New York State and Local Employees' Retirement System
Police and Fire Retirement System
Public Employees' Group Life Insurance Plan

Thomas P. DiNapoli, Comptroller

ANNUAL REPORT TO THE COMPTROLLER ON ACTUARIAL ASSUMPTIONS

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I. Executive Summary

Fiscal year 2012 (FY 2012) was the second in the current five year experience study cycle. The August 2010 report based on experience studies for the period April 1, 2005 through March 31, 2010 recommended changes in virtually all of the assumptions. This year's report displays the FY 2012 experience and, as is customary in interim reports, recommends that the current assumptions be maintained.

Summary of Assumptions

Assumption	Current
Inflation/COLA	2.7 %
Investment Return	7.5 %
ERS Salary Scale	4.9 % (FY 2010 data) Indexed by Service
PFRS Salary Scale	6.0 % (FY 2010 data) Indexed by Service
Asset Valuation Method	5 Year Level Smoothing
Pensioner Mortality	Gender/Collar Specific Tables based upon FY 2006-2010 experience with Society Of Actuaries Scale AA loading for mortality improvement.
Active Member Decrements	Based upon FY 2006-2010 experience

This recommendation has been shared with the Systems' outside Actuarial Advisory Committee for their review and comment. This Committee is composed of senior actuaries from major insurance companies or pension plans.

In addition to oversight provided by the Actuarial Advisory Committee, the work of the Systems' actuaries is periodically reviewed by a number of organizations, including the Systems' financial statement auditors, internal auditors of the Office of the State Comptroller, the New York State Department of Financial Services (DFS), and a quinquennial review by an external actuarial firm. The most recent review by the DFS is in progress. The most recent review by an external firm was completed in March 2008 by Buck Consultants, LLC. A Request For Quotations (RFQ) for the next review will be publicized later in the year.

The reviewed and finalized actuarial assumptions will be presented to Comptroller Thomas P. DiNapoli for certification and will be used in developing employer contribution rates (payable on 2/1/2014) for the many different plans covered by the Employees Retirement System (ERS) and the Police and Fire Retirement System (PFRS).

FY 2009 market losses were managed by retirement fund actuaries in a variety of ways. Perhaps most common was some form of smoothing method elongation.

The New York State and Local Retirement System (NYSLRS) approach was to maintain existing methodologies and allow the employer contribution rate increase to reflect the magnitude of the market loss. A contribution stabilization rate program was developed to provide employers with an optional tool to assist in managing the contribution impact.

The total FYE 2012 outstanding balance of these amortizations is $1.1b, less than one percent of the assets.

The avoidance of extraordinary contribution rate manipulation provided a transparent view of post Great Recession pension funding realities. State and Local policymakers responded to this environment with salary restraint (as seen in Section II C) and benefit reductions.

Each new tier reduced benefits and increased employee contributions. The significant features of the most recent three tiers for each system are compared on the following two pages.

