



New York City Retirement Systems

Contribution Rate Replication Audit

June 4, 2019

Bolton

Submitted by:

Thomas Lowman, FSA, EA, MAAA

(443) 573-3909

tlowman@boltonusa.com

Colin England, FSA, EA, MAAA

(443) 703-2512

cengland@boltonusa.com

Jordan McClane, ASA, EA

(667) 218-6935

jmcclane@boltonusa.com



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Employee Benefits, Actuarial & Investment Consulting

June 4, 2019

The Honorable Scott M. Stringer
New York City Comptroller
Office of the New York City Comptroller
One Centre Street
New York, NY 10007

Re: Actuarial Audit of Employer Contributions for 2016 valuation

Dear Comptroller Stringer:

Bolton Partners, Inc. is pleased to present this Contribution Rate Replication Audit Report (Report), which is a key deliverable under our second biennial engagement to serve as Independent Actuary under Section 96 of the New York City Charter. Bolton Partners was hired by the Office of the Comptroller to perform an actuarial audit of the following five New York City Retirement Systems:

- New York City Employees' Retirement System (NYCERS)
- Teachers' Retirement System of the City of New York (TRS)
- Board of Education Retirement System of the City of New York (BERS)
- New York City Police Pension Fund (POLICE)
- New York City Fire Pension Fund (FIRE)

This is Bolton Partners' report covering our full replication actuarial audit of the 2016 valuations. The primary purpose of the full replication work (which includes mathematical modeling and sample life analysis) is to validate the results, with emphasis on the actuarial liabilities, assets, and required contributions, of the June 30, 2016 actuarial valuations for the plans which determined the City's contribution needs for FY 2018¹. We have finished our review of the five plans and we have closely matched the Office of the Actuary's (OA or Actuary) results based on their assumptions and methods. Many of our comments relate to (1) questioning some of the methods used, (2) items that were corrected after our first engagement or (3) minor refinements in the valuation of the benefits.

We also were asked to determine whether the actuarial valuation methods, assumptions and procedures used by the OA are reasonable and consistent with all applicable laws, Board policies, and generally accepted actuarial principles and practices. Methods and assumptions are appropriate for the plan structure and funding objectives and are applied as stated by the OA. We comment on these later in this report.

¹ We will refer to actuarial valuations by the year as of which the present value of benefits is calculated, and as of which the member data used in the valuation is collected. For example, the valuation prepared using June 30, 2016 member data and calculating present values as of that date will be referred to as the 2016 valuation.

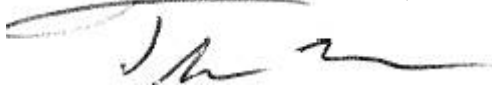
Members of the Board
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We thank Sherry Chan, Michael Samet, and Anderson Huynh at the OA and their colleagues for their assistance in providing us the member and other data and sample life information required to prepare this report, as well as promptly and thoroughly answering our questions regarding sample life calculations and other issues regarding plan provisions, funding methods and assumptions, participant data, and practices used by the OA to prepare the annual valuations.

We also want to thank the staffs at each System for providing documents and spending time answering our many questions. Their assistance was crucial to our work.

Sincerely,

BOLTON PARTNERS, INC.



Thomas B. Lowman, FSA, EA, MAAA
Vice President



Colin England, FSA, EA, MAAA
Senior Consulting Actuary



Jordan McClane, ASA, EA
Actuary



Section I. Actuarial Audit Process

The Contribution Rate Replication Audit for each System² followed four main steps:

- Collect and validate all source information, including member data
- Produce independent models to verify computational and procedural accuracy
- Using the models we prepared, review the 2016 valuation for consistency between the methods and assumptions and Plan provisions used, and the results of the OA’s liability, normal cost and contribution calculations.
- Provide feedback on the OA model’s weaknesses and recommendations for improvements.

The OA provided us all source material including the “scrubbed” census data³ for the 2016 valuation. Summaries of the census information (summary statistics) were reviewed by the project manager for consistency with the reports produced by the OA. The following table provides select examples of summary statistics and validation parameters⁴:

Summary Statistic	Acceptable Tolerance
Number of participants — active, retired, various inactive categories	1.0%
Total salary and member contributions	1.0%
Age/Salary/Service grouping statistics	2.0%

The key purpose of the independent models is to audit the actuarial liabilities of the Systems and verify the Actuary’s calculations of Employer Pension Contributions for each System. The successful validation of these items depended on a validation of the software used by the OA, the participant and asset data used by the OA, and the methods used to account for all benefits provided by the plans, including the Variable Supplements Fund (VSF) and Tax Deferred Annuity (TDA) programs. Some of this validation involved reviewing sample lives prepared by the OA and creating our own sample lives in Excel.

We created independent actuarial models of the Systems in Excel and ProVal, a pension actuarial valuation software program. The purpose of these models was to calculate the actuarial assets, liabilities and employer pension contributions for each System and for the participating employers. These actuarial results were used to:

- Confirm that the actuarial assumptions and methods used by the Actuary are as adopted by each System’s Board of Trustees and/or promulgated by the State legislature
- Verify the Actuary’s calculations of Employer Pension Contributions for each System
- Validate the actuarial software used by the Actuary
- Review the financial impact of the VSFs on the NYCERS, POLICE, and FIRE
- Review the financial impact of the TDA arrangements incorporated in TRS and BERS
- Review the systems’ progress in implementing the recommendations made by the preceding independent actuary or in our previous report.

² We refer to NYCERS, TRS, BERS, POLICE and FIRE as the Systems.

³ By “scrubbed” census data we mean the member data from which all internal inconsistencies have been addressed and which requires no additional review for completeness or consistency with prior years. Note that this does not imply that the member data was necessarily complete as members could have been left out of the data OA reviewed prior to their review.

⁴ All information on acceptable tolerances in this report was taken from our proposal, which discussed the reasons for the various tolerance limits that we would apply in our work for the City of New York.

Section I. Actuarial Audit Process

The models produced a comprehensive replication of the actuarial results that we compared to the detailed reports produced by the OA for each employee group and tier of each System. While we expected our results to be considerably closer to the OA's results than the acceptable tolerance shown below (in part because we also use ProVal, the valuation software used by the OA, to value system liabilities), the maximum tolerance we viewed as acceptable is shown below:

Calculated Item	Acceptable Tolerance
Present value of pay; present value of member contributions	2.0%
Present value of future benefits	4.0%
Normal cost (gross)	4.0%
Actuarial value of assets	0.5%
Actuarial accrued liabilities	4.0%
Employer Contribution	5.0%

Our findings were expected to include comments on:

- Data limitations / reporting errors
- Computational errors or inefficiencies
- Inconsistencies between assumptions used by the Actuary and those set by the Boards and State legislature.

We catalogued weaknesses in the OA's models, reviewed them for significance and typically discussed them with the OA. We include comments on:

- The appropriateness of the actuarial asset valuation method used to calculate employer contributions
- The appropriateness of the actuarial cost method used to calculate employer contributions, including the one-year lag methodology
- Recommended areas for additional improvement, inquiry or investigation by the OA or Office of the Comptroller.



Section II. Contribution Replication

Summary of Results:

We have completed the replication of the present value of future benefits (PVFB), accrued liability, normal cost and employer contributions for each of the plans. A detailed comparison of results by plan can be found at the end of this section. The comparison of results uses the same tolerance methodology as was used for our previous report, which detailed the replication results for the 2014 valuation. For components with subcomponents, tolerance tests are completed on individual sub-components as a percentage of the subcomponent (labeled “Individual”) and as a percentage of the total component (labeled “Total”). For instance, the Individual (*Total*) tolerance test for active PVFB is computed as the active PVFB produced by Bolton Partners minus the active PVFB produced by the OA, divided by the active (*Total*) PVFB produced by the OA.

Key values from the comparison are presented in the following table:

Comparison of OA and Bolton Results (\$ Millions)						
System	Category	OA Results	Bolton Results	Percentage Difference	Tolerance Limit	Pass / Fail
NYCERS	PVFB	\$ 95,785	\$ 96,117	0.35%	4.00%	Pass
	Employer Contribution	\$ 3,377	\$ 3,405	0.84%	5.00%	Pass
TRS	PVFB	\$ 85,762	\$ 86,246	0.56%	4.00%	Pass
	Employer Contribution	\$ 3,890	\$ 3,947	1.47%	5.00%	Pass
BERS	PVFB	\$ 6,133	\$ 6,166	0.54%	4.00%	Pass
	Employer Contribution	\$ 319	\$ 323	1.27%	5.00%	Pass
POLICE	PVFB	\$ 62,348	\$ 62,292	-0.09%	4.00%	Pass
	Employer Contribution	\$ 2,415	\$ 2,408	-0.30%	5.00%	Pass
FIRE	PVFB	\$ 25,154	\$ 25,051	-0.41%	4.00%	Pass
	Employer Contribution	\$ 1,200	\$ 1,188	-1.03%	5.00%	Pass
Total	PVFB	\$ 275,182	\$ 275,872	0.25%		
	Employer Contribution	\$ 11,201	\$ 11,271	0.63%		

We concluded that the benefit provisions, methods and assumptions were appropriately used by the OA to determine the liabilities, normal cost and employer pension contributions for the Systems. While we determined that there were minor mistakes with both the application of benefits provisions and the use of assumptions, we encountered no significant errors.

In addition to total results by plan, three plans (NYCERS, TRS and BERS) have subgroups that require separate reporting. Some subgroups cover City employees and others do not. Our 2016 review covers the results by subgroup which are included in the “Detailed Results” section of this report.

Section II. Contribution Replication

Summary of Results:

We have grouped the issues found during our replication work into the following categories:

1. Treatment of subsidized interest and annuity conversion factors applied to TDA balances for TRS and BERS
2. The use of the overtime assumptions for POLICE, FIRE, and NYCERS
3. The coordination of the VSF payments and escalation for POLICE, FIRE, and NYCERS
4. The Lag Method
5. The need for actuarial reports for each System, and the appropriate content for those reports
6. The calculation of the employer normal cost
7. Conformance with ASOPs
8. Minor issues.

Issues:

Issue #1: Funding of subsidized interest and annuity conversion factors applied to TDA balances for TRS and BERS TDA (403(b)) benefits

We raised this issue in our prior report and the 2016 valuation was changed to reflect the added “term cost”⁵ for this subsidized TDA interest rates. The additional term cost added to the employer pension contribution in the 2016 valuation was about \$38 million for TRS and about \$10 million for BERS. The annuity conversion factors are being reviewed by OA, to determine how these should be reflected in future valuations. We believe it is useful to include the following explanation of the issues in our final report.

Employees can voluntarily contribute to a Tax Deferred Annuity (aka TDA or 403(b)) plan. One of the “investment options” members may elect for their TDA account is a fixed rate of either 7% or 8.25%. This rate is provided by the primary plan (that is, the System that pays the traditional retirement benefits). Whether the rate is 7% or 8.25% depends on the bargaining unit. During the replication audit for the 2014 valuation, the OA mentioned that approximately 15% of TRS TDA Fixed Fund Balance amounts and about 67% of BERS TDA Fixed Fund Balance amounts earn 8.25%. For the 2016 replication, the percentages were approximately 15% for TRS and 63% for BERS. Our primary concern is that if the pension plan guaranteeing the investment return is expecting to earn 7% but is paying members 8.25% on their TDA accounts, the plan has a liability for guaranteeing this investment. We believe that the best practice is for the cost of this guaranteed interest rate be funded as part of the plan liabilities. The value of this additional benefit amount should be reflected in the contribution rate, either reflecting all future years the guaranty applies, or at least the value of this guarantee for the current year (also known as the “term cost” for the benefit.) Currently, no liability is reflected for the value of this subsidy in future years. Past subsidies are included as actuarial losses and amortized over future years. At the end of this Issue #1 is some history related to previous loads that were included to reflect the subsidy.

⁵ “Term Cost” means the value of a benefit expected to be earned (credited) in the upcoming year. Thus, the term cost of the TDA interest rate guarantee for members guaranteed 8.25% would be 1.25% of the balance of their accounts at the beginning of the year.

Section II. Contribution Replication

Issues:

Issue #1: Funding of subsidized interest and annuity conversion factors applied to TDA balances for TRS and BERS TDA (403(b)) benefits (cont.)

We recommend that the cost of future interest rate subsidies be reflected in advance of the payment of the subsidy. The prior approach of recognizing and amortizing an actuarial loss each year is not a preferred funding method. The question of how to best prefund this guarantee is complicated, however, because (1) these fixed TDA accounts continue to earn 7% or 8.25% even after termination of employment, until the employee or former employee withdraws the funds, (2) employee contribution levels vary, as the TDA contributions are voluntary and (3) investment allocations can be changed quarterly.

The OA should consider prefunding the difference between 8.25% and 7%, whether through the term cost approach adopted for the 2016 valuation or including the value of all expected future subsidies in the present value of future benefits, instead of reflecting these amounts as an actuarial loss and amortizing the loss each year. Given that the current best estimate is that 15% of TRS and 63% of BERS Fixed TDA ASF funds are credited with 8.25% annually, the OA implemented, for the 2016 valuation, an annual term cost, which for TRS could be approximated as 15% of the TRS Fixed ASF (15% x \$17.3 billion), multiplied by the difference between the guaranteed rate and the valuation rate (8.25% - 7%), or about \$32 million. Alternatively, we suggest including the liability for this above-market investment credit in the plan liabilities, reflecting both the subsidy earned this year and the expected subsidies to be earned in future years, including those years after retirement or termination.

Another issue is the treatment of the TDA accounts that are guaranteed to earn the 7% rate. GRS had commented on the leveraging impact which was resulting in amplified gains and losses. We note that if there were a requirement to disclose liabilities at bond rates (or some other rate below 7%), the value of the 7% guarantee should be reflected, and that value could be substantial. However, just because the 7% rate has a risk of increasing plan costs does not mean it has an expected cost using current assumptions. However, if the OA were to reduce the discount rate assumption, then this TDA guarantee should also be reflected as part of the cost of the plans, on the same basis as the 8.25% guarantee.

Also, members may elect to convert TDA funds into an annuity at subsidized discount and mortality rates (that is rates higher than would be provided in the annuity market, or those used for valuation purposes by OA), effectively purchasing an annuity from the plan. This option has not been elected by many employees. However, the option does provide members a valuable option. In 2000, then Chief Actuary, Bob North, wrote a memo providing load factors to apply to valuation liabilities to reflect the employees' option to buy an annuity from the plan. While the subsidies were considerable, the election rates were low so the TDA loads were small. We understand that OA has updated the load for TRS. Still, because of the potential risk to BERS of members electing this option, we believe that it is appropriate for the OA to review:

1. Whether the OA should also value a load for annuity conversions of the fixed investments (e.g. ASF TDA non-variable money),
2. Whether the OA should update the loads for the ASF TDA variable fund investments developed in 2000, and

Section II. Contribution Replication

Issues:

Issue #1: Funding of subsidized interest and annuity conversion factors applied to TDA balances for TRS and BERS TDA (403(b)) benefits (cont.)

3. Whether the OA should value a normal cost component for the potential annuity conversion cost (at least for amounts expected to be contributed in the year to the TDA, a term cost approach).

The issue of loads for TDA annuities does not significantly affect the results of the valuation given that members often leave their money in ASF TDA funds after they leave, and eventually elect one or more lump sum distributions. If this provision or the fixed ASF rates were to change, or if employees better understood the value of this option and elected to convert some or all of their TDA balances into annuity benefits, the value of the annuity option could become more significant.

Issues related to the TDA plan design and any related legal issues (e.g. how the subsidized interest and annuity conversion factors would factor into IRC §415 limits) and treatment under GASB 67 and 68 accounting rules are beyond the scope of this project. Our audit reflects the plans' current provisions (e.g. the appropriateness of the mortality tables and interest rates used to convert the TDA balances into an annuity currently contained in the law are not a subject of this audit), so our focus is on seeing how existing provisions are funded.

The history of TDA interest credit cost, as we understand it, is as follows: Legislation in 2009 changed the interest crediting rate on some accounts from 8.25% to 7%. Prior to those changes, there was a 2.3% load on TDA Fixed assets to account for the extra 0.25%/year interest credit above the valuation discount rate assumption of 8%. When the interest crediting rate was lowered on most TDA fixed assets to 7%, the load was set to zero. It appears a "negative" load was not added because of the "risk" associated with earning 7% even though the expected return was 8% (i.e. no leveraging was assumed). For the 2010 actuarial valuation, the discount rate was lowered from 8% to 7%. The discount rate change eliminated any expected positive leveraging (for those TDA funds credited with 7%) and resulted in a scenario similar to the scenario prior to 2009, in which the guaranteed rate of return for all fixed TDA funds was greater than or equal to the valuation discount rate. Despite the lower discount rate, a load for the fixed TDA funds earning 8.25% was not created.

Issue #2: Overtime

For POLICE, FIRE, and NYCERS, the compensation used for developing benefits in the valuation year includes the annualized June 30 rate of pay, assumed overtime, and an upward adjustment using half of the salary scale corresponding to the completed years of service as of the valuation date, in the valuation year.

Section II. Contribution Replication

Issues:

Issue #2: Overtime (cont.)

The steps to develop the compensation used for benefits in the valuation year are outlined below.

