5.20%	5.20%	5.20%	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%

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
2047/48	5.10%	5.10%	5.10%	4.50%	4.50%
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%	5.00%	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	4.90%	4.90%	4.90%	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%

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

NYS Empire Plan

Year	Adjusted Trend				
	Pre-65		Post-65		
	Med	RX	Med	RX	EGWP
2080/81	4.80%	4.80%	4.80%	4.50%	4.50%
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%	4.80%	4.50%	4.50%
2087/88	4.80%	4.80%	4.80%	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 2014 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, 2018 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.

<u>Expansion of Child Coverage to Age 26</u> — 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.

<u>High Cost Plan Excise Tax</u> — Health Care Reform includes various revenue raisers, one of which is the high cost plan excise tax. The expected impact of the excise tax on high cost health plans was reflected through adjusted trend rates. For the excise tax, the per capita claim amounts used in the valuation were trended forward using the unleveraged trend rates from the valuation and compared to the statutory threshold levels indexed at CPI (except for 2018 where an additional 1% was applied, per the statute). Any excess of the indexed plan costs over the indexed statutory threshold level (in 2022 and after) had a 40% tax applied. The unleveraged trend rates for 2022 and after were then adjusted to reflect any additional costs due to the excise tax to produce the leveraged trend rates used for the valuation.

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.