ERS	**TIERS 3 & 4**		**TIER 5** (3/31/12: 11.5% mbrs, 4.9% sal)	**TIER 6**	
Membership Date	September 1, 1983 – December 31, 2009		January 1, 2010 – March 31, 2012	On or after April 1, 2012	
New Entrant Rate Plan **A15** (85% sal)	11.6% - 0.7% (GLIP/Admin) = **10.9%**		- 1.3% (a) - 0.8% (b,d) - 0.1% (f) = **8.7%** 8.7/10.9 = 80%	- 1.5% (a) - 1.0% (b-d) - 0.5% (e) = **5.7%** 5.7/8/7 = 66%	5.7/10.9 = 52%
(a) Employee Contribution Rate	3% of gross salary until earlier of a) 10 years of membership, or b) 10 years of service credit		3% of gross salary for entire career	Variable % of gross salary for entire career	
				Wage 2 yrs prior	Total Rate (not stepped)
				≤ $45k	3.0%
				$45k +1¢ to $55k	3.5% (1¢ costs $225)
				$55k +1¢ to $75k	4.5% (1¢ costs $550)
				$75k +1¢ to $100k	5.75% (1¢ costs $937.50)
				> $100k	6.0% (1¢ costs $250)
(b) Retirement Age	Full benefits at age 62.			Full benefits at age 63.	
	Or age 55 with ≥ 30 yrs of service.				
	Reduced benefits down to age 55.				
(c) Benefit Calc < 20 years of service	1/60th (1.67%) of FAS * years of service				
≥ 20 years of service	1/50th (2%) of FAS * years of service ≤ 30 + 3/200ths (1.5%) of FAS * years of service > 30			35% of FAS + 1/50th (2%) of FAS * years of service > 20	
(d) Early Age Reduction	Age at Retirement	% Reduction	% Reduction	% Reduction	
	63	0	0	0	
	62	0	0	6.5	
	61	6	6.67	13.0	
	60	12	13.33	19.5	
	…	+ 3 per year	+ 5 per year	+ 6.5 per year	
	55	27	38.33	52	
(e) Final Average Salary	Period	3 years	$(Sal_{1\text{-}261}+Sal_{262\text{-}522}+Sal_{523\text{-}783})/3$	5 years	
	Look Back	2 years	$Sal_{1\text{-}261}$ capped at $(Sal_{262\text{-}522}+Sal_{523\text{-}783})/2$	4 years	
	Growth Cap	10%	* 110%	10%	
	Amount Cap	401(a)(17) Limit ($245,000 for fye 2012)		Governor's Salary ($179,000)	
	Exclusion	None	OT > ann. cap ($15k fye'10, 3% ann. inc)	OT > ann. cap ($15k fye'13, CPI ann. inc)	
(f) Vesting	5 years service, payable age 55		10 years service, payable age 55		
(g) Sick Leave Credit	service credit for up to 165 days (200 days for some members) of unused, unpaid sick leave days			service credit for up to 100 days (200 days) of unused, unpaid sick leave days	

PFRS		TIER 2	TIER 5 (3/31/12: 5.6% mbrs, 2.1% sal)	TIER 6	
Membership Date		July 31, 1973 – June 30, 2009	January 9, 2010 – March 31, 2012	On or after April 1, 2012	
New Entrant Rate Plan **384E** (55% sal)		18.8% - 0.4% (GLIP/Admin) = **18.4%**	- 2.9%(a) - 0.7%(b) - 0.1%(c) = **14.7%** 14.7/18.4 = 80%	-2.6(a) -1.2(b) -0.3(c) -0.2(synergy) = **10.4%** 10.4/14.7 = 71%	10.4/18.4 = 57%
(a) Employee Contribution Rate		Non-contributory	3% of gross salary until 32 years of service (when service crediting ceases) No contributions if contract is so stated (18% mbrs, 23% sal)	Variable % of gross salary until 32 years	
				Wage 2 yrs prior	Total Rate (not stepped)
				≤ $45k	3.0%
				$45k +1¢ to $55k	3.5% (1¢ costs $225)
				$55k +1¢ to $75k	4.5% (1¢ costs $550)
				$75k +1¢ to $100k	5.75% (1¢ costs $937.50)
				> $100k	6.0% (1¢ costs $250)
(b) Final Average Salary[1]	Period	3 years		5 years	
	Look Back	2 years		4 years	
	Growth Cap	20%		10%	
	Amount Cap	401(a)(17) Limit ($245,000 for fye 2012)		Governor's Salary ($179,000)	
	Exclusion	None	OT > 15% of regular annual wages		
(c) Vested Benefit		5 years service, payable age 55	10 years service, payable age 55	10 years service, payable age 63	
		1/60th (1.66%) of FAS * years of service			
(d) Benefit Calc < 20 yrs of service (assume no reversion to regular plan)		Age 62 (to 9/25/08)	Age 65 (on or after 9/26/08, when mandatory retirement age was increased)		
		1/40th (2.5%) of FAS * years of creditable service			
≥ 20 yrs of service (regardless of age)		50% of FAS + 1/60th (1.67%) of FAS * years of service > 20 (capped at 70% of FAS)			
(e) Sick Leave Credit		service credit for up to 165 days (200 days for some members) of unused, unpaid sick leave days			

[1] 1 Year FAS = Highest year of wages subject to a cap of 20% over the wages for the previous 12 months.