- The “Salary Base for Pension” field⁶ provided in the active database is equal to the June 30, 2016 annualized rate of pay plus assumed overtime (which we will denote as Base OT_0) corresponding to the years of service as of the valuation date.
- Multiply the ‘Salary Base for Pension’ by $\left[1 + \frac{Salary\ Scale_0}{2}\right]$ to adjust salary from June 30, 2016 to December 31, 2016, the date of assumed decrements (other than 100% retirement) in the valuation year.
- Divide the result by $[1 + Base\ OT_0]$ to back out the assumed baseline overtime assumption, which was presumably developed for the calendar year.
- Multiply the result by $\left[1 + \frac{Base\ OT_0 + Base\ OT_1}{2}\right]$ to incorporate an overtime assumption that is intended to correspond to the fiscal year (July 1, 2016 – June 30, 2017).

Our experience is that government plans which incorporate actual overtime for preparing annual valuations often adjust expected future salaries to anticipate an increase in overtime when members near retirement (known as “spiking”). However, the OA does not use actual overtime except as part of the experience study process. Using the assumed versus actual overtime amount might have some benefit if department-wide overtime varies significantly (and temporarily, such as the overtime following the events on September 11, 2001, or to address the more recent Riker’s Island issues) from year to year, as may currently be the case with the Fire department due to the hiring freeze from 2006-2014. A reasonable overtime assumption will sometimes overstate and other times understate the actual overtime earnings, but in general, needs to provide an appropriate assumption in the aggregate for multiple lives over an extended period in order to be a useful replacement for using the actual overtime each year. Because it is unusual to replace actual overtime with assumed overtime, we believe that this process and the results of it should be clearly described in the methods and assumptions section of the actuarial reports.

The OA has both a baseline overtime assumption and a “dual” overtime assumption. The dual overtime assumption for service retirement includes higher expected overtime in the years prior to retirement, which is the result of members working additional hours of overtime in order to bolster their pay-related pension benefits. Recent experience for FIRE has indicated that the overtime assumption (baseline, dual service retirement, and dual disability) has been understating actual overtime by a significant margin. To determine significance in this context, we integrated the 4% threshold used to determine PVFB tolerance. While a generalization, if pay were 1% higher (due to additional overtime equal to 1% of pay), active liabilities are likely to be nearly 1% higher. The results could be more skewed depending on whether the differences were higher near retirement (the dual overtime group).

⁶ For the 2014 valuation, the POLICE, FIRE, and NYCERS databases contain a revised “salary base for pension” field which was used in place of the original field.

Section II. Contribution Replication

Issues:

Issue #2: Overtime (cont.)

The following table, which is based on continuing active participants (those who did not decrement in the year indicated), shows the total compensation used for benefits if actual overtime were used instead of assumed baseline overtime, divided by the total compensation used for benefits (which includes assumed baseline overtime):

(Base+Actual OT) / (Base+Expected OT)					
Year	POLICE	FIRE	Year	POLICE	FIRE
2006	103.00%	106.82%	2011	102.26%	105.98%
2007	103.75%	104.34%	2012	103.27%	109.03%
2008	105.14%	103.25%	2013	103.86%	114.65%
2009	103.93%	100.92%	2014	102.25%	115.78%
2010	103.93%	103.99%	2015	105.14%	113.67%

Given the high actual overtime earnings for firefighters from 2011 to 2015, the review of the overtime assumption as part of the experience study, which is complicated by the Fire department's hiring freeze, has added importance. The OA could also decide to review the current methodology of using assumptions for both overtime and dual overtime vs. using actual overtime and an assumption for "spiking" near retirement. We note that the Fire department has been working to significantly reduce overtime, so the overtime experience may decrease significantly from the most recent years.

We note that using assumed overtime has both advantages and disadvantages in smoothing the effect of unusual overtime patterns, such as has occurred in the recent years, at least in part due to the hiring freeze. Our recommendation is to continue to use the assumed overtime but to adjust the tables as part of the experience study (see separate Experience Study Report).

Issue #3: Reducing VSF Payments by Escalation

The OA's coding for the 2014 and 2016 valuations assumes that VSF payments will be reduced by Escalation. When this question was posed to the POLICE and FIRE representatives during the administrative review, they confirmed that VSF payments will not be reduced by Escalation. It appears that there was a period of time when it was not clear whether the offset should apply but it has now been established that it should not apply. We understand that OA has changed the valuation coding (post 2016 AVR).

Issue #4: Lag methodology used in the 2016 valuation for the FY 2018 contribution

The Lag method was discussed in our prior report and in the GRS report. We expect that there will be some changes before the audit of the 2018 valuation. We note that OA indicated that starting with the 2017 valuation they moved to an individual EAN Normal Cost method instead of an aggregate type of method described below. However, like the TDA interest subsidy discussion, we have included the discussion of the lag method from our prior report in this report for completeness purposes.

Section II. Contribution Replication

Issues:

Issue #4: Lag methodology used in the 2016 valuation for the FY 2018 contribution (cont.)

Almost all public-sector valuations have a goal of creating an Actuarially Determined Contribution amount prior to the fiscal year in which it is made to simplify the budget process. For NYC, the June 30, 2016 valuation generated results for the FY 2018 budget. The OA used their “Lag” method to account for the delay between the calculation of the contribution and the payment of the contribution. While we do not believe this method is inappropriate, there are other methods which may be more consistent and which the OA could consider implementing for future valuations. Any method will have at least some minor issues, typically related to the time between the date of the valuation and the date the contribution is made.

We characterize the Lag methodology, for which the cost of year 1 is paid in year 2, as one specific case of a sub-class⁷ to the primary funding method. The attributes of the Lag method that lead to this conclusion include:

- The Normal Cost for the FY 2018 contribution reflects only those hired by June 30, 2016
- The Normal Cost amount paid in FY 2017 is included as an asset for the June 30, 2016 valuation and is based on the June 30, 2015 valuation.

While not discussed in common actuarial literature, funding methods can be divided into the following two sub-classes: (1) methods, such as the Lag method used by the OA, that produce a cost for a prior year and adjust the cost for payment in a succeeding year and (2) methods that produce a cost using a prior year’s results projected to the current year. All methods should adjust for the timing of the payment a year later, which the Lag method does.

There is more than one calculation method for each of these two sub-classes. The first sub-class above contains other methods in addition to the Lag method. Some plans simply add the coming year’s contribution to the assets (e.g. adding FY 2017 contributions to the June 30, 2016 assets) and add interest to the developed contribution from the valuation date to the date of payment (FY 2018).

⁷ We generally think of the overarching funding method as the way in which a plan allocates costs, and subsequently, funds those costs. Three common funding methods include Entry Age Normal, Projected Unit Credit and term cost funding. We consider the Lag method to be in a sub-class of funding methods as it delineates the timing of the primary funding method.

Section II. Contribution Replication

Issues:

Issue #4: Lag methodology used in the 2016 valuation for the FY 2018 contribution (cont.)

Plans that employ methods within the other sub-class (those that produce a cost for the current year) tend to use some type of roll forward method to get results before the budget is prepared. While GASB is not a funding method, GASB types of valuations are more like this sub-class of cost allocation methods. Usually these sub-class methods include:

- Rolling the unfunded liability forward a year (e.g. from June 30, 2016 to June 30, 2017) factoring in normal cost and contributions (e.g. for FY 2017). The rolled-forward unfunded liability is then amortized as of June 30, 2017. The Lag method looks something like this in terms of the unfunded liability payment calculation.
- Taking the Normal Cost from the June 30, 2016 valuation and moving it forward on some type of open group basis. This might be as simple as adding a projected salary growth percentage to the FY 2017 normal cost. This component is where sub-class (1) and the OA Lag method differ most from this sub-class (2) of methods.

Background and other thoughts on the Lag method:

The Lag method uses closed group payroll projections. We closely matched the four payroll values:

- Total Salary (VNCOMP)
- Salary Time = 0.5
- Salary Time = 1.0
- Salary Time = 1.5

We know that these salary values are for a closed group (those employed on June 30, 2016) and differences between these four values relate to salary scale increases and members decrementing out of the valuation (no replacements).



Section II. Contribution Replication

Issues:

Issue #4: Lag methodology used in the 2016 valuation for the FY 2018 contribution (cont.)

Page 49 of the POLICE valuation report accurately describes the One Year Lag Methodology (OYLM), so we have repeated it here:

One-Year Lag Methodology: One-Year Lag methodology uses a June 30, XX-2 valuation date to determine Fiscal Year XX employer contributions.

This methodology requires technical adjustments to certain components used to determine Fiscal Year XX employer contributions as follows:

- *Present Value of Future Salary (PVFS)*

The PVFS at June 30, XX-2 is reduced by the value of salary projected to be paid during Fiscal Year XX-1.

- *Salary for Determining Employer Normal Contributions*

Salary used to determine the employer Normal Contribution is the salary projected to be paid during Fiscal Year XX to members on payroll at June 30, XX-2.

- *UAAL [Unfunded Actuarial Accrued Liability] Payments*

For determining the UAAL payments for Fiscal Year XX, and to be consistent with the OYLM, the UAAL as of June 30, XX-2 is adjusted by the discounted value of employer Normal Contributions paid during Fiscal Year XX-1 and the discounted value of Administrative Expenses reimbursed during Fiscal Years XX-1 and XX.

After reading the valuation report description of the Lag method, we reread the GRS discussion of the lag methodology. GRS stated:

The One-Year-Lag-Methodology (OYLM) used in the valuation process (first used in the June 30, 2004 valuation to determine the FY 2006 contributions when valuations were performed using the Frozen Initial Liability actuarial cost method) reflects the fact that the employer contributions determined in a specific valuation will be contributed in the fiscal year that starts one year after the valuation date. Essentially, under the OYLM, the employer's cost of each new member's projected benefit is financed over a period starting with the second year of employment (entry age plus one) and ending on the expected year of retirement (retirement age). Currently, the OA starts the calculations using the individual level entry age actuarial cost method, which finances each member's projected benefit over the period from entry age to retirement age. However, the OA then modifies the entry age results in aggregate for the group, by financing the total future employer normal cost for the group over the future salaries of the group, starting one year after the valuation. Once the OA has made this adjustment, the normal cost is no longer level for each individual (based the OA's implementation). It may still be level for the group if the population stays relatively stable from year to year.

Section II. Contribution Replication

Issues:

Issue #4: Lag methodology used in the 2016 valuation for the FY 2018 contribution (cont.)

The rest of the GRS explanation was a little hard to follow as GRS tried to show this as an individual member example even though the OA modifies the individual entry age results in the “aggregate for the group.” The use of an aggregate method makes it difficult to convert this to an individual example. Certainly, the Normal Cost shown as a percent of pay is increased since the time to fund the benefit is shortened. The aggregate method also tends to have some type of asymptotic result when viewed between successive valuations.

One minor concern we have with the Lag method is that the funded ratio at June 30, 2016 would best be understood without including the contributions intended to fund the 2015 Normal Cost which will be paid in FY 2017. For GASB purposes, we would clearly not include the 2015 Normal Cost in the assets on June 30, 2016. Yet, we have done and seen similar things in the past for other plans using this type of sub-class methodology.

Issue #5: Production of actuarial valuation reports and additional disclosures in the valuation reports

We fully support the OA’s plan to provide annual actuarial reports for all five plans (currently these exist for only the FIRE and POLICE plans) in addition to information shown in the CAFR. We believe that, for all five plans, there is value to disclose details on assumptions, methods and data in the same document. The Actuarial Standards of Practice (ASOPs)⁸ contain lists of the disclosure requirements. Trying to decide what is significant or not significant given plans with this level of benefit and valuation methodology complexities is difficult. We have a few suggestions:

1. The fact that actual overtime pay is not used in determining valuation liabilities should be disclosed. We also suggest the disclosure of the difference between the prior years’ overtime and the assumed overtime in each valuation, perhaps in a table showing the ratio of actual/assumed overtime in the prior 10 years.
2. The application of the salary scale components with mid-year decrements is not easily understood without reviewing sample lives. While complicated, we don’t think the details need to be in the annual report, but some additional explanations would be helpful.
3. The funding of the BERS and TRS TDA subsidies should be described in the QPP valuation reports, as well as how these subsidies are reflected in the valuation results. We also suggest including a liability reflecting the valuation assumptions, actuarial liability methodology, and appropriate distribution assumptions. The OA may also want to include a discussion of the risk associated with these benefit provisions.
4. Explanation of the loads used to estimate various liabilities.
5. There are some items, such as negative ARF TDA asset values, that don’t impact the contribution calculation but should be explained or the asset values changed.

⁸ Common pension ASOPs that apply most often include ASOPs 4, 27, 35 and 44, as well as ASOP 41 which describes communication requirements.

Section II. Contribution Replication

Issues:

Issue #6: Calculation of Employer Normal Cost

The OA calculates the employer normal cost for each of the five plans as a level percentage of pay when employees enter the plan. The employer normal cost is based on the difference in the present value of the total benefits and the present value of employee contributions, spread over the employee's present value of future pay. However, employee contributions are not made over an employee's career, but rather over a fixed number of years (e.g. first 20 years for POLICE and FIRE and 10 years for TRS and BERS). We view the actual (non-level) employee contributions as part of the total normal cost. Thus, for each employee the resulting total normal cost is higher as a percent of pay in the early years (i.e., before an employee's contributions end) and lower in the later years (that is, the years after the employee's "normal cost" or contributions end). We believe that the OA's method of keeping the employer normal cost level and not keeping the total normal cost level is an appropriate method for funding these plans.

Because the method used by the OA is not typical (just as ending employee contributions after 10 years is not typical), we suggest that this be disclosed in the description of the funding method. For most non-NYC plans, the employee contributions, gross normal cost and employer normal cost are all level over a member's career. GRS also commented on this in their review in 2013.

Issue #7: Conformance with Actuarial Standards of Practice (ASOPs)

There are many standards the plan's actuary must follow in order to say: "To the best of my knowledge, the results contained herein have been prepared in accordance with generally accepted actuarial principals and procedures and with the Actuarial Standards of Practice issued by the Actuarial Standards Board."⁹ Many of these are in the nature of disclosures related to information underlying the results of the valuation. We can find things in the OA's reports such as disclosure of the purpose of the report, the date liabilities and assets are measured as of and a summary of the plan provisions. Normally we look in the Actuarial Valuation Reports (AVRs) for this information. Since the OA only produces a single document for two plans (FIRE and POLICE) that would be considered a consolidated AVRs, we looked at the actuarial sections of the CAFRs for the other three plans. The ASOP requirements for an AVR can be met through a combination of reports (e.g., for NYCERS, TRS and BERS a combination of the CAFR, employer contribution letters, "Silver Book" describing the actuarial assumptions and methods and "Orange Book" describing the member data). While it is potentially awkward for a user to look through all of these reports, using multiple reports can make each portion of the AVR shorter. Generally, we would like to see a consolidated AVR including all of the relevant information.

⁹ From cover letter of the OA's 2015 (FY17) actuarial valuation report for POLICE.

Section II. Contribution Replication

Issues:

Issue #7: Conformance with Actuarial Standards of Practice (ASOPs) (cont.)

Below are some suggested changes:

1. One example of using multiple reports is that employee information is usually summarized in the AVR using a traditional “age and service” matrix broken down into five-year age and service grouping. However, we understand that such summaries are contained in other reports (e.g. the Orange report). Reference should be made in the report contained in the CAFR to such reports and where those reports can be found.
2. There is a requirement to provide a rationale for key assumptions. The CAFRs and AVRs refer to reports containing assumption studies. We believe that the rationale for certain key assumptions coming from these studies (i.e., the Silver Book) should be addressed in the CAFR, if there is no consolidated AVR.
3. The use of assumed and not actual overtime compensation should be disclosed in the AVR.
4. The AVR should identify who provided the plan asset information and member data.
5. We recommend that the various loads should be clearly stated, along with some of the considerations in determining the load. We recognize that many of these loads are not likely to be material.
6. While it is generally understood that valuations are based on assumptions, we believe that there should also be some disclosure that future events can change results. Section 4.1r of ASOP 4 suggests the following language be included: “Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan’s funded status); and changes in plan provisions or applicable law.” Page A-13 of the “Employer contribution letter” contains some of these points.
7. The OA should note that the funded status measure shown in the report is not appropriate “for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan’s benefit obligations.” See ASOP 4 section 4.1q.
8. Unless the OA judges it inappropriate, the actuary issuing an actuarial communication should also indicate the extent to which the actuary is available to provide supplementary information and explanation.

Issue #8: Other minor observations

Below is a list of comments, noted during the development of our replication valuation coding and review of sample lives, which we would like to mention, as each topic’s methodology differs from our expectation based on the SPDs and valuation reports for the plans. Although their impact to liability and contributions of these items may be minor, we consider them to be substantial enough to warrant review by the OA.

Section II. Contribution Replication

Issues:

Issue #8: Other minor observations (cont.)