Note: Tier 3 applies to members joining July 1, 2009 through January 8, 2010 who declined the option to join Tier 5. (274 members on 3/31/2012)
A complicated array of benefits is detailed in Article 14 of the RSSL.

II. Economic Assumptions

A. Inflation (CPI-U) and the Cost of Living Adjustment (COLA)

The table below displays the applicable CPI-U data:

	CPI-U	Increase	COLA
3/31/2012	229.392	2.65%	1.4%
3/31/2011	223.467	2.68%	1.4%
3/31/2010	217.631		

As a result, there will be a —— = 1.33% rounded up to 1.4% COLA applied in September of 2012, which matches the current assumption.

B. Investment Rate of Return (Discount Rate)

The FY 2012 investment rate of return, as reported by the Division of Investment and Cash Management, is 5.96%. This is nearby the 7.50% assumption. The 3, 5, and 10 year returns are 15.19%, 2.91% and 6.45% respectively.

The high cost of oil (averaging $87.04 per barrel in 2011[1]) and government (averaging 35.4% of GDP in 2011[2]) continue to create a headwind, potentially prolonged, that the markets must overcome.

[1] http://inflationdata.com/inflation/inflation_rate/historical_oil_prices_table.asp

[2] http://www.gpoaccess.gov/usbudget/fy12/xls/BUDGET-2013-TAB-15-3.xls

The actuarial bureau has developed a more mature methodology for determining a best estimate range for the investment return assumption. Common to the method used in the previous quinquennial report is the belief that a fund's asset allocation (mix of stocks and bonds) is the most relevant characteristic for determining the fund's expected investment income. However, the new methodology uses stochastic simulations with forward looking asset class capital market assumptions, as opposed to a less rigorous calculation using general historical returns for equities and fixed income.

The goal is to develop a best estimate range for the investment rate of return over a 30 year period. Each stochastic simulation represents one year's performance. Groupings of 30 simulations provide an annualized return over a 30 year period. Multiple groups of 30 provide a range of annualized returns over a 30 year period.

Given a set of capital market assumptions developed by one of the fund's external investment consultants, and, after adjusting for investment expenses, the best estimate range (defined as the 25th percentile to the 75th percentile) for the investment rate of return over a 30 year period based upon 5,000 thirty year groupings is 4.88% to 7.69%.

The actuarial assumed rate of return of 7.50% is exceeded in 28.1% (down from 34.6% one year ago) of the thirty year groupings.

These results support the recent 0.5% reduction. Looking ahead toward the next five year study, absent future adjustments in the asset allocation and/or capital market assumptions, it seems more likely that the Actuary will be considering a reduction in the assumed investment rate of return than an increase.

C. Salary Scales

The table below displays the actual and expected salary increases for full-time employees.

	FY2011			FY2012		
	Actual	Expected	A/E	Actual	Expected	A/E
ERS	4.279%	4.860%	0.8804	2.762%	4.847%	0.5698
PFRS	6.411%	5.745%	1.1161	3.928%	5.421%	0.7246
Combined	4.533%	4.966%	0.9129	2.927%	4.928%	0.5938

Note that the expected salary scale for FY 2012 in PFRS was 5.421% (which differs from the stated assumed value of 6.0%). This is because there was a shift in the demographics of the PFRS population, namely a smaller percentage of employees at the lower service levels, which have the higher salary growth assumptions.

When reducing an indexed salary scale to one number, the result is only a constant insofar as the demographics of the group remain constant. Indexing by service is more sensitive to demographic shifts than indexing by age as the former has a larger range in salary growth assumptions.

III. Asset Valuation Method

The values since FY2001 are given below (in billions):

Market Value v. Actuarial Value of Assets

FY	MVA[a]	AVA	AL_{EAN}	Ratio	UAL_{EAN}	FY	MVA[a]	AVA	AL_{EAN}	Ratio	UAL_{EAN}
2001	$114.0	$119.4	$98.0	121.9%	$-21.4	2007	$156.5	$142.5	$134.6	105.9%	$-7.9
2002	112.7	125.1	103.9	120.4	-21.2	2008	155.8	151.7	141.3	107.4	-10.4
2003	97.3	106.6	107.3	99.4	0.6	2009	110.9	148.9	146.7	101.5	-2.1
2004[b]	120.8	117.4	116.2	101.0	-1.2	2010	134.2	147.7	156.6	94.3	8.9
2005	128.0	123.7	120.0	103.1	-3.7	2011	149.5	148.6	164.3	90.5	15.7
2006	142.6	132.0	126.6	104.3	-5.4	2012	153.3	147.8	169.3	87.3	21.5

a) Financial Statement Plan Net Assets (i.e. Invested Assets + Receivables)
[both the MVA & AVA exclude funds for group term life insurance]
b) The equity smoothing was 'restarted';
MVA > AVA as the market value of the fixed income portfolio exceeded the amortized cost.

IV. Demographic Assumptions

A. Pensioner Mortality Experience (annual option 0 in millions)

	Male (ERS & Benes) Service (PFRS)					Female (ERS & Benes) Service (PFRS)				
	FY2012		FYs11-12			FY2012		FYs11-12		
	Actual	Expected	Actual	Expected	A/E	Actual	Expected	Actual	Expected	A/E
ERS Clerk (White Collar) Service Retirements	53.412	53.904	105.786	103.972	1.017	45.363	46.666	85.996	89.336	0.963
ERS Laborer (Blue Collar) Service Retirements	29.465	30.751	57.703	59.577	0.969	6.094	5.804	11.255	11.183	1.006
ERS Disability Retirements	6.426	6.226	13.215	12.277	1.076	4.020	3.851	7.742	7.564	1.023
Beneficiaries (uses actual pension received)	1.221	0.944	2.303	1.794	1.284	10.780	9.665	19.359	18.587	1.042
PFRS Retirements	12.586	15.030	26.332	29.086	0.905	2.507	2.536	4.799	4.893	0.981
All Pensioner Mortality for FYs 2011-2012								334.490	338.269	0.989

B. Active Member Decrement Experience

	FY2012		FYs11-12		
Decrement	Actual	Expected	Actual	Expected	A/E
ERS Withdrawals 0 ≤ Srv < 2	10,691	9,360	21,207	19,232	1.103
ERS Withdrawals 2 ≤ Srv < 3	2,744	2,220	5,334	5,096	1.047
ERS Withdrawals 3 ≤ Srv < 4	2,153	2,084	3,798	4,247	.894
ERS Withdrawals 4 ≤ Srv < 5	1,355	1,589	2,535	3,035	.835
ERS Withdrawals 5 ≤ Srv < 10	2,751	2,852	5,169	5,715	.904
ERS Withdrawals 10 ≤ Service	1,926	2,171	3,719	4,356	.854
PFRS Withdrawals	263	266	572	556	1.029
All Withdrawals			42,334	42,237	1.002
ERS T-1 Reg Plan Srv Ret 0 ≤ Srv < 20	273	261	583	566	1.031
ERS T-1 Reg Plan Srv Ret 20 ≤ Srv < 30	329	338	889	748	1.189*
ERS T-1 Reg Plan Srv Ret 30 ≤ Service	842	762	3,528	1,990	1.773*
ERS T-2,3,4 Reg Plan Srv Ret 0 ≤ Srv < 20	4,354	4,343	8,702	8,440	1.031
ERS T-2,3,4 Reg Plan Srv Ret 20 ≤ Srv < 30	3,989	4,228	11,184	8,531	1.311*
ERS T-2,3,4 Reg Plan Srv Ret 30 ≤ Service	3,975	3,736	11,718	7,525	1.557*
ERS State T-1,2 Correction Officer Srv Ret	43	~32	88	~77	1.143
ERS State T-3 Correction Officer Srv Ret	707	601	1256	1,151	1.091
ERS County Correction Officer Srv Ret	153	143	355	285	1.247
All ERS Service Retirements			38,303	29,313	1.307
PFRS 20 Year Plan Srv Ret	246	272	496	552	.899
PFRS 20 Year Plan w add'l 60ths Srv Ret	514	450	1059	917	1.155
PFRS State Police 20 Year Plan Srv Ret	179	116	300	233	1.288
All PFRS Service Retirements			1,855	1,702	1.090
ERS Accidental Deaths	0	~5	1	~10	.098
ERS Ordinary Deaths	686	755	1,408	1,530	.920
PFRS Accidental Deaths	3	~2	8	~5	1.618
PFRS Ordinary Deaths	18	~21	45	~43	1.042
ERS Accidental Disability	3	~12	9	~24	0.368
ERS Ordinary Disability	470	457	906	920	.985
PFRS Accidental Disability	71	~96	163	194	.842
PFRS Ordinary Disability	4	~5	13	~11	1.234
PFRS IPOD Disability	71	~61	151	122	1.234