- Our results for each of the five plans closely matched the OA's results and the same was true for most of the subgroups. Generally, when a plan has subgroups, they are referred to as "obligors." The NYCERS results were generated not only by "obligors" but also by "main groups." All five plans had a PVFB that was within 1% of our results (well within the 4% tolerance established in our proposal). However, some small subgroups had larger differences. Four subgroups had differences of more than 2% and less than 4%. One (NYCERS – SOAMDS) had a difference of 4.97%. However, it is not unusual to have larger variances in small groups, because differences for a single or small number of employees can make for a significant difference in the total liabilities or normal cost..
- There were some disability benefit changes between the 2014 and 2016 valuations. In the 2016 valuation these were valued explicitly for FIRE and using a load for POLICE. We understand that POLICE was previously valued explicitly but was valued differently for 2016 because of scheduling needs. This was revised in the 2017 Police valuation, when data became available to value the benefit explicitly.
- The Tier 3 active valuation for FIRE used the POLICE Tier 3 disability OT adjustment in the new disability benefits (ordinary and accidental). The OA also noticed this issue and corrected it in the 2017 valuation.
- The VSF valuations for Tier 3 for POLICE and FIRE and the VSF valuations for Tier 6 for NYCERS Corrections assume a VSF benefit for ordinary disability decrements after 20 years of service. Essentially, the OA assumes that the retirement benefit with VSF will be greater than the ordinary disability benefit. However, the base (non-VSF) valuation does not assume that; rather, it assumes that the ordinary disability benefit will always be greater. The OA also caught this issue and corrected it in the 2017 valuation by valuing the service retirement benefit with VSF when decrementing for ordinary disability after 20 years of service for uniformed groups.
- For POLICE, FIRE, and NYCERS Corrections, the salary (merit) tables which are uploaded to ProVal to adjust the salary used for contributions and the present value of future salary were not updated for the change in the accidental disability decrement due to the improved accidental disability benefit provisions. The OA also noticed this issue and corrected it in the 2017 valuation.
- For POLICE and FIRE, the Terminated Vested valuation converts shortage/excess member contributions using a single annuity factor, rather than the best of three annuity factors.

Section II. Contribution Replication

Issues:

Issue #8: Other minor observations (cont.)

- For POLICE and FIRE Active Tier 3 sample lives, both the baseline run and the VSF run, the retirement benefit is assumed to apply for ordinary disability decrements when retirement eligible. For ordinary disability decrements between 20 and 23 years of service, this translates to the retirement benefit with 1.5% COLA (for 23 years of service and above, escalation is assumed). For retirements, the COLA is payable upon the earlier of age 55 and 10 years in pay or age 62 and 5 years in pay. However, the OA is valuing the COLA after 5 years in pay, regardless of age, which is the COLA payable for ordinary disabilities. The OA also noticed this issue and corrected it for the 2017 valuation.
- The OA should disclose the plan changes (City assumed to pay State portion of SADB and the new disability benefit which Tier 3 and 6 members can opt into by making additional employee contributions of 2% for FIRE, 1% for POLICE, and 0.8% for NYCERS Corrections) in the valuation report and state the OA's assumption that all eligible members are assumed to opt into the enhanced disability benefits. We understand that elections have now been made for those wishing to opt into the enhanced disability benefit and assumptions are no longer required.
- The OA values a TDA liability for pensioners with a non-blank MSTATTC field. However, there are pensioners who have a MSTATC = 10 (i.e. valued in the QPP pension valuation) with a nonzero TDAPay field but have a blank MSTATTC field. The OA should review the database records for these pensioners and determine whether a TDA liability should be valued for them.
- For TRS Tier 6 members, normal retirement is age 63 with 10 years of service. The decrement tables provided, however, only have early (reduced) retirement rates through age 61, with unreduced retirement rates beginning at age 62. From the Tier 6 active sample life, it appears that the OA is using the unreduced retirement decrement rate of 30% for reduced retirement benefits commencing at age 62. We understand from the OA that this has now been fixed.
- BERS is the only system that used service rounded down (for example, a member with 7 years and 10 months would be valued as having 7 years of service at the valuation date). We understand that the OA fixed this with the 2017 valuation.
- Unlike for TRS, the OA does not value as a negative asset the expected loss due to annuitization of the TDA variable funds for BERS. We understand that these are small amounts that are not material.
- Unlike for TRS, the OA does not value as an asset (negative asset if difference is negative) the difference between the assets and liabilities for the ARF variable fund for BERS. The BERS QPP liability for commitments to the TDA ARF fund is very small. However, the AVR could not account for the exact net liability.

Section II. Contribution Replication

Issues:

Issue #8: Other minor observations (cont.)

- The method used by the OA for allocating the Normal Cost among subgroups of NYCERS is different than the method used for TRS and BERS. For TRS and BERS, the Normal Cost was computed for each subgroup, individually, and the difference between the Normal Cost calculated for the entire plan and the sum of the individual subgroups was added to the Normal Cost for the largest subgroup. Because the largest subgroups for TRS and BERS make up the vast majority of those two plans (over 95% of the present value of future benefits), this is not a significant adjustment. For NYCERS, the Normal Cost is calculated for the entire plan and allocated to each of the subgroups based on the ratio of each subgroup's individual (unallocated) Normal Cost to the sum of all subgroup's individual Normal Costs. We do not have an issue with OA's methodology but believe the OA should consider disclosing it. This has become moot since we understand that OA has changed their methodology starting with the 2017 valuation.
- The methodology for allocating the normal cost between non-VSF and VSF for NYCERS differs from the methodology used for POLICE and FIRE worksheets. For POLICE and FIRE, all portions (total, non-VSF, and VSF) of the present value of future employer normal costs (PVFERNC) are divided by the present value of total salary, whereas, for NYCERS, the non-VSF PVFERNC is divided by the present value of *total* salary but the VSF PVFERNC is divided by the present value of *VSF* salary. Thus, the non-VSF ERNC and VSF ERNC do not sum to the total ERNC. Despite the discrepancy, the development of the total contribution correctly uses the total ERNC. We understand that the OA says they have corrected this in future valuations.
- Tier 4 NYCERS Sanitation member contribution rates are overstated by 0.5% and Tier 3 NYCERS corrections basic member contribution rates are overstated by 3.0%. We understand that the OA fixed this in the 2017 valuation.
- In the NYCERS Corrections Tier 3 VSF sample life provided, no accidental disability decrement is applied. While no VSF benefit is payable for accidental disability, the decrement should still be included in the valuation to remove members from the eligible VSF member population. The OA also noticed this issue and corrected it for the 2017 valuation.
- Based on the sample lives we received, it appears that the OA is not limiting the salary used in the calculation of the Final Average Salary (FAS). Generally, each year's salary used in the calculation of the FAS should be limited to:
 - For employees in Tier 2, 120% of the prior year salary.
 - For employees in Tier 3 or Tier 4, 110% of the average of the salaries for the prior two years.
 - For employees in Tier 6, 110% of the average of the salaries for the prior four years.

This is referred to as the "Kingston" limit. We understand that the OA fixed this in the 2017 valuation.

Section II. Contribution Replication

Issues:

Issue #8: Other minor observations (cont.)

- For TRS and BERS, loads are calculated for the expected loss resulting from the potential annuitization of TDA *variable* funds. Although the percentage of members who elect to annuitize is likely much smaller for the fixed fund than the variable funds, the OA should also consider adding a load for the expected additional liability from annuitization of the *fixed* TDA funds. We understand that the OA updated the loads with the 2017 valuation.
- Similar to the annuitization loads applied to the TDA, loads are calculated for TRS and BERS for the expected loss resulting from the potential annuitization of variable funds consisting of Tier 1 and 2 contributions (both employee and employer ITHP). The OA should consider adding a load for the expected loss from annuitization of the fixed ASF and ASAF funds as well. We understand that these loads would be very small and that a load was added to recognize the additional liability for the ASF starting with the 2017 valuation.
- For TRS, the net impact of the TDA is presented as a negative asset. The OA should consider valuing the net impact of the TDA as a liability, rather than a negative asset, since this is a benefit obligation of the QPP.
- The discount rate for variable annuities in pay should be 4.074% instead of 4% since the change in the unit values is the fund return minus the increase in units (4%/12 each month). We recognize that the impact of this adjustment is very minor and was changed for the 2017 valuation.
- Some of the liability (e.g. about 1.6% for TRS and BERS but much less for POLICE and FIRE) is for “inactive” members who are neither employees nor retirees. It is important to keep some liability for this group not in a permanent status. While not material, we suggest that the OA consider a study or gain/loss analysis for TRS and BERS to determine the reasonableness of valuing the ABO liability for ‘inactive’ members for the first 5 or 7 years of inactivity.

Section II. Contribution Replication

Comments on Prior GRS Recommendations/Findings

In addition to replicating the 2014 and 2016 valuation results, we reviewed the recommendations and findings of GRS in this area. Our responses are shown in *italics*.

Applicable to all Systems:

- Produce formal actuarial reports for all Systems
 - *The OA now has actuarial valuation reports (AVRs) for both the POLICE and FIRE and intends to prepare reports for the other plans.*
 - *We agree with the GRS recommendation.*
- Describe the leveling of member contributions (over each member's career) in the determination of the employer normal cost in any description of the actuarial cost method
 - *We agree with the disclosure recommendation and have no problem with the method in use.*
- Consider the use of a corridor around the market value in the development of the actuarial value of assets (*There was no corridor prior to the 2014 valuation*)
 - *We agree with the GRS recommendation and support the OA's adoption of a limit on the difference between the market value and actuarial value of assets.*
- Consider changes to the One Year Lag Methodology (OYLM)
 - *See Issue 4 above.*
- Review the assumed commencement date for deferred vested members for consistency between the valuation of the vested decrement for current active members (who are assumed to become deferred vested in the future) and the valuation of the current deferred vested members
 - *Assumed commencement age is now the same for active members who terminate and current deferred vested members.*

NYCERS:

- Review administrative expenses in the development of the Actuarial Value of Assets (AVA)
 - *We believe that the OA appropriately adds to the assets expected reimbursements of expenses paid in the past.*
- Review programming for treatment of active members that are over 75 on the valuation date
 - *We did not receive any samples lives for active members who are age 75 or older on the valuation date but given that these active members make up less than 1% of the active population, we believe this issue does not have a significant effect on liabilities. We understand that decrements rates for active members' decrements have now been extended to age 80.*
- Review calculations of liabilities for the vesting decrement for active members (liabilities for current active members assumed to quit with deferred benefits in the future)
 - *We did not find any issues with the vesting decrement liabilities for active members.*

Section II. Contribution Replication

Comments on Prior GRS Recommendations/Findings

NYCERS:

- Review the use of “default plan” provisions to value certain NYCERS members
 - *The OA provided Bolton with the mapping and count of participants to plans, which addresses GRS’ “default plan” provision recommendation.*
 - *We recommend that the OA disclose this mapping methodology.*
- Update the mortality for Transit beneficiaries to the tables adopted with the 2012 A&M
 - *We did not request or receive any sample lives for Transit beneficiaries, so we could not verify whether the correct mortality tables were used for this group. OA said this issue was fixed in 2014.*

TRS:

- Review method of accounting for the TDA Fixed Funds in the development of the AVA
 - *We agree with this recommendation and have the following observations:*
 - *The smoothing method should continue to exclude QPP Tier 1-2 ASF funds that are variable funds and TDA money likewise should continue to exclude any variable benefit funds (ASF or ARF) for the same reason (i.e. employer has no investment risk). The smoothing should continue to include money in the fixed TDA ASF and fixed TDA ARF.*
 - *While it seems natural to split QPP and TDA assets, the purpose of asset smoothing is to reduce the effect of short-term market volatility in an unbiased fashion. This second condition (unbiased fashion) is why this method should be on the equivalent of a combined QPP and TDA basis.*
- Review method of accounting for the TDA Fixed Funds in the development of the AVA (cont.)
 - *We agree with this recommendation and have the following observations (cont.):*
 - *While some TDA funds credit 8.25%, the plan has an expected rate of return assumption which is 7% and not really a blend of 7% and 8.25%. The OA moved to term cost funding (or some other approach) for the difference between 8.25% and 7% on certain TDA funds. Previously (when the valuation discount rate as 8.0%) there was a load to reflect that the 8.25% crediting rate was higher than the assumption. The investment smoothing to determine the actuarial value of assets should be based on an expected return of 7% and not some weighting of 7% and 8.25%. Crediting 8.25% on some TDA funds is really a benefit provision and not an assumption.*
- Review rounding of service for active members
 - *The rounding of service for the sample lives we received seems reasonable. All systems, including TRS, use either rounded or truncated service as of the valuation date. We are unsure why GRS only made this comment for TRS. Using exact years of service, rather than integer years, is not likely to have a significant impact on valuation results.*

Section II. Contribution Replication

Comments on Prior GRS Recommendations/Findings

TRS:

- Review programming of probabilities of termination on and after 20 years of service – rates shown on the test life cases appear to indicate that these probabilities were rounded to the nearest 1%
 - *As stated in a June 23, 2017 email from Anderson Huynh (OA), the rates have been fixed for the valuations subsequent to June 30, 2014.*

BERS:

- Review the amount of the assumed COLA in the first year after the valuation for members with \$0 reported in the maximum allowance field
 - *In the BERS section of the report, GRS expanded on this topic: “If the maximum allowance field is zero, the OA appears to base the first year COLA amount solely on the Supplementation field. We recommend that for these cases, the first year COLA Amount be based on the sum of the Pension, Annuity and Supplementation fields, similar to the Auto COLA (used for all future years except first year).” Based on a review of the sample lives we received, this issue appears to have been fixed.*
- Review the allocation of the liabilities to the vested decrement for Tier I and Tier II
 - *In the BERS section of the report, GRS expanded on this topic: “Tier II 55/25 optional plan members are valued using the old retirement pattern (pre-2012 A&M).” We did not receive any Tier II 55/25 optional plan sample lives but believe this issue is not significant as there are very few (less than 15) actives in the Tier II 55/25 optional plan as of the valuation date.*

BERS:

- Continue to work with BERS to improve the reporting of valuation data related to part-time members
 - *Our understanding, as discussed in the Administrative Review portion of our report, is that BERS made substantial changes both in historical data and in the data now being made available to the OA, as of June 30, 2017. While we have not reviewed this information, we anticipate substantial improvement in the data. More information regarding this issue is contained in the Experience Study Report.*

Section II. Contribution Replication

Comments on Prior GRS Recommendations/Findings

POLICE:

- Review the assumed age of commencement for current deferred vested members
 - *Assumed commencement age is now the same for active members who terminate and current deferred vested members.*
- Review development of the RASF (required member contributions) used in the entry age pass and reprogram accordingly
 - *The final GRS report contained the following explanation “A detailed analysis of the test lives indicated that the required contribution field (RASF) read in from the data file was used at each and every age of the entry age pass. This means that a deficit or addition to the formula benefit is valued due to an artificial difference between the actual and required employee contributions.” Although it is not frequently used, ProVal has the functionality to develop two separate present value of future benefits (PVFB) calculations. The standard calculation of PVFB (which we will denote as $PVFB_S$) is used to determine the accrued liability for the entry age normal (EAN) method and is coded in the benefit definition. If “Use alternative formula for EAN Normal Cost” is selected, a separate PVFB calculation (which we will denote as $PVFB_A$) can be coded to develop the EAN normal cost rate (equal to $PVFB_A$ divided by the present value of future salary from entry age) and the EAN present value of future normal costs (equal to normal cost rate multiplied by the present value of future salaries at the valuation date). We interpret GRS’ comment to mean that GRS had concluded that the RASF component used to develop $PVFB_A$ was the same for all years (i.e. the RASF amount at the age of entry and every age thereafter was equal to the amount provided in the data). This no longer appears to be true as the RASF balance for calculating $PVFB_A$ is an expected amount (increasing from entry age through 20 years of service with contributions and interest) calculated by ProVal and is not based on the field provided in the data. The RASF field in the data is used for calculating $PVFB_S$.*

Section II. Contribution Replication

Comments on Prior GRS Recommendations/Findings

FIRE:

- Review the assumed age of commencement for current deferred vested members
 - *Assumed commencement age is now the same for active members who terminate and current deferred vested members.*
- Value benefits (and liabilities) associated with “other service”
 - *We agree with the GRS recommendation. Neither POLICE nor FIRE valuation uses “other” (non-uniform) service. Of the 10,319 actives in the 2014 FIRE data, 474 of them had other service greater than 0. For these 474 participants, other service as a percentage of total service (with total service = Service for Standard Benefits plus Service for Other Benefits), ranges from 0.5% to over 50%. Half of the 474 participants had other service as a percentage of total service of at least 20%. Given the potentially significant effect for FIRE in both the count of members with other service and the percentage of total service attributed to other service, we recommend that the OA consider valuing other service in future valuations. We understand that OA started to include this service in the 2017 valuation.*
- Review modeling of Auto COLA for certain beneficiaries.
 - *Spouse beneficiaries and all beneficiaries (even non-spouse) of members deceased due to accidental death are entitled to COLAs. Per a June 29, 2017 email, the OA believes that GRS’ use of the term “certain beneficiaries” refers to non-spouse beneficiaries. We did not request enough sample lives to determine whether non-spouse beneficiaries only get a COLA if the corresponding member death was categorized as accidental. If this issue is in fact present in the coding, then the total impact on results would be minimal given that there are very few (approximately 20) non-spouse beneficiaries who are receiving benefits as a result of a member decrement other than accidental death.*



NYCERS Results (Total)



NYCERS Comparison of Results

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives						
Retirement	44,121		44,037		-0.19%	-0.09%
Disability	3,384		3,416		0.92%	0.03%
Ordinary Death	949		946		-0.38%	0.00%
Accidental Death	37		45		20.73%	0.01%
Deferred Vested	1,415		1,415		0.03%	0.00%
Non-Vested Return of Contributions	<u>81</u>		<u>82</u>		0.42%	0.00%
Total	49,988	185,481	49,940	185,481	-0.10%	-0.05%
b. Inactives	1,004	17,989	1,005	17,989	0.16%	0.00%
c. Terminated Vesteds	735	8,895	750	8,895	1.95%	0.02%
d. Retirees	42,252	147,514	42,609	147,514	0.85%	0.37%
e. Loads	267		267		0.00%	0.00%
f. VSFs	<u>1,539</u>		<u>1,545</u>		0.37%	0.01%
g. Total	95,785	359,879	96,117	359,879	0.35%	0.35%
2. Present Value of Future Salary	122,088		122,845		0.62%	
3. Present Value of Future Employee Contributions	3,780		3,748		-0.83%	
4. Present Value of Future Employer Normal Costs						
a. Actives	12,709		12,836		1.00%	0.98%
b. VSFs	<u>185</u>		<u>159</u>		-14.23%	-0.20%
c. Total	12,894		12,995		0.78%	0.78%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	33,499		33,356		-0.43%	-0.18%
b. Inactives (1.b.)	1,004		1,005		0.16%	0.00%
c. Terminated Vesteds (1.c.)	735		750		1.95%	0.02%
d. Retirees (1.d.)	42,252		42,609		0.85%	0.45%
e. Loads (1.e.)	267		267		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	<u>1,354</u>		<u>1,386</u>		2.37%	0.04%
g. Total	79,150		79,373		0.28%	0.28%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	12,894		12,995		0.78%	
b. Present Value of Future Salary	122,088		122,845		0.62%	
c. Salary - Time 0.5	12,953		12,959		0.05%	
d. Projected Present Value of Future Salary	109,567		110,317		0.68%	
e. Normal Cost Percent	11.769%		11.780%		0.09%	
f. Salary - Time 1.5	12,716		12,729		0.11%	
g. Employer Normal Cost	1,498		1,500		0.13%	
7. Assets (Main Fund)						
a. Market Value of Assets	55,490		55,490		0.00%	
b. Actuarial Value of Assets	56,492		56,492		0.00%	
c. PV 1-Year Adj Employer Normal Cost	1,446		1,446		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	57		57		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	<u>58</u>		<u>58</u>		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	58,053		58,053		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	47		47		0.00%	
b. Actuarial Value of Assets	69		69		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	21,029		21,252		1.06%	
10. Components of Contribution						
a. Employer Normal Cost	1,498		1,500		0.13%	0.06%
b. UAAL Contribution	1,798		1,825		1.47%	0.79%
c. Administrative Expenses	63		63		0.00%	0.00%
d. Interest on Late Employer Contribution	<u>18</u>		<u>18</u>		0.00%	0.00%
e. Total (Pension Expense)	3,377		3,405		0.84%	0.84%



NYCERS Results (by Main Group)



NYCERS: Other

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	29,461	122,059	29,480	122,059	0.07%	0.03%
b. Inactives	641	13,653	719	13,653	12.21%	0.14%
c. Terminated Vesteds	612	7,921	633	7,921	3.47%	0.04%
d. Retirees	23,965	97,768	24,192	97,768	0.95%	0.41%
e. Loads	125		125		0.00%	0.00%
f. VSFs	<u>0</u>		<u>0</u>		0.00%	0.00%
g. Total	54,804	241,401	55,150	241,401	0.63%	0.63%
2. Present Value of Future Salary	76,000		76,529		0.70%	
3. Present Value of Future Employee Contributions	1,931		1,919		-0.58%	
4. Present Value of Future Employer Normal Costs						
a. Actives	7,211		7,256		0.62%	0.62%
b. VSFs	<u>0</u>		<u>0</u>		0.00%	0.00%
c. Total	7,211		7,256		0.62%	0.62%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	20,319		20,305		-0.07%	-0.03%
b. Inactives (1.b.)	641		719		12.21%	0.17%
c. Terminated Vesteds (1.c.)	612		633		3.47%	0.05%
d. Retirees (1.d.)	23,965		24,192		0.95%	0.50%
e. Loads (1.e.)	125		125		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	<u>0</u>		<u>0</u>		0.00%	0.00%
g. Total	45,662		45,975		0.68%	0.68%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	7,211		7,256		0.62%	
b. Present Value of Future Salary	76,000		76,529		0.70%	
c. Salary - Time 0.5	8,077		8,090		0.16%	
d. Projected Present Value of Future Salary	68,192		68,708		0.76%	
e. Normal Cost Percent	10.519%		10.487%		-0.30%	
f. Salary - Time 1.5	7,904		7,921		0.20%	
g. Employer Normal Cost	831		831		-0.10%	
7. Assets (Main Fund)						
a. Market Value of Assets	31,063		31,063		0.00%	
b. Actuarial Value of Assets	31,624		31,624		0.00%	
c. PV 1-Year Adj Employer Normal Cost	803		803		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	38		38		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	<u>36</u>		<u>36</u>		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	32,501		32,501		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	13,161		13,474		2.37%	
10. Components of Contribution						
a. Employer Normal Cost	831		831		-0.10%	-0.04%
b. UAAL Contribution	1,163		1,200		3.18%	1.80%
c. Administrative Expenses	42		42		0.00%	0.00%
d. Interest on Late Employer Contribution	<u>18</u>		<u>18</u>		0.00%	0.00%
e. Total (Pension Expense)	2,055		2,091		1.76%	1.76%



NYCERS: DAI

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	29	82	28	82	-1.14%	-1.08%
b. Inactives	2	22	1	22	-20.83%	-1.07%
c. Terminated Vesteds	0	0	0	0	0.00%	0.00%
d. Retirees	0	0	0	0	0.00%	0.00%
e. Loads	0		0		0.00%	0.00%
f. VSFs	<u>0</u>		<u>0</u>		0.00%	0.00%
g. Total	30	104	30	104	-2.15%	-2.15%
2. Present Value of Future Salary	52		51		-0.84%	
3. Present Value of Future Employee Contributions	1		2		15.08%	
4. Present Value of Future Employer Normal Costs						
a. Actives	8		7		-5.51%	-5.51%
b. VSFs	<u>0</u>		<u>0</u>		0.00%	0.00%
c. Total	8		7		-5.51%	-5.51%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	19		19		-0.46%	-0.43%
b. Inactives (1.b.)	2		1		-20.83%	-1.54%
c. Terminated Vesteds (1.c.)	0		0		0.00%	0.00%
d. Retirees (1.d.)	0		0		0.00%	0.00%
e. Loads (1.e.)	0		0		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	<u>0</u>		<u>0</u>		0.00%	0.00%
g. Total	21		21		-1.97%	-1.97%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	8		7		-5.51%	
b. Present Value of Future Salary	52		51		-0.84%	
c. Salary - Time 0.5	6		6		0.00%	
d. Projected Present Value of Future Salary	46		46		-0.94%	
e. Normal Cost Percent	16.939%		16.131%		-4.77%	
f. Salary - Time 1.5	5		5		0.00%	
g. Employer Normal Cost	1		1		-4.76%	
7. Assets (Main Fund)						
a. Market Value of Assets	36		36		0.00%	
b. Actuarial Value of Assets	37		37		0.00%	
c. PV 1-Year Adj Employer Normal Cost	1		1		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	0		0		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	<u>0</u>		<u>0</u>		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	38		38		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	-17		-17		-2.43%	
10. Components of Contribution						
a. Employer Normal Cost	1		1		-4.76%	3.10%
b. UAAL Contribution	-2		-2		-2.07%	3.44%
c. Administrative Expenses	0		0		0.00%	0.00%
d. Interest on Late Employer Contribution	<u>0</u>		<u>0</u>		0.00%	0.00%
e. Total (Pension Expense)	-1		-2		-6.53%	6.53%



NYCERS: EMT

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	721	3,846	705	3,846	-2.20%	-2.16%
b. Inactives	13	348	12	348	-7.78%	-0.14%
c. Terminated Vesteds	0	0	0	0	0.00%	0.00%
d. Retirees	0	0	0	0	0.00%	0.00%
e. Loads	0		0		0.00%	0.00%
f. VSFs	0		0		0.00%	0.00%
g. Total	735	4,194	718	4,194	-2.30%	-2.30%
2. Present Value of Future Salary	2,518		2,531		0.51%	
3. Present Value of Future Employee Contributions	188		189		0.19%	
4. Present Value of Future Employer Normal Costs						
a. Actives	139		136		-1.97%	-1.97%
b. VSFs	0		0		0.00%	0.00%
c. Total	139		136		-1.97%	-1.97%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	394		381		-3.43%	-3.32%
b. Inactives (1.b.)	13		12		-7.78%	-0.25%
c. Terminated Vesteds (1.c.)	0		0		0.00%	0.00%
d. Retirees (1.d.)	0		0		0.00%	0.00%
e. Loads (1.e.)	0		0		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	0		0		0.00%	0.00%
g. Total	407		393		-3.57%	-3.57%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	139		136		-1.97%	
b. Present Value of Future Salary	2,518		2,531		0.51%	
c. Salary - Time 0.5	207		207		0.00%	
d. Projected Present Value of Future Salary	2,318		2,331		0.55%	
e. Normal Cost Percent	5.959%		5.800%		-2.67%	
f. Salary - Time 1.5	208		208		0.04%	
g. Employer Normal Cost	12		12		-2.65%	
7. Assets (Main Fund)						
a. Market Value of Assets	534		534		0.00%	
b. Actuarial Value of Assets	543		543		0.00%	
c. PV 1-Year Adj Employer Normal Cost	12		12		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	1		1		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	1		1		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	557		557		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	-150		-164		-9.72%	
10. Components of Contribution						
a. Employer Normal Cost	12		12		-2.65%	3.92%
b. UAAL Contribution	-21		-23		-8.01%	20.57%
c. Administrative Expenses	1		1		0.00%	0.00%
d. Interest on Late Employer Contribution	0		0		0.00%	0.00%
e. Total (Pension Expense)	-8		-10		-24.50%	24.50%



NYCERS: FAD

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	36	146	35	146	-3.44%	-3.37%
b. Inactives	1	11	1	11	-6.52%	-0.13%
c. Terminated Vesteds	0	0	0	0	0.00%	0.00%
d. Retirees	0	0	0	0	0.00%	0.00%
e. Loads	0		0		0.00%	0.00%
f. VSFs	0		0		0.00%	0.00%
g. Total	37	157	36	157	-3.50%	-3.50%
2. Present Value of Future Salary	117		117		0.00%	
3. Present Value of Future Employee Contributions	8		8		0.08%	
4. Present Value of Future Employer Normal Costs						
a. Actives	7		7		-8.10%	-8.10%
b. VSFs	0		0		0.00%	0.00%
c. Total	7		7		-8.10%	-8.10%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	21		20		-3.08%	-2.98%
b. Inactives (1.b.)	1		1		-6.52%	-0.21%
c. Terminated Vesteds (1.c.)	0		0		0.00%	0.00%
d. Retirees (1.d.)	0		0		0.00%	0.00%
e. Loads (1.e.)	0		0		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	0		0		0.00%	0.00%
g. Total	22		21		-3.19%	-3.19%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	7		7		-8.10%	
b. Present Value of Future Salary	117		117		0.00%	
c. Salary - Time 0.5	10		10		0.00%	
d. Projected Present Value of Future Salary	108		108		0.00%	
e. Normal Cost Percent	6.846%		6.281%		-8.25%	
f. Salary - Time 1.5	10		10		0.00%	
g. Employer Normal Cost	1		1		-8.25%	
7. Assets (Main Fund)						
a. Market Value of Assets	27		27		0.00%	
b. Actuarial Value of Assets	27		27		0.00%	
c. PV 1-Year Adj Employer Normal Cost	1		1		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	0		0		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	0		0		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	28		28		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	-6		-7		-10.90%	
10. Components of Contribution						
a. Employer Normal Cost	1		1		-8.25%	21.64%
b. UAAL Contribution	-1		-1		-8.59%	32.04%
c. Administrative Expenses	0		0		0.00%	0.00%
d. Interest on Late Employer Contribution	0		0		0.00%	0.00%
e. Total (Pension Expense)	0		0		-53.68%	53.68%



NYCERS: SOAMDS

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	1,078	6,134	1,023	6,134	-5.08%	-5.00%
b. Inactives	18	763	19	763	1.94%	0.03%
c. Terminated Vesteds	0	0	0	0	0.00%	0.00%
d. Retirees	0	0	0	0	0.00%	0.00%
e. Loads	0		0		0.00%	0.00%
f. VSFs	0		0		0.00%	0.00%
g. Total	1,096	6,897	1,042	6,897	-4.97%	-4.97%
2. Present Value of Future Salary	4,104		4,248		3.51%	
3. Present Value of Future Employee Contributions	304		310		2.17%	
4. Present Value of Future Employer Normal Costs						
a. Actives	231		216		-6.63%	-6.63%
b. VSFs	0		0		0.00%	0.00%
c. Total	231		216		-6.63%	-6.63%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	543		497		-8.49%	-8.21%
b. Inactives (1.b.)	18		19		1.94%	0.06%
c. Terminated Vesteds (1.c.)	0		0		0.00%	0.00%
d. Retirees (1.d.)	0		0		0.00%	0.00%
e. Loads (1.e.)	0		0		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	0		0		0.00%	0.00%
g. Total	561		515		-8.15%	-8.15%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	231		216		-6.63%	
b. Present Value of Future Salary	4,104		4,248		3.51%	
c. Salary - Time 0.5	342		343		0.25%	
d. Projected Present Value of Future Salary	3,773		3,916		3.79%	
e. Normal Cost Percent	6.098%		5.477%		-10.18%	
f. Salary - Time 1.5	344		346		0.73%	
g. Employer Normal Cost	21		19		-9.53%	
7. Assets (Main Fund)						
a. Market Value of Assets	703		703		0.00%	
b. Actuarial Value of Assets	716		716		0.00%	
c. PV 1-Year Adj Employer Normal Cost	20		20		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	1		1		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	1		1		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	738		738		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	-177		-223		-25.80%	
10. Components of Contribution						
a. Employer Normal Cost	21		19		-9.53%	58.11%
b. UAAL Contribution	-26		-31		-21.13%	157.42%
c. Administrative Expenses	1		1		0.00%	0.00%
d. Interest on Late Employer Contribution	0		0		0.00%	0.00%
e. Total (Pension Expense)	-3		-11		-215.54%	215.54%



NYCERS: DA

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	0	0	0	0	0.00%	0.00%
b. Inactives	0	0	0	0	0.00%	0.00%
c. Terminated Vesteds	0	0	0	0	0.00%	0.00%
d. Retirees	27	133	27	133	0.00%	0.00%
e. Loads	0		0		0.00%	0.00%
f. VSFs	0		0		0.00%	0.00%
g. Total	27	133	27	133	0.00%	0.00%
2. Present Value of Future Salary	0		0		0.00%	
3. Present Value of Future Employee Contributions	0		0		0.00%	
4. Present Value of Future Employer Normal Costs						
a. Actives	0		0		0.00%	#DIV/0!
b. VSFs	0		0		0.00%	#DIV/0!
c. Total	0		0		0.00%	#DIV/0!
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	0		0		0.00%	0.00%
b. Inactives (1.b.)	0		0		0.00%	0.00%
c. Terminated Vesteds (1.c.)	0		0		0.00%	0.00%
d. Retirees (1.d.)	27		27		0.00%	0.00%
e. Loads (1.e.)	0		0		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	0		0		0.00%	0.00%
g. Total	27		27		0.00%	0.00%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	0		0		0.00%	
b. Present Value of Future Salary	0		0		0.00%	
c. Salary - Time 0.5	0		0		0.00%	
d. Projected Present Value of Future Salary	0		0		0.00%	
e. Normal Cost Percent	0.000%		0.000%		0.00%	
f. Salary - Time 1.5	0		0		0.00%	
g. Employer Normal Cost	0		0		0.00%	
7. Assets (Main Fund)						
a. Market Value of Assets	11		11		0.00%	
b. Actuarial Value of Assets	12		12		0.00%	
c. PV 1-Year Adj Employer Normal Cost	0		0		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	0		0		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	0		0		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	12		12		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	16		16		0.00%	
10. Components of Contribution						
a. Employer Normal Cost	0		0		0.00%	0.00%
b. UAAL Contribution	1		1		0.00%	0.00%
c. Administrative Expenses	0		0		0.00%	0.00%
d. Interest on Late Employer Contribution	0		0		0.00%	0.00%
e. Total (Pension Expense)	2		2		0.00%	0.00%



NYCERS: Total General

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	31,325	132,267	31,272	132,267	-0.17%	-0.09%
b. Inactives	674	14,797	752	14,797	11.44%	0.14%
c. Terminated Vesteds	612	7,921	633	7,921	3.47%	0.04%
d. Retirees	23,992	97,901	24,220	97,901	0.95%	0.40%
e. Loads	125		125		0.00%	0.00%
f. VSFs	<u>0</u>		<u>0</u>		0.00%	0.00%
g. Total	56,730	252,886	57,002	252,886	0.48%	0.48%
2. Present Value of Future Salary	82,792		83,477		0.83%	
3. Present Value of Future Employee Contributions	2,432		2,428		-0.17%	
4. Present Value of Future Employer Normal Costs						
a. Actives	7,597		7,622		0.33%	0.33%
b. VSFs	<u>0</u>		<u>0</u>		0.00%	0.00%
c. Total	7,597		7,622		0.33%	0.33%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	21,296		21,222		-0.35%	-0.16%
b. Inactives (1.b.)	674		752		11.44%	0.17%
c. Terminated Vesteds (1.c.)	612		633		3.47%	0.05%
d. Retirees (1.d.)	23,992		24,220		0.95%	0.49%
e. Loads (1.e.)	125		125		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	<u>0</u>		<u>0</u>		0.00%	0.00%
g. Total	46,701		46,952		0.54%	0.54%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	7,597		7,622		0.33%	
b. Present Value of Future Salary	82,792		83,477		0.83%	
c. Salary - Time 0.5	8,642		8,655		0.16%	
d. Projected Present Value of Future Salary	74,438		75,109		0.90%	
e. Normal Cost Percent	10.228%		10.167%		-0.60%	
f. Salary - Time 1.5	8,471		8,490		0.22%	
g. Employer Normal Cost	866		863		-0.38%	
7. Assets (Main Fund)						
a. Market Value of Assets	32,374		32,374		0.00%	
b. Actuarial Value of Assets	32,959		32,959		0.00%	
c. PV 1-Year Adj Employer Normal Cost	837		837		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	40		40		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	<u>39</u>		<u>39</u>		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	33,874		33,874		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	12,827		13,078		1.96%	
10. Components of Contribution						
a. Employer Normal Cost	866		863		-0.38%	-0.16%
b. UAAL Contribution	1,114		1,144		2.67%	1.45%
c. Administrative Expenses	44		44		0.00%	0.00%
d. Interest on Late Employer Contribution	<u>18</u>		<u>18</u>		0.00%	0.00%
e. Total (Pension Expense)	2,043		2,069		1.29%	1.29%



NYCERS: Correction

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	4,080	8,815	4,078	8,815	-0.05%	-0.02%
b. Inactives	107	625	97	625	-9.74%	-0.09%
c. Terminated Vesteds	37	244	35	244	-4.41%	-0.01%
d. Retirees	5,312	11,287	5,364	11,287	0.98%	0.47%
e. Loads	16		16		0.00%	0.00%
f. VSFs	<u>1,443</u>		<u>1,449</u>		0.39%	0.05%
g. Total	10,996	20,971	11,039	20,971	0.40%	0.40%
2. Present Value of Future Salary	7,497		7,490		-0.09%	
3. Present Value of Future Employee Contributions	292		279		-4.60%	
4. Present Value of Future Employer Normal Costs						
a. Actives	1,435		1,508		5.05%	4.47%
b. VSFs	<u>185</u>		<u>159</u>		-14.23%	-1.63%
c. Total	1,620		1,667		2.85%	2.85%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	2,353		2,292		-2.60%	-0.67%
b. Inactives (1.b.)	107		97		-9.74%	-0.11%
c. Terminated Vesteds (1.c.)	37		35		-4.41%	-0.02%
d. Retirees (1.d.)	5,312		5,364		0.98%	0.57%
e. Loads (1.e.)	16		16		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	<u>1,258</u>		<u>1,290</u>		2.54%	0.35%
g. Total	9,083		9,094		0.12%	0.12%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	1,620		1,667		2.85%	
b. Present Value of Future Salary	7,497		7,490		-0.09%	
c. Salary - Time 0.5	755		754		-0.06%	
d. Projected Present Value of Future Salary	6,767		6,761		-0.09%	
e. Normal Cost Percent	23.998%		24.697%		2.91%	
f. Salary - Time 1.5	753		753		-0.05%	
g. Employer Normal Cost	181		186		2.86%	
7. Assets (Main Fund)						
a. Market Value of Assets	6,432		6,432		0.00%	
b. Actuarial Value of Assets	6,548		6,548		0.00%	
c. PV 1-Year Adj Employer Normal Cost	177		177		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	3		3		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	<u>3</u>		<u>3</u>		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	6,732		6,732		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	47		47		0.00%	
b. Actuarial Value of Assets	69		69		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	2,283		2,294		0.48%	
10. Components of Contribution						
a. Employer Normal Cost	181		186		2.86%	1.35%
b. UAAL Contribution	199		201		0.71%	0.37%
c. Administrative Expenses	4		4		0.00%	0.00%
d. Interest on Late Employer Contribution	<u>0</u>		<u>0</u>		0.00%	0.00%
e. Total (Pension Expense)	384		390		1.72%	1.72%



NYCERS: HP/TP

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	0	0	0	0	0.00%	0.00%
b. Inactives	0	0	0	0	0.00%	0.00%
c. Terminated Vesteds	0	0	0	0	0.00%	0.00%
d. Retirees	808	3,062	824	3,062	1.94%	1.74%
e. Loads	0		0		0.00%	0.00%
f. VSFs	<u>96</u>		<u>96</u>		0.11%	0.01%
g. Total	904	3,062	920	3,062	1.75%	1.75%
2. Present Value of Future Salary	0		0		0.00%	
3. Present Value of Future Employee Contributions	0		0		0.00%	
4. Present Value of Future Employer Normal Costs						
a. Actives	0		0		0.00%	#DIV/0!
b. VSFs	<u>0</u>		<u>0</u>		0.00%	#DIV/0!
c. Total	0		0		0.00%	#DIV/0!
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	0		0		0.00%	0.00%
b. Inactives (1.b.)	0		0		0.00%	0.00%
c. Terminated Vesteds (1.c.)	0		0		0.00%	0.00%
d. Retirees (1.d.)	808		824		1.94%	1.74%
e. Loads (1.e.)	0		0		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	<u>96</u>		<u>96</u>		0.11%	0.01%
g. Total	904		920		1.75%	1.75%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	0		0		0.00%	
b. Present Value of Future Salary	0		0		0.00%	
c. Salary - Time 0.5	0		0		0.00%	
d. Projected Present Value of Future Salary	0		0		0.00%	
e. Normal Cost Percent	0.000%		#DIV/0!		0.00%	
f. Salary - Time 1.5	0		0		0.00%	
g. Employer Normal Cost	0		0		0.00%	
7. Assets (Main Fund)						
a. Market Value of Assets	504		504		0.00%	
b. Actuarial Value of Assets	513		513		0.00%	
c. PV 1-Year Adj Employer Normal Cost	0		0		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	0		0		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	<u>0</u>		<u>0</u>		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	513		513		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	391		406		4.05%	
10. Components of Contribution						
a. Employer Normal Cost	0		0		0.00%	0.00%
b. UAAL Contribution	34		36		5.49%	5.41%
c. Administrative Expenses	1		1		0.00%	0.00%
d. Interest on Late Employer Contribution	<u>0</u>		<u>0</u>		0.00%	0.00%
e. Total (Pension Expense)	35		36		5.41%	5.41%



NYCERS: Sanitation

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	3,493	7,338	3,491	7,338	-0.05%	-0.02%
b. Inactives	36	170	31	170	-13.94%	-0.07%
c. Terminated Vesteds	13	65	13	65	-0.29%	0.00%
d. Retirees	4,070	11,407	4,160	11,407	2.20%	1.16%
e. Loads	90		90		0.00%	0.00%
f. VSFs	<u>0</u>		<u>0</u>		0.00%	0.00%
g. Total	7,702	18,980	7,784	18,980	1.08%	1.08%
2. Present Value of Future Salary	6,641		6,642		0.01%	
3. Present Value of Future Employee Contributions	276		261		-5.54%	
4. Present Value of Future Employer Normal Costs						
a. Actives	1,159		1,215		4.83%	4.83%
b. VSFs	<u>0</u>		<u>0</u>		0.00%	0.00%
c. Total	1,159		1,215		4.83%	4.83%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	2,058		2,015		-2.06%	-0.67%
b. Inactives (1.b.)	36		31		-13.94%	-0.08%
c. Terminated Vesteds (1.c.)	13		13		-0.29%	0.00%
d. Retirees (1.d.)	4,070		4,160		2.20%	1.42%
e. Loads (1.e.)	90		90		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	<u>0</u>		<u>0</u>		0.00%	0.00%
g. Total	6,305		6,309		0.06%	0.06%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	1,159		1,215		4.83%	
b. Present Value of Future Salary	6,641		6,642		0.01%	
c. Salary - Time 0.5	672		671		-0.15%	
d. Projected Present Value of Future Salary	5,992		5,993		0.02%	
e. Normal Cost Percent	19.538%		20.304%		3.92%	
f. Salary - Time 1.5	685		684		-0.08%	
g. Employer Normal Cost	134		139		3.83%	
7. Assets (Main Fund)						
a. Market Value of Assets	4,312		4,312		0.00%	
b. Actuarial Value of Assets	4,390		4,390		0.00%	
c. PV 1-Year Adj Employer Normal Cost	127		127		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	3		3		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	<u>3</u>		<u>3</u>		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	4,523		4,523		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	1,782		1,785		0.20%	
10. Components of Contribution						
a. Employer Normal Cost	134		139		3.83%	1.73%
b. UAAL Contribution	160		160		0.22%	0.12%
c. Administrative Expenses	3		3		0.00%	0.00%
d. Interest on Late Employer Contribution	<u>0</u>		<u>0</u>		0.00%	0.00%
e. Total (Pension Expense)	297		303		1.85%	1.85%



NYCERS: TBTA

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	524	1,311	523	1,311	-0.08%	-0.04%
b. Inactives	7	94	5	94	-22.83%	-0.14%
c. Terminated Vesteds	8	64	8	64	0.67%	0.00%
d. Retirees	546	1,376	549	1,376	0.57%	0.29%
e. Loads	9		9		0.00%	0.00%
f. VSFs	0		0		0.00%	0.00%
g. Total	1,093	2,845	1,094	2,845	0.11%	0.11%
2. Present Value of Future Salary	1,066		1,090		2.26%	
3. Present Value of Future Employee Contributions	42		41		-2.83%	
4. Present Value of Future Employer Normal Costs						
a. Actives	107		111		3.50%	3.50%
b. VSFs	0		0		0.00%	0.00%
c. Total	107		111		3.50%	3.50%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	374		371		-0.79%	-0.31%
b. Inactives (1.b.)	7		5		-22.83%	-0.16%
c. Terminated Vesteds (1.c.)	8		8		0.67%	0.01%
d. Retirees (1.d.)	546		549		0.57%	0.33%
e. Loads (1.e.)	9		9		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	0		0		0.00%	0.00%
g. Total	944		942		-0.14%	-0.14%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	107		111		3.50%	
b. Present Value of Future Salary	1,066		1,090		2.26%	
c. Salary - Time 0.5	125		125		0.21%	
d. Projected Present Value of Future Salary	946		970		2.52%	
e. Normal Cost Percent	11.366%		11.470%		0.92%	
f. Salary - Time 1.5	123		124		0.94%	
g. Employer Normal Cost	14		14		1.86%	
7. Assets (Main Fund)						
a. Market Value of Assets	640		640		0.00%	
b. Actuarial Value of Assets	652		652		0.00%	
c. PV 1-Year Adj Employer Normal Cost	15		15		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	0		0		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	1		1		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	667		667		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	276		275		-0.48%	
10. Components of Contribution						
a. Employer Normal Cost	14		14		1.86%	0.66%
b. UAAL Contribution	25		24		-0.63%	-0.40%
c. Administrative Expenses	0		0		0.00%	0.00%
d. Interest on Late Employer Contribution	0		0		0.00%	0.00%
e. Total (Pension Expense)	39		39		0.27%	0.27%



NYCERS: Operating

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	10,566	35,750	10,576	35,750	0.09%	0.05%
b. Inactives	179	2,303	121	2,303	-32.64%	-0.32%
c. Terminated Vesteds	66	601	61	601	-7.97%	-0.03%
d. Retirees	7,523	22,481	7,493	22,481	-0.40%	-0.16%
e. Loads	27		27		0.00%	0.00%
f. VSFs	<u>0</u>		<u>0</u>		0.00%	0.00%
g. Total	18,361	61,135	18,277	61,135	-0.46%	-0.46%
2. Present Value of Future Salary	24,092		24,146		0.22%	
3. Present Value of Future Employee Contributions	737		740		0.34%	
4. Present Value of Future Employer Normal Costs						
a. Actives	2,411		2,381		-1.27%	-1.27%
b. VSFs	<u>0</u>		<u>0</u>		0.00%	0.00%
c. Total	2,411		2,381		-1.27%	-1.27%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	7,418		7,455		0.51%	0.25%
b. Inactives (1.b.)	179		121		-32.64%	-0.38%
c. Terminated Vesteds (1.c.)	66		61		-7.97%	-0.03%
d. Retirees (1.d.)	7,523		7,493		-0.40%	-0.20%
e. Loads (1.e.)	27		27		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	<u>0</u>		<u>0</u>		0.00%	0.00%
g. Total	15,213		15,156		-0.37%	-0.37%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	2,411		2,381		-1.27%	
b. Present Value of Future Salary	24,092		24,146		0.22%	
c. Salary - Time 0.5	2,760		2,753		-0.23%	
d. Projected Present Value of Future Salary	21,425		21,484		0.28%	
e. Normal Cost Percent	11.278%		11.100%		-1.58%	
f. Salary - Time 1.5	2,684		2,678		-0.20%	
g. Employer Normal Cost	303		297		-1.77%	
7. Assets (Main Fund)						
a. Market Value of Assets	11,227		11,227		0.00%	
b. Actuarial Value of Assets	11,430		11,430		0.00%	
c. PV 1-Year Adj Employer Normal Cost	290		290		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	10		10		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	<u>12</u>		<u>12</u>		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	11,743		11,743		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	3,470		3,414		-1.63%	
10. Components of Contribution						
a. Employer Normal Cost	303		297		-1.77%	-0.93%
b. UAAL Contribution	266		260		-2.51%	-1.15%
c. Administrative Expenses	11		11		0.00%	0.00%
d. Interest on Late Employer Contribution	<u>0</u>		<u>0</u>		0.00%	0.00%
e. Total (Pension Expense)	580		568		-2.08%	-2.08%



NYCERS Results

(by Obligor)



NYCERS: TRANSIT OPERATING

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	10,566	35,750	10,576	35,750	0.09%	0.05%
b. Inactives	179	2,303	121	2,303	-32.64%	-0.32%
c. Terminated Vesteds	66	601	61	601	-7.97%	-0.03%
d. Retirees	7,523	22,481	7,493	22,481	-0.40%	-0.16%
e. Loads	27		27		0.00%	0.00%
f. VSFs	0		0		0.00%	0.00%
g. Total	18,361	61,135	18,277	61,135	-0.46%	-0.46%
2. Present Value of Future Salary	24,092		24,146		0.22%	
3. Present Value of Future Employee Contributions	737		740		0.34%	
4. Present Value of Future Employer Normal Costs						
a. Actives	2,411		2,381		-1.27%	-1.27%
b. VSFs	0		0		0.00%	0.00%
c. Total	2,411		2,381		-1.27%	-1.27%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	7,418		7,455		0.51%	0.25%
b. Inactives (1.b.)	179		121		-32.64%	-0.38%
c. Terminated Vesteds (1.c.)	66		61		-7.97%	-0.03%
d. Retirees (1.d.)	7,523		7,493		-0.40%	-0.20%
e. Loads (1.e.)	27		27		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	0		0		0.00%	0.00%
g. Total	15,213		15,156		-0.37%	-0.37%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	2,411		2,381		-1.27%	
b. Present Value of Future Salary	24,092		24,146		0.22%	
c. Salary - Time 0.5	2,760		2,753		-0.23%	
d. Projected Present Value of Future Salary	21,425		21,484		0.28%	
e. Normal Cost Percent	11.278%		11.109%		-1.50%	
f. Salary - Time 1.5	2,684		2,678		-0.20%	
g. Employer Normal Cost	303		298		-1.69%	
7. Assets (Main Fund)						
a. Market Value of Assets	11,227		11,227		0.00%	
b. Actuarial Value of Assets	11,430		11,430		0.00%	
c. PV 1-Year Adj Employer Normal Cost	290		290		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	10		10		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	12		12		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	11,743		11,743		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	3,470		3,414		-1.63%	
10. Components of Contribution						
a. Employer Normal Cost	303		298		-1.69%	-0.88%
b. UAAL Contribution	266		260		-2.51%	-1.15%
c. Administrative Expenses	11		11		0.00%	0.00%
d. Interest on Late Employer Contribution	0		0		0.00%	0.00%
e. Total (Part of Employer Contributions for Fiscal Year 2018 (2016 Valuation))	580		569		-2.04%	-2.04%

Actuarial Audit of Employer Contributions for Fiscal Year 2018 (2016 Valuation)



NYCERS: TA NON-OPERATING

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	763	2,017	779	2,017	2.04%	0.61%
b. Inactives	6	90	7	90	9.81%	0.02%
c. Terminated Vesteds	32	444	33	444	3.27%	0.04%
d. Retirees	1,765	8,222	1,847	8,222	4.67%	3.21%
e. Loads	0		0		0.00%	0.00%
f. VSFs	0		0		0.00%	0.00%
g. Total	2,566	10,773	2,666	10,773	3.88%	3.88%
2. Present Value of Future Salary	1,475		1,449		-1.81%	
3. Present Value of Future Employee Contributions	28		30		7.72%	
4. Present Value of Future Employer Normal Costs						
a. Actives	137		140		2.38%	2.38%
b. VSFs	0		0		0.00%	0.00%
c. Total	137		140		2.38%	2.38%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	598		608		1.69%	0.42%
b. Inactives (1.b.)	6		7		9.81%	0.03%
c. Terminated Vesteds (1.c.)	32		33		3.27%	0.04%
d. Retirees (1.d.)	1,765		1,847		4.67%	3.43%
e. Loads (1.e.)	0		0		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	0		0		0.00%	0.00%
g. Total	2,401		2,495		3.92%	3.92%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	137		140		2.38%	
b. Present Value of Future Salary	1,475		1,449		-1.81%	
c. Salary - Time 0.5	179		179		-0.13%	
d. Projected Present Value of Future Salary	1,302		1,276		-2.04%	
e. Normal Cost Percent	10.555%		11.037%		4.57%	
f. Salary - Time 1.5	173		172		-0.43%	
g. Employer Normal Cost	18		19		4.12%	
7. Assets (Main Fund)						
a. Market Value of Assets	1,082		1,082		0.00%	
b. Actuarial Value of Assets	1,101		1,101		0.00%	
c. PV 1-Year Adj Employer Normal Cost	16		16		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	2		2		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	1		1		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	1,120		1,120		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	1,281		1,375		7.35%	
10. Components of Contribution						
a. Employer Normal Cost	18		19		4.12%	0.49%
b. UAAL Contribution	134		145		8.34%	7.25%
c. Administrative Expenses	2		2		0.00%	0.00%
d. Interest on Late Employer Contribution	0		0		0.00%	0.00%
e. Total (Pension Expense)	154		166		7.74%	7.74%



NYCERS: TA TP

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	0	0	0	0	0.00%	0.00%
b. Inactives	0	0	0	0	0.00%	0.00%
c. Terminated Vesteds	0	0	0	0	0.00%	0.00%
d. Retirees	562	2,145	574	2,145	2.16%	1.96%
e. Loads	0		0		0.00%	0.00%
f. VSFs	<u>58</u>		<u>58</u>		0.11%	0.01%
g. Total	619	2,145	632	2,145	1.97%	1.97%
2. Present Value of Future Salary	0		0		0.00%	
3. Present Value of Future Employee Contributions	0		0		0.00%	
4. Present Value of Future Employer Normal Costs						
a. Actives	0		0		0.00%	#DIV/0!
b. VSFs	<u>0</u>		<u>0</u>		0.00%	#DIV/0!
c. Total	0		0		0.00%	#DIV/0!
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	0		0		0.00%	0.00%
b. Inactives (1.b.)	0		0		0.00%	0.00%
c. Terminated Vesteds (1.c.)	0		0		0.00%	0.00%
d. Retirees (1.d.)	562		574		2.16%	1.96%
e. Loads (1.e.)	0		0		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	<u>58</u>		<u>58</u>		0.11%	0.01%
g. Total	619		632		1.97%	1.97%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	0		0		0.00%	
b. Present Value of Future Salary	0		0		0.00%	
c. Salary - Time 0.5	0		0		0.00%	
d. Projected Present Value of Future Salary	0		0		0.00%	
e. Normal Cost Percent	0.000%		0.000%		0.00%	
f. Salary - Time 1.5	0		0		0.00%	
g. Employer Normal Cost	0		0		0.00%	
7. Assets (Main Fund)						
a. Market Value of Assets	341		341		0.00%	
b. Actuarial Value of Assets	347		347		0.00%	
c. PV 1-Year Adj Employer Normal Cost	0		0		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	0		0		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	<u>0</u>		<u>0</u>		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	347		347		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	272		284		4.48%	
10. Components of Contribution						
a. Employer Normal Cost	0		0		0.00%	0.00%
b. UAAL Contribution	25		26		5.77%	5.68%
c. Administrative Expenses	0		0		0.00%	0.00%
d. Interest on Late Employer Contribution	<u>0</u>		<u>0</u>		0.00%	0.00%
e. Total (Pension Expense)	25		27		5.68%	5.68%



NYCERS: TA CP ENGINEERS

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	384	900	388	900	0.89%	0.45%
b. Inactives	7	39	7	39	-0.15%	0.00%
c. Terminated Vesteds	6	49	6	49	3.92%	0.03%
d. Retirees	367	948	368	948	0.30%	0.14%
e. Loads	0		0		0.00%	0.00%
f. VSFs	0		0		0.00%	0.00%
g. Total	764	1,936	768	1,936	0.62%	0.62%
2. Present Value of Future Salary	614		608		-0.95%	
3. Present Value of Future Employee Contributions	11		11		0.61%	
4. Present Value of Future Employer Normal Costs						
a. Actives	57		58		0.64%	0.64%
b. VSFs	0		0		0.00%	0.00%
c. Total	57		58		0.64%	0.64%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	316		319		0.95%	0.43%
b. Inactives (1.b.)	7		7		-0.15%	0.00%
c. Terminated Vesteds (1.c.)	6		6		3.92%	0.03%
d. Retirees (1.d.)	367		368		0.30%	0.16%
e. Loads (1.e.)	0		0		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	0		0		0.00%	0.00%
g. Total	695		700		0.62%	0.62%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	57		58		0.64%	
b. Present Value of Future Salary	614		608		-0.95%	
c. Salary - Time 0.5	83		83		0.00%	
d. Projected Present Value of Future Salary	534		528		-1.10%	
e. Normal Cost Percent	10.738%		10.932%		1.81%	
f. Salary - Time 1.5	78		78		0.03%	
g. Employer Normal Cost	8		9		1.84%	
7. Assets (Main Fund)						
a. Market Value of Assets	466		466		0.00%	
b. Actuarial Value of Assets	474		474		0.00%	
c. PV 1-Year Adj Employer Normal Cost	8		8		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	0		0		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	0		0		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	483		483		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	212		216		2.04%	
10. Components of Contribution						
a. Employer Normal Cost	8		9		1.84%	0.57%
b. UAAL Contribution	19		19		2.74%	1.86%
c. Administrative Expenses	0		0		0.00%	0.00%
d. Interest on Late Employer Contribution	0		0		0.00%	0.00%
e. Total (Pension Expense)	27		28		2.43%	2.43%



NYCERS: HA REGULAR

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	2,431	9,914	2,412	9,914	-0.78%	-0.41%
b. Inactives	63	1,015	66	1,015	4.11%	0.06%
c. Terminated Vesteds	52	620	54	620	5.18%	0.06%
d. Retirees	2,099	8,997	2,114	8,997	0.67%	0.30%
e. Loads	0		0		0.00%	0.00%
f. VSFs	0		0		0.00%	0.00%
g. Total	4,646	20,546	4,646	20,546	0.01%	0.01%
2. Present Value of Future Salary	5,851		5,992		2.40%	
3. Present Value of Future Employee Contributions	150		151		0.83%	
4. Present Value of Future Employer Normal Costs						
a. Actives	519		517		-0.34%	-0.34%
b. VSFs	0		0		0.00%	0.00%
c. Total	519		517		-0.34%	-0.34%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	1,762		1,744		-1.04%	-0.46%
b. Inactives (1.b.)	63		66		4.11%	0.07%
c. Terminated Vesteds (1.c.)	52		54		5.18%	0.07%
d. Retirees (1.d.)	2,099		2,114		0.67%	0.36%
e. Loads (1.e.)	0		0		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	0		0		0.00%	0.00%
g. Total	3,977		3,978		0.03%	0.03%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	519		517		-0.34%	
b. Present Value of Future Salary	5,851		5,992		2.40%	
c. Salary - Time 0.5	620		621		0.11%	
d. Projected Present Value of Future Salary	5,252		5,391		2.66%	
e. Normal Cost Percent	9.906%		9.621%		-2.88%	
f. Salary - Time 1.5	611		612		0.25%	
g. Employer Normal Cost	60		59		-2.63%	
7. Assets (Main Fund)						
a. Market Value of Assets	2,794		2,794		0.00%	
b. Actuarial Value of Assets	2,845		2,845		0.00%	
c. PV 1-Year Adj Employer Normal Cost	60		60		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	3		3		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	3		3		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	2,911		2,911		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	1,066		1,067		0.10%	
10. Components of Contribution						
a. Employer Normal Cost	60		59		-2.63%	-1.03%
b. UAAL Contribution	90		90		0.15%	0.09%
c. Administrative Expenses	4		4		0.00%	0.00%
d. Interest on Late Employer Contribution	0		0		0.00%	0.00%
e. Total (Pension Expense)	154		153		-0.95%	-0.95%



NYCERS: HA HP

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	0	0	0	0	0.00%	0.00%
b. Inactives	0	0	0	0	0.00%	0.00%
c. Terminated Vesteds	0	0	0	0	0.00%	0.00%
d. Retirees	246	917	250	917	1.45%	1.26%
e. Loads	0		0		0.00%	0.00%
f. VSFs	<u>38</u>		<u>38</u>		0.11%	0.02%
g. Total	285	917	288	917	1.27%	1.27%
2. Present Value of Future Salary	0		0		0.00%	
3. Present Value of Future Employee Contributions	0		0		0.00%	
4. Present Value of Future Employer Normal Costs						
a. Actives	0		0		0.00%	#DIV/0!
b. VSFs	<u>0</u>		<u>0</u>		0.00%	#DIV/0!
c. Total	0		0		0.00%	#DIV/0!
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	0		0		0.00%	0.00%
b. Inactives (1.b.)	0		0		0.00%	0.00%
c. Terminated Vesteds (1.c.)	0		0		0.00%	0.00%
d. Retirees (1.d.)	246		250		1.45%	1.26%
e. Loads (1.e.)	0		0		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	<u>38</u>		<u>38</u>		0.11%	0.02%
g. Total	285		288		1.27%	1.27%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	0		0		0.00%	
b. Present Value of Future Salary	0		0		0.00%	
c. Salary - Time 0.5	0		0		0.00%	
d. Projected Present Value of Future Salary	0		0		0.00%	
e. Normal Cost Percent	0.000%		0.000%		0.00%	
f. Salary - Time 1.5	0		0		0.00%	
g. Employer Normal Cost	0		0		0.00%	
7. Assets (Main Fund)						
a. Market Value of Assets	167		167		0.00%	
b. Actuarial Value of Assets	170		170		0.00%	
c. PV 1-Year Adj Employer Normal Cost	0		0		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	0		0		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	<u>0</u>		<u>0</u>		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	170		170		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	115		118		3.15%	
10. Components of Contribution						
a. Employer Normal Cost	0		0		0.00%	0.00%
b. UAAL Contribution	10		11		4.11%	4.04%
c. Administrative Expenses	0		0		0.00%	0.00%
d. Interest on Late Employer Contribution	<u>0</u>		<u>0</u>		0.00%	0.00%
e. Total (Pension Expense)	11		11		4.04%	4.04%



NYCERS: HHC

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	7,285	32,322	7,288	32,322	0.05%	0.03%
b. Inactives	140	3,910	171	3,910	22.04%	0.24%
c. Terminated Vesteds	141	1,807	145	1,807	2.56%	0.03%
d. Retirees	5,495	23,198	5,546	23,198	0.93%	0.39%
e. Loads	0		0		0.00%	0.00%
f. VSFs	0		0		0.00%	0.00%
g. Total	13,062	61,237	13,151	61,237	0.68%	0.68%
2. Present Value of Future Salary	20,109		20,253		0.72%	
3. Present Value of Future Employee Contributions	556		545		-1.82%	
4. Present Value of Future Employer Normal Costs						
a. Actives	1,960		1,991		1.60%	1.60%
b. VSFs	0		0		0.00%	0.00%
c. Total	1,960		1,991		1.60%	1.60%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	4,770		4,752		-0.37%	-0.17%
b. Inactives (1.b.)	140		171		22.04%	0.29%
c. Terminated Vesteds (1.c.)	141		145		2.56%	0.03%
d. Retirees (1.d.)	5,495		5,546		0.93%	0.49%
e. Loads (1.e.)	0		0		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	0		0		0.00%	0.00%
g. Total	10,547		10,615		0.64%	0.64%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	1,960		1,991		1.60%	
b. Present Value of Future Salary	20,109		20,253		0.72%	
c. Salary - Time 0.5	2,176		2,181		0.23%	
d. Projected Present Value of Future Salary	18,005		18,145		0.78%	
e. Normal Cost Percent	10.906%		11.001%		0.87%	
f. Salary - Time 1.5	2,125		2,131		0.26%	
g. Employer Normal Cost	232		234		1.13%	
7. Assets (Main Fund)						
a. Market Value of Assets	7,293		7,293		0.00%	
b. Actuarial Value of Assets	7,425		7,425		0.00%	
c. PV 1-Year Adj Employer Normal Cost	225		225		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	10		10		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	10		10		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	7,669		7,669		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	2,878		2,946		2.36%	
10. Components of Contribution						
a. Employer Normal Cost	232		234		1.13%	0.52%
b. UAAL Contribution	252		260		3.18%	1.58%
c. Administrative Expenses	11		11		0.00%	0.00%
d. Interest on Late Employer Contribution	13		13		0.00%	0.00%
e. Total (Pension Expense)	507		518		2.10%	2.10%



NYCERS: OTB

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	0	0	0	0	0.00%	0.00%
b. Inactives	0	4	0	4	6.83%	0.01%
c. Terminated Vesteds	22	295	23	295	4.18%	0.28%
d. Retirees	304	1,246	305	1,246	0.23%	0.22%
e. Loads	0		0		0.00%	0.00%
f. VSFs	0		0		0.00%	0.00%
g. Total	327	1,545	328	1,545	0.51%	0.51%
2. Present Value of Future Salary	0		0		0.00%	
3. Present Value of Future Employee Contributions	0		0		0.00%	
4. Present Value of Future Employer Normal Costs						
a. Actives	0		0		0.00%	#DIV/0!
b. VSFs	0		0		0.00%	#DIV/0!
c. Total	0		0		0.00%	#DIV/0!
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	0		0		0.00%	0.00%
b. Inactives (1.b.)	0		0		6.83%	0.01%
c. Terminated Vesteds (1.c.)	22		23		4.18%	0.28%
d. Retirees (1.d.)	304		305		0.23%	0.22%
e. Loads (1.e.)	0		0		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	0		0		0.00%	0.00%
g. Total	327		328		0.51%	0.51%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	0		0		0.00%	
b. Present Value of Future Salary	0		0		0.00%	
c. Salary - Time 0.5	0		0		0.00%	
d. Projected Present Value of Future Salary	0		0		0.00%	
e. Normal Cost Percent	0.000%		0.000%		0.00%	
f. Salary - Time 1.5	0		0		0.00%	
g. Employer Normal Cost	0		0		0.00%	
7. Assets (Main Fund)						
a. Market Value of Assets	186		186		0.00%	
b. Actuarial Value of Assets	190		190		0.00%	
c. PV 1-Year Adj Employer Normal Cost	0		0		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	0		0		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	0		0		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	190		190		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	136		138		1.22%	
10. Components of Contribution						
a. Employer Normal Cost	0		0		0.00%	0.00%
b. UAAL Contribution	12		13		1.59%	1.07%
c. Administrative Expenses	0		0		0.00%	0.00%
d. Interest on Late Employer Contribution	6		6		0.00%	0.00%
e. Total (Pension Expense)	18		19		1.07%	1.07%



NYCERS: HDC / REMIC

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	28	97	28	97	0.33%	0.23%
b. Inactives	1	10	1	10	43.99%	0.62%
c. Terminated Vesteds	0	1	0	1	1.58%	0.00%
d. Retirees	12	27	12	27	-3.17%	-0.96%
e. Loads	0		0		0.00%	0.00%
f. VSFs	0		0		0.00%	0.00%
g. Total	41	135	40	135	-0.11%	-0.11%
2. Present Value of Future Salary	79		79		0.00%	
3. Present Value of Future Employee Contributions	2		2		-4.15%	
4. Present Value of Future Employer Normal Costs						
a. Actives	9		9		1.37%	1.37%
b. VSFs	0		0		0.00%	0.00%
c. Total	9		9		1.37%	1.37%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	17		17		0.20%	0.11%
b. Inactives (1.b.)	1		1		43.99%	0.85%
c. Terminated Vesteds (1.c.)	0		0		1.58%	0.01%
d. Retirees (1.d.)	12		12		-3.17%	-1.30%
e. Loads (1.e.)	0		0		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	0		0		0.00%	0.00%
g. Total	30		30		-0.34%	-0.34%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	9		9		1.37%	
b. Present Value of Future Salary	79		79		0.00%	
c. Salary - Time 0.5	9		9		0.00%	
d. Projected Present Value of Future Salary	70		70		0.00%	
e. Normal Cost Percent	12.971%		13.155%		1.42%	
f. Salary - Time 1.5	9		9		0.00%	
g. Employer Normal Cost	1		1		1.42%	
7. Assets (Main Fund)						
a. Market Value of Assets	22		22		0.00%	
b. Actuarial Value of Assets	22		22		0.00%	
c. PV 1-Year Adj Employer Normal Cost	1		1		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	0		0		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	0		0		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	24		24		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	6		6		-1.60%	
10. Components of Contribution						
a. Employer Normal Cost	1		1		1.42%	0.94%
b. UAAL Contribution	1		1		-2.15%	-0.69%
c. Administrative Expenses	0		0		0.00%	0.00%
d. Interest on Late Employer Contribution	0		0		0.00%	0.00%
e. Total (Pension Expense)	2		2		0.25%	0.25%



NYCERS: COURTS

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	0	0	0	0	0.00%	0.00%
b. Inactives	0	0	0	0	0.00%	0.00%
c. Terminated Vesteds	0	0	0	0	0.00%	0.00%
d. Retirees	19	115	19	115	-0.40%	-0.40%
e. Loads	0		0		0.00%	0.00%
f. VSFs	0		0		0.00%	0.00%
g. Total	19	115	19	115	-0.40%	-0.40%
2. Present Value of Future Salary	0		0		0.00%	
3. Present Value of Future Employee Contributions	0		0		0.00%	
4. Present Value of Future Employer Normal Costs						
a. Actives	0		0		0.00%	#DIV/0!
b. VSFs	0		0		0.00%	#DIV/0!
c. Total	0		0		0.00%	#DIV/0!
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	0		0		0.00%	0.00%
b. Inactives (1.b.)	0		0		0.00%	0.00%
c. Terminated Vesteds (1.c.)	0		0		0.00%	0.00%
d. Retirees (1.d.)	19		19		-0.40%	-0.40%
e. Loads (1.e.)	0		0		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	0		0		0.00%	0.00%
g. Total	19		19		-0.40%	-0.40%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	0		0		0.00%	
b. Present Value of Future Salary	0		0		0.00%	
c. Salary - Time 0.5	0		0		0.00%	
d. Projected Present Value of Future Salary	0		0		0.00%	
e. Normal Cost Percent	0.000%		0.000%		0.00%	
f. Salary - Time 1.5	0		0		0.00%	
g. Employer Normal Cost	0		0		0.00%	
7. Assets (Main Fund)						
a. Market Value of Assets	4		4		0.00%	
b. Actuarial Value of Assets	4		4		0.00%	
c. PV 1-Year Adj Employer Normal Cost	0		0		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	0		0		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	0		0		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	4		4		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	15		15		-0.50%	
10. Components of Contribution						
a. Employer Normal Cost	0		0		0.00%	0.00%
b. UAAL Contribution	1		1		-0.65%	-0.64%
c. Administrative Expenses	0		0		0.00%	0.00%
d. Interest on Late Employer Contribution	0		0		0.00%	0.00%
e. Total (Pension Expense)	1		1		-0.64%	-0.64%



NYCERS: SCA

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	28	55	28	55	0.31%	0.18%
b. Inactives	0	4	0	4	13.86%	0.09%
c. Terminated Vesteds	1	7	1	7	0.57%	0.01%
d. Retirees	19	38	19	38	1.72%	0.67%
e. Loads	0		0		0.00%	0.00%
f. VSFs	0		0		0.00%	0.00%
g. Total	48	104	48	104	0.95%	0.95%
2. Present Value of Future Salary	46		46		0.07%	
3. Present Value of Future Employee Contributions	0		0		-0.49%	
4. Present Value of Future Employer Normal Costs						
a. Actives	5		4		-1.47%	-1.47%
b. VSFs	0		0		0.00%	0.00%
c. Total	5		4		-1.47%	-1.47%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	23		23		0.68%	0.36%
b. Inactives (1.b.)	0		0		13.86%	0.10%
c. Terminated Vesteds (1.c.)	1		1		0.57%	0.01%
d. Retirees (1.d.)	19		19		1.72%	0.74%
e. Loads (1.e.)	0		0		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	0		0		0.00%	0.00%
g. Total	43		43		1.22%	1.22%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	5		4		-1.47%	
b. Present Value of Future Salary	46		46		0.07%	
c. Salary - Time 0.5	6		6		0.07%	
d. Projected Present Value of Future Salary	40		40		0.07%	
e. Normal Cost Percent	11.353%		11.183%		-1.50%	
f. Salary - Time 1.5	6		6		0.25%	
g. Employer Normal Cost	1		1		-1.25%	
7. Assets (Main Fund)						
a. Market Value of Assets	30		30		0.00%	
b. Actuarial Value of Assets	31		31		0.00%	
c. PV 1-Year Adj Employer Normal Cost	1		1		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	0		0		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	0		0		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	31		31		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	11		12		4.61%	
10. Components of Contribution						
a. Employer Normal Cost	1		1		-1.25%	-0.48%
b. UAAL Contribution	1		1		6.06%	3.66%
c. Administrative Expenses	0		0		0.00%	0.00%
d. Interest on Late Employer Contribution	0		0		0.00%	0.00%
e. Total (Pension Expense)	2		2		3.18%	3.18%



NYCERS: WFA

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	3	10	3	10	0.17%	0.13%
b. Inactives	0	2	0	2	76.70%	0.72%
c. Terminated Vesteds	0	0	0	0	0.00%	0.00%
d. Retirees	1	1	1	1	0.00%	0.00%
e. Loads	0		0		0.00%	0.00%
f. VSFs	<u>0</u>		<u>0</u>		0.00%	0.00%
g. Total	4	13	4	13	0.86%	0.86%
2. Present Value of Future Salary	10		10		0.02%	
3. Present Value of Future Employee Contributions	0		0		0.02%	
4. Present Value of Future Employer Normal Costs						
a. Actives	1		1		-0.37%	-0.37%
b. VSFs	<u>0</u>		<u>0</u>		0.00%	0.00%
c. Total	1		1		-0.37%	-0.37%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	2		2		0.52%	0.37%
b. Inactives (1.b.)	0		0		76.70%	1.11%
c. Terminated Vesteds (1.c.)	0		0		0.00%	0.00%
d. Retirees (1.d.)	1		1		0.00%	0.00%
e. Loads (1.e.)	0		0		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	<u>0</u>		<u>0</u>		0.00%	0.00%
g. Total	3		3		1.48%	1.48%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	1		1		-0.37%	
b. Present Value of Future Salary	10		10		0.02%	
c. Salary - Time 0.5	1		1		0.00%	
d. Projected Present Value of Future Salary	9		9		0.03%	
e. Normal Cost Percent	12.131%		12.089%		-0.35%	
f. Salary - Time 1.5	1		1		0.00%	
g. Employer Normal Cost	0		0		-0.35%	
7. Assets (Main Fund)						
a. Market Value of Assets	2		2		0.00%	
b. Actuarial Value of Assets	2		2		0.00%	
c. PV 1-Year Adj Employer Normal Cost	0		0		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	0		0		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	<u>0</u>		<u>0</u>		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	2		2		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	0		0		93.27%	
10. Components of Contribution						
a. Employer Normal Cost	0		0		-0.35%	-0.38%
b. UAAL Contribution	0		0		31.52%	3.93%
c. Administrative Expenses	0		0		0.00%	0.00%
d. Interest on Late Employer Contribution	<u>0</u>		<u>0</u>		0.00%	0.00%
e. Total (Pension Expense)	0		0		3.54%	3.54%



NYCERS: SENIOR COLLEGE

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	788	4,350	786	4,350	-0.27%	-0.18%
b. Inactives	19	769	23	769	16.44%	0.27%
c. Terminated Vesteds	7	100	7	100	2.90%	0.02%
d. Retirees	371	2,034	371	2,034	0.15%	0.05%
e. Loads	6		6		0.00%	0.00%
f. VSFs	0		0		0.00%	0.00%
g. Total	1,192	7,253	1,194	7,253	0.15%	0.15%
2. Present Value of Future Salary	2,207		2,228		0.99%	
3. Present Value of Future Employee Contributions	62		64		1.72%	
4. Present Value of Future Employer Normal Costs						
a. Actives	208		208		-0.28%	-0.28%
b. VSFs	0		0		0.00%	0.00%
c. Total	208		208		-0.28%	-0.28%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	518		515		-0.51%	-0.29%
b. Inactives (1.b.)	19		23		16.44%	0.35%
c. Terminated Vesteds (1.c.)	7		7		2.90%	0.02%
d. Retirees (1.d.)	371		371		0.15%	0.06%
e. Loads (1.e.)	6		6		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	0		0		0.00%	0.00%
g. Total	921		922		0.14%	0.14%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	208		208		-0.28%	
b. Present Value of Future Salary	2,207		2,228		0.99%	
c. Salary - Time 0.5	230		230		0.32%	
d. Projected Present Value of Future Salary	1,985		2,006		1.06%	
e. Normal Cost Percent	10.521%		10.387%		-1.27%	
f. Salary - Time 1.5	224		225		0.45%	
g. Employer Normal Cost	24		23		-0.83%	
7. Assets (Main Fund)						
a. Market Value of Assets	652		652		0.00%	
b. Actuarial Value of Assets	664		664		0.00%	
c. PV 1-Year Adj Employer Normal Cost	21		21		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	1		1		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	1		1		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	687		687		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	234		235		0.57%	
10. Components of Contribution						
a. Employer Normal Cost	24		23		-0.83%	-0.44%
b. UAAL Contribution	20		20		0.79%	0.35%
c. Administrative Expenses	1		1		0.00%	0.00%
d. Interest on Late Employer Contribution	0		0		0.00%	0.00%
e. Total (Pension Expense)	45		45		-0.09%	-0.09%



NYCERS: TBTA

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	524	1,311	523	1,311	-0.08%	-0.04%
b. Inactives	7	94	5	94	-22.83%	-0.14%
c. Terminated Vesteds	8	64	8	64	0.67%	0.00%
d. Retirees	546	1,376	549	1,376	0.57%	0.29%
e. Loads	9		9		0.00%	0.00%
f. VSFs	<u>0</u>		<u>0</u>		0.00%	0.00%
g. Total	1,093	2,845	1,094	2,845	0.11%	0.11%
2. Present Value of Future Salary	1,066		1,090		2.26%	
3. Present Value of Future Employee Contributions	42		41		-2.83%	
4. Present Value of Future Employer Normal Costs						
a. Actives	107		111		3.50%	3.50%
b. VSFs	<u>0</u>		<u>0</u>		0.00%	0.00%
c. Total	107		111		3.50%	3.50%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	374		371		-0.79%	-0.31%
b. Inactives (1.b.)	7		5		-22.83%	-0.16%
c. Terminated Vesteds (1.c.)	8		8		0.67%	0.01%
d. Retirees (1.d.)	546		549		0.57%	0.33%
e. Loads (1.e.)	9		9		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	<u>0</u>		<u>0</u>		0.00%	0.00%
g. Total	944		942		-0.14%	-0.14%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	107		111		3.50%	
b. Present Value of Future Salary	1,066		1,090		2.26%	
c. Salary - Time 0.5	125		125		0.21%	
d. Projected Present Value of Future Salary	946		970		2.52%	
e. Normal Cost Percent	11.366%		11.479%		0.99%	
f. Salary - Time 1.5	123		124		0.94%	
g. Employer Normal Cost	14		14		1.94%	
7. Assets (Main Fund)						
a. Market Value of Assets	640		640		0.00%	
b. Actuarial Value of Assets	652		652		0.00%	
c. PV 1-Year Adj Employer Normal Cost	15		15		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	0		0		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	<u>1</u>		<u>1</u>		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	667		667		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	276		275		-0.48%	
10. Components of Contribution						
a. Employer Normal Cost	14		14		1.94%	0.69%
b. UAAL Contribution	25		24		-0.63%	-0.40%
c. Administrative Expenses	0		0		0.00%	0.00%
d. Interest on Late Employer Contribution	<u>0</u>		<u>0</u>		0.00%	0.00%
e. Total (Pension Expense)	39		39		0.29%	0.29%



NYCERS: OBLIGORS TOTAL

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	22,800	86,726	22,811	86,726	0.05%	0.02%
b. Inactives	423	8,240	401	8,240	-5.29%	-0.05%
c. Terminated Vesteds	335	3,988	338	3,988	1.05%	0.01%
d. Retirees	19,328	71,745	19,467	71,745	0.72%	0.32%
e. Loads	42		42		0.00%	0.00%
f. VSFs	<u>96</u>		<u>96</u>		0.11%	0.00%
g. Total	43,025	170,699	43,155	170,699	0.30%	0.30%
2. Present Value of Future Salary	55,549		55,901		0.63%	
3. Present Value of Future Employee Contributions	1,589		1,585		-0.27%	
4. Present Value of Future Employer Normal Costs						
a. Actives	5,415		5,420		0.11%	0.11%
b. VSFs	<u>0</u>		<u>0</u>		0.00%	0.00%
c. Total	5,415		5,420		0.11%	0.11%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	15,797		15,806		0.06%	0.03%
b. Inactives (1.b.)	423		401		-5.29%	-0.06%
c. Terminated Vesteds (1.c.)	335		338		1.05%	0.01%
d. Retirees (1.d.)	19,328		19,467		0.72%	0.38%
e. Loads (1.e.)	42		42		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	<u>96</u>		<u>96</u>		0.11%	0.00%
g. Total	36,021		36,150		0.36%	0.36%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	5,415		5,420		0.11%	
b. Present Value of Future Salary	55,549		55,901		0.63%	
c. Salary - Time 0.5	6,187		6,187		0.00%	
d. Projected Present Value of Future Salary	49,568		49,920		0.71%	
e. Normal Cost Percent	10.957%		10.900%		-0.52%	
f. Salary - Time 1.5	6,033		6,036		0.05%	
g. Employer Normal Cost	661		658		-0.47%	
7. Assets (Main Fund)						
a. Market Value of Assets	24,907		24,907		0.00%	
b. Actuarial Value of Assets	25,356		25,356		0.00%	
c. PV 1-Year Adj Employer Normal Cost	637		637		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	27		27		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	<u>28</u>		<u>28</u>		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	26,048		26,048		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	9,973		10,102		1.29%	
10. Components of Contribution						
a. Employer Normal Cost	661		658		-0.47%	-0.20%
b. UAAL Contribution	856		872		1.78%	0.97%
c. Administrative Expenses	30		30		0.00%	0.00%
d. Interest on Late Employer Contribution	<u>18</u>		<u>18</u>		0.00%	0.00%
e. Total (Pension Expense)	1,566		1,578		0.78%	0.78%



NYCERS: CITY TOTAL

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	27,188	98,755	27,129	98,755	-0.22%	-0.11%
b. Inactives	580	9,749	604	9,749	4.14%	0.05%
c. Terminated Vesteds	401	4,907	411	4,907	2.71%	0.02%
d. Retirees	22,923	75,769	23,142	75,769	0.96%	0.42%
e. Loads	225		225		0.00%	0.00%
f. VSFs	<u>1,443</u>		<u>1,449</u>		0.39%	0.01%
g. Total	52,761	189,180	52,962	189,180	0.38%	0.38%
2. Present Value of Future Salary	66,539		66,944		0.61%	
3. Present Value of Future Employee Contributions	2,191		2,164		-1.24%	
4. Present Value of Future Employer Normal Costs						
a. Actives	7,294		7,416		1.66%	1.62%
b. VSFs	<u>185</u>		<u>159</u>		-14.23%	-0.35%
c. Total	7,480		7,575		1.27%	1.27%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	17,702		17,550		-0.86%	-0.35%
b. Inactives (1.b.)	580		604		4.14%	0.06%
c. Terminated Vesteds (1.c.)	401		411		2.71%	0.03%
d. Retirees (1.d.)	22,923		23,142		0.96%	0.51%
e. Loads (1.e.)	225		225		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	<u>1,258</u>		<u>1,290</u>		2.54%	0.07%
g. Total	43,128		43,223		0.22%	0.22%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	7,480		7,575		1.27%	
b. Present Value of Future Salary	66,539		66,944		0.61%	
c. Salary - Time 0.5	6,766		6,772		0.09%	
d. Projected Present Value of Future Salary	59,999		60,397		0.66%	
e. Normal Cost Percent	12.519%		12.574%		0.44%	
f. Salary - Time 1.5	6,683		6,693		0.15%	
g. Employer Normal Cost	837		842		0.60%	
7. Assets (Main Fund)						
a. Market Value of Assets	30,583		30,583		0.00%	
b. Actuarial Value of Assets	31,135		31,135		0.00%	
c. PV 1-Year Adj Employer Normal Cost	809		809		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	30		30		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	<u>30</u>		<u>30</u>		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	32,004		32,004		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	47		47		0.00%	
b. Actuarial Value of Assets	69		69		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	11,055		11,150		0.86%	
10. Components of Contribution						
a. Employer Normal Cost	837		842		0.60%	0.28%
b. UAAL Contribution	942		953		1.20%	0.62%
c. Administrative Expenses	33		33		0.00%	0.00%
d. Interest on Late Employer Contribution	<u>0</u>		<u>0</u>		0.00%	0.00%
e. Total (Pension Expense)	1,812		1,828		0.90%	0.90%



NYCERS: COMMUNITY COLLEGE

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	308	2,096	306	2,096	-0.68%	-0.52%
b. Inactives	11	432	12	432	4.04%	0.11%
c. Terminated Vesteds	5	100	5	100	0.84%	0.01%
d. Retirees	75	525	76	525	0.08%	0.02%
e. Loads	0		0		0.00%	0.00%
f. VSFs	<u>0</u>		<u>0</u>		0.00%	0.00%
g. Total	400	3,153	398	3,153	-0.38%	-0.38%
2. Present Value of Future Salary	934		944		1.00%	
3. Present Value of Future Employee Contributions	29		30		2.19%	
4. Present Value of Future Employer Normal Costs						
a. Actives	84		84		-0.20%	-0.20%
b. VSFs	<u>0</u>		<u>0</u>		0.00%	0.00%
c. Total	84		84		-0.20%	-0.20%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	195		192		-1.31%	-0.89%
b. Inactives (1.b.)	11		12		4.04%	0.16%
c. Terminated Vesteds (1.c.)	5		5		0.84%	0.02%
d. Retirees (1.d.)	75		76		0.08%	0.02%
e. Loads (1.e.)	0		0		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	<u>0</u>		<u>0</u>		0.00%	0.00%
g. Total	287		285		-0.70%	-0.70%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	84		84		-0.20%	
b. Present Value of Future Salary	934		944		1.00%	
c. Salary - Time 0.5	91		92		0.38%	
d. Projected Present Value of Future Salary	846		855		1.07%	
e. Normal Cost Percent	9.948%		9.821%		-1.28%	
f. Salary - Time 1.5	90		90		0.42%	
g. Employer Normal Cost	9		9		-0.79%	
7. Assets (Main Fund)						
a. Market Value of Assets	267		267		0.00%	
b. Actuarial Value of Assets	272		272		0.00%	
c. PV 1-Year Adj Employer Normal Cost	9		9		0.00%	
d. PV Administrative Expense 6/30/xx Reimb	0		0		0.00%	
e. PV Administrative Expense 6/30/xx-1 Reimb	<u>0</u>		<u>0</u>		0.00%	
f. Total Main Fund Valuation Assets (b.+ c.+ d. + e.)	282		282		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	0		0		0.00%	
b. Actuarial Value of Assets	0		0		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	5		3		-41.34%	
10. Components of Contribution						
a. Employer Normal Cost	9		9		-0.79%	-0.98%
b. UAAL Contribution	-2		-3		-10.34%	-3.30%
c. Administrative Expenses	1		1		0.00%	0.00%
d. Interest on Late Employer Contribution	<u>0</u>		<u>0</u>		0.00%	0.00%
e. Total (Pension Expense)	7		7		-4.28%	-4.28%



TRS Results (Total)



TRS Comparison of Results

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives						
Retirement	36,772		36,729		-0.12%	-0.05%
Ordinary Disability	817		829		1.52%	0.01%
Accidental Disability	230		231		0.35%	0.00%
Ordinary Death	400		406		1.42%	0.01%
Accidental Death			0		N/A	N/A
Deferred Vested	1,195		1,215		1.69%	0.02%
Non-Vested Return of Contributions	<u>122</u>		<u>122</u>		0.39%	0.00%
Total	39,536	118,201	39,533	118,201	-0.01%	0.00%
b. Inactives	536	7,401	533	7,401	-0.44%	0.00%
c. Terminated Vested	972	14,393	989	14,393	1.75%	0.02%
d. Retirees and Designated Annuitants	41,652	84,093	42,124	84,206	1.13%	0.55%
e. Loads	<u>3,067</u>		<u>3,067</u>		0.00%	0.00%
f. Total	85,762	224,088	86,246	224,201	0.56%	0.56%
2. Present Value of Future Salary	115,861		115,761		-0.09%	
3. Present Value of Future Employee Contributions	2,651		2,654		0.12%	
4. Present Value of Future Employer Normal Costs	13,147		13,173		0.20%	
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.)	23,738		23,706		-0.14%	-0.05%
b. Inactives (1.b.)	536		533		-0.44%	0.00%
c. Terminated Vested (1.c.)	972		989		1.75%	0.02%
d. Retirees (1.d.)	41,652		42,124		1.13%	0.68%
e. Loads (1.e.)	<u>3,067</u>		<u>3,067</u>		0.00%	0.00%
f. Total	69,964		70,419		0.65%	0.65%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Cost	13,147		13,173		0.20%	
b. Present Value of Future Salary	115,861		115,761		-0.09%	
c. Salary - Time 0.5	9,179		9,182		0.04%	
d. Projected Present Value of Future Salary	106,987		106,884		-0.10%	
e. Normal Cost Percent	12.289%		12.325%		0.29%	
f. Salary - Time 1.5	9,222		9,223		0.02%	
g. Employer Normal Cost	1,133		1,137		0.31%	
h. TDA Fixed 1.25% One Year Term Cost	38		38		0.00%	
i. Total Employer Normal Cost	1,172		1,176		0.30%	
7. Assets						
a. Market Value of Assets - Fixed	41,440		41,440		0.00%	
b. Market Value of Assets - Variable	2,189		2,189		0.00%	
c. Market Value of Assets - Total	43,630		43,630		0.00%	
d. Actuarial Value of Assets	41,015		41,015		0.00%	
e. Administrative Expense	48		48		0.00%	
f. PV 1-Year Adj Employer Normal Cost	1,088		1,088		0.00%	
g. PV Future Administrative Expense Reimbursement	49		49		0.00%	
h. Administrative Expense Reimbursement 6/30/xx-1	51		51		0.00%	
i. Due (To)/From TDA	<u>-489</u>		<u>-489</u>		0.00%	
j. Total Valuation Assets (c. + e. + f. + g. + h. + i.)	41,715		41,715		0.00%	
8. Unfunded Actuarial Accrued Liability Bases	28,249		28,704		1.61%	
9. Components of Contribution						
a. Employer Normal Cost	1,172		1,176		0.30%	0.09%
b. UAAL Contribution	2,663		2,717		2.02%	1.38%
c. Administrative Expenses	<u>54</u>		<u>54</u>		0.00%	0.00%
d. Total (Pension Expense)	3,890		3,947		1.47%	1.47%



TRS Results (by Obligor)



TRS: Senior Coll - State

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	680	3,728	660	3,728	-2.98%	-1.05%
b. Inactives	22	299	21	299	-7.96%	-0.09%
c. Terminated Vesteds	11	148	11	148	6.07%	0.03%
d. Retirees and Designated Annuitants	1,034	2,034	1,042	2,034	0.84%	0.45%
e. Loads	<u>178</u>		<u>178</u>		0.00%	0.00%
f. Total	1,924	6,209	1,911	6,209	-0.66%	-0.66%
2. Present Value of Future Salary	2,201		2,224		1.03%	
3. Present Value of Future Employee Contributions	61		63		3.08%	
4. Present Value of Future Employer Normal Costs	267		268		0.31%	
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.)	352		329		-6.53%	-1.44%
b. Inactives (1.b.)	22		21		-7.96%	-0.11%
c. Terminated Vesteds (1.c.)	11		11		6.07%	0.04%
d. Retirees (1.d.)	1,034		1,042		0.84%	0.54%
e. Loads (1.e.)	<u>178</u>		<u>178</u>		0.00%	0.00%
f. Total	1,596		1,581		-0.97%	-0.97%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Cost	267		268		0.31%	
b. Present Value of Future Salary	2,201		2,224		1.03%	
c. Salary - Time 0.5	196		198		1.00%	
d. Projected Present Value of Future Salary	2,012		2,033		1.03%	
e. Normal Cost Percent	13.277%		13.183%		-0.71%	
f. Salary - Time 1.5	194		197		1.28%	
g. Employer Normal Cost	26		26		0.56%	
h. TDA Fixed 1.25% One Year Term Cost	3		3		0.00%	
i. Total Employer Normal Cost	29		29		0.50%	
7. Assets						
a. Market Value of Assets	903		903		0.00%	
b. Actuarial Value of Assets	849		849		0.00%	
c. Administrative Expense	1		1		0.00%	
d. PV 1-Year Adj Employer Normal Cost	23		23		0.00%	
e. PV Future Administrative Expense Reimbursement	1		1		0.00%	
f. Administrative Expense Reimbursement 6/30/xx-1	1		1		0.00%	
g. Due (To)/From TDA	<u>-9</u>		<u>-9</u>		0.00%	
h. Total Valuation Assets (a. + c. + d. + e. + f. + g.)	866		866		0.00%	
8. Unfunded Actuarial Accrued Liability Bases	730		715		-2.12%	
9. Components of Contribution						
a. Employer Normal Cost	29		29		0.50%	0.14%
b. UAAL Contribution	71		70		-2.56%	-1.79%
c. Administrative Expenses	<u>2</u>		<u>2</u>		0.00%	0.00%
d. Total (Pension Expense)	102		100		-1.65%	-1.65%



TRS: Comm Colleges

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	389	2,068	389	2,068	-0.16%	-0.08%
b. Inactives	13	617	12	617	-3.55%	-0.06%
c. Terminated Vesteds	6	77	6	77	3.24%	0.02%
d. Retirees and Designated Annuitants	325	642	328	642	0.92%	0.37%
e. Loads	<u>76</u>		<u>76</u>		0.00%	0.00%
f. Total	809	3,404	811	3,404	0.26%	0.26%
2. Present Value of Future Salary	1,533		1,540		0.47%	
3. Present Value of Future Employee Contributions	44		45		1.42%	
4. Present Value of Future Employer Normal Costs	182		183		0.41%	
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.)	163		161		-1.22%	-0.34%
b. Inactives (1.b.)	13		12		-3.55%	-0.08%
c. Terminated Vesteds (1.c.)	6		6		3.24%	0.03%
d. Retirees (1.d.)	325		328		0.92%	0.51%
e. Loads (1.e.)	<u>76</u>		<u>76</u>		0.00%	0.00%
f. Total	583		583		0.13%	0.13%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Cost	182		183		0.41%	
b. Present Value of Future Salary	1,533		1,540		0.47%	
c. Salary - Time 0.5	126		127		0.78%	
d. Projected Present Value of Future Salary	1,411		1,417		0.45%	
e. Normal Cost Percent	12.912%		12.907%		-0.04%	
f. Salary - Time 1.5	126		127		0.94%	
g. Employer Normal Cost	16		16		0.91%	
h. TDA Fixed 1.25% One Year Term Cost	2		2		0.00%	
i. Total Employer Normal Cost	18		18		0.81%	
7. Assets						
a. Market Value of Assets	318		318		0.00%	
b. Actuarial Value of Assets	299		299		0.00%	
c. Administrative Expense	1		1		0.00%	
d. PV 1-Year Adj Employer Normal Cost	14		14		0.00%	
e. PV Future Administrative Expense Reimbursement	1		1		0.00%	
f. Administrative Expense Reimbursement 6/30/xx-1	1		1		0.00%	
g. Due (To)/From TDA	<u>-1</u>		<u>-1</u>		0.00%	
h. Total Valuation Assets (a. + c. + d. + e. + f. + g.)	314		314		0.00%	
8. Unfunded Actuarial Accrued Liability Bases	269		269		0.27%	
9. Components of Contribution						
a. Employer Normal Cost	18		18		0.81%	0.32%
b. UAAL Contribution	27		27		0.32%	0.19%
c. Administrative Expenses	<u>1</u>		<u>1</u>		0.00%	0.00%
d. Total (Pension Expense)	46		46		0.51%	0.51%



TRS: KIPP

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	21	89	21	89	0.03%	0.02%
b. Inactives	0	18	0	18	-3.25%	-0.05%
c. Terminated Vesteds	1	26	1	26	0.05%	0.00%
d. Retirees and Designated Annuitants	1	2	1	2	-0.01%	0.00%
e. Loads	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	24	135	24	135	-0.03%	-0.03%
2. Present Value of Future Salary	126		126		-0.01%	
3. Present Value of Future Employee Contributions	5		5		0.09%	
4. Present Value of Future Employer Normal Costs	10		10		0.39%	
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.)	6		6		-0.69%	-0.48%
b. Inactives (1.b.)	0		0		-3.25%	-0.16%
c. Terminated Vesteds (1.c.)	1		1		0.05%	0.01%
d. Retirees (1.d.)	1		1		-0.01%	0.00%
e. Loads (1.e.)	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	8		8		-0.63%	-0.63%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Cost	10		10		0.39%	
b. Present Value of Future Salary	126		126		-0.01%	
c. Salary - Time 0.5	7		7		0.00%	
d. Projected Present Value of Future Salary	120		120		-0.01%	
e. Normal Cost Percent	8.737%		8.771%		0.39%	
f. Salary - Time 1.5	7		7		0.00%	
g. Employer Normal Cost	1		1		0.39%	
h. TDA Fixed 1.25% One Year Term Cost	0		0		0.00%	
i. Total Employer Normal Cost	1		1		0.38%	
7. Assets						
a. Market Value of Assets	6		6		0.00%	
b. Actuarial Value of Assets	6		6		0.00%	
c. Administrative Expense	0		0		0.00%	
d. PV 1-Year Adj Employer Normal Cost	1		1		0.00%	
e. PV Future Administrative Expense Reimbursement	0		0		0.00%	
f. Administrative Expense Reimbursement 6/30/xx-1	0		0		0.00%	
g. Due (To)/From TDA	<u>0</u>		<u>0</u>		N/A	
h. Total Valuation Assets (a. + c. + d. + e. + f. + g.)	6		6		0.00%	
8. Unfunded Actuarial Accrued Liability Bases	2		2		-2.78%	
9. Components of Contribution						
a. Employer Normal Cost	1		1		0.38%	0.29%
b. UAAL Contribution	0		0		-3.66%	-0.74%
c. Administrative Expenses	<u>0</u>		<u>0</u>		0.00%	0.00%
d. Total (Pension Expense)	1		1		-0.45%	-0.45%



TRS: REN

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	20	58	20	58	0.56%	0.45%
b. Inactives	1	4	1	4	1.92%	0.04%
c. Terminated Vesteds	0	3	0	3	-0.16%	0.00%
d. Retirees and Designated Annuitants	4	8	4	8	0.39%	0.06%
e. Loads	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	25	73	25	73	0.56%	0.56%
2. Present Value of Future Salary	60		60		-0.40%	
3. Present Value of Future Employee Contributions	1		1		0.48%	
4. Present Value of Future Employer Normal Costs	7		7		0.13%	
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.)	12		12		0.83%	0.58%
b. Inactives (1.b.)	1		1		1.92%	0.07%
c. Terminated Vesteds (1.c.)	0		0		-0.16%	0.00%
d. Retirees (1.d.)	4		4		0.39%	0.09%
e. Loads (1.e.)	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	17		17		0.74%	0.74%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Cost	7		7		0.13%	
b. Present Value of Future Salary	60		60		-0.40%	
c. Salary - Time 0.5	5		5		0.00%	
d. Projected Present Value of Future Salary	56		55		-0.43%	
e. Normal Cost Percent	12.493%		12.563%		0.56%	
f. Salary - Time 1.5	5		5		0.00%	
g. Employer Normal Cost	1		1		0.56%	
h. TDA Fixed 1.25% One Year Term Cost	0		0		0.00%	
i. Total Employer Normal Cost	1		1		0.51%	
7. Assets						
a. Market Value of Assets	10		10		0.00%	
b. Actuarial Value of Assets	10		10		0.00%	
c. Administrative Expense	0		0		0.00%	
d. PV 1-Year Adj Employer Normal Cost	1		1		0.00%	
e. PV Future Administrative Expense Reimbursement	0		0		0.00%	
f. Administrative Expense Reimbursement 6/30/xx-1	0		0		0.00%	
g. Due (To)/From TDA	<u>-1</u>		<u>-1</u>		0.00%	
h. Total Valuation Assets (a. + c. + d. + e. + f. + g.)	10		10		0.00%	
8. Unfunded Actuarial Accrued Liability Bases	7		7		1.73%	
9. Components of Contribution						
a. Employer Normal Cost	1		1		0.51%	0.23%
b. UAAL Contribution	1		1		2.01%	1.06%
c. Administrative Expenses	<u>0</u>		<u>0</u>		0.00%	0.00%
d. Total (Pension Expense)	1		1		1.30%	1.30%



TRS: WILDCAT

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	10	31	10	31	0.22%	0.19%
b. Inactives	0	2	0	2	0.95%	0.01%
c. Terminated Vesteds	0	3	0	3	0.42%	0.01%
d. Retirees and Designated Annuitants	1	2	1	2	5.62%	0.46%
e. Loads	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	11	38	11	38	0.67%	0.67%
2. Present Value of Future Salary	29		29		-0.05%	
3. Present Value of Future Employee Contributions	0		0		0.58%	
4. Present Value of Future Employer Normal Costs	4		4		0.64%	
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.)	6		6		-0.06%	-0.05%
b. Inactives (1.b.)	0		0		0.95%	0.02%
c. Terminated Vesteds (1.c.)	0		0		0.42%	0.01%
d. Retirees (1.d.)	1		1		5.62%	0.71%
e. Loads (1.e.)	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	7		7		0.69%	0.69%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Cost	4		4		0.64%	
b. Present Value of Future Salary	29		29		-0.05%	
c. Salary - Time 0.5	3		3		0.00%	
d. Projected Present Value of Future Salary	26		26		-0.05%	
e. Normal Cost Percent	13.780%		13.876%		0.70%	
f. Salary - Time 1.5	3		3		0.00%	
g. Employer Normal Cost	0		0		0.70%	
h. TDA Fixed 1.25% One Year Term Cost	0		0		0.00%	
i. Total Employer Normal Cost	0		0		0.66%	
7. Assets						
a. Market Value of Assets	5		5		0.00%	
b. Actuarial Value of Assets	4		4		0.00%	
c. Administrative Expense	0		0		0.00%	
d. PV 1-Year Adj Employer Normal Cost	0		0		0.00%	
e. PV Future Administrative Expense Reimbursement	0		0		0.00%	
f. Administrative Expense Reimbursement 6/30/xx-1	0		0		0.00%	
g. Due (To)/From TDA	<u>0</u>		<u>0</u>		N/A	
h. Total