* The FY 2011 ERS retirement incentive resulted in an earlier harvest of near-term retirees (12,207).

V. Effect on Contributions

The table below summarizes the average employer contribution rates for the most recent valuations.

Valuation	Local Employer Billing Date	ERS	PFRS	Total Employer Contributions
4/1/2005	2/1/2007	10.7%	17.0%	$2.7b
4/1/2006	2/1/2008	9.6%	16.6%	$2.6b
4/1/2007	2/1/2009	8.5%	15.8%	$2.5b
4/1/2008	2/1/2010	7.3%	15.1%	$2.3b
4/1/2009	2/1/2011	11.9%	18.2%	$3.6b
4/1/2010	2/1/2012	16.3%	21.6%	$4.9b
4/1/2011	2/1/2013	18.9%	25.8%	$5.5b
4/1/2012	**2/1/2014**	**20.9%**	**28.9%**	**$6.2b**

The ERS absolute increase of 2.0% is less than the 4.6%, 4.4%, and 2.6% increases over the last three years. [Note that the associated ERS average new entrant rate is 11.6%, and 20.9%/11.6% = 180%.]

The PFRS absolute increase of 3.1% is similar to the 3.1%, 3.4%, and 4.2% increases over the last three years. [Note that the associated PFRS average new entrant rate is 19.0%, and 28.9%/19.0% = 152%.]

The employer contribution increase of $0.7b is similar to last year's $0.6b increase. [Note that the associated new entrant contribution is $3.7b. The additional $2.5b is 11.6% of the UAL_{EAN} of $21.5b]

The new funded ratios are 87.2% in ERS and 87.9% in PFRS, down from 90.2% and 91.9% respectively.

The FY2009 investment loss will be entirely recognized with the next valuation, which will hopefully mark the peak in the employer contribution rates and minimum in the funded ratios. The graph on the last page shows that the new rates are similar to those in the early 1970s.

VI. Summary of Recommendations

I recommend that the current assumptions be maintained.

This recommendation was reviewed and approved by the Actuarial Advisory Committee in a meeting on July 24, 2012. The final recommendation will be submitted to the State Comptroller, Thomas P. DiNapoli, pursuant to Section 11 of the Retirement and Social Security law.

Historical Employer Contribution Average Rate

	Average Rate			Average Rate			Average Rate	
Year	ERS	PFRS	Year	ERS	PFRS	Year	ERS	PFRS
1972	21.9	28.8	1987	9.4	13.3	2002	1.2	1.6
1973	20.3	31.4	1988	9.7	14.8	2003	1.5	1.4
1974	21.3	32.4	1989	3.7	8.5	2004	5.9	5.8
1975	20.4	32.9	1990	3.6	8.3	2005	12.9	17.6
1976	19.7	32.3	1991	0.3	7.8	2006	11.3	16.3
1977	19.6	33.3	1992	0.4	11.5	2007	10.7	17.0
1978	19.8	34.9	1993	0.6	14.0	2008	9.6	16.6
1979	18.8	35.1	1994	0.7	11.3	2009	8.5	15.8
1980	18.1	34.2	1995	0.7	13.9	2010	7.4	15.1
1981	17.0	33.1	1996	2.2	13.0	2011	11.9	18.2
1982	15.5	29.6	1997	3.7	9.8	2012	16.3	21.6
1983	15.1	28.7	1998	1.7	7.0	2013	18.9	25.8
1984	14.4	27.3	1999	1.3	2.4	2014	20.9	28.9
1985	14.2	26.5	2000	0.9	1.9			
1986	10.4	19.8	2001	0.9	1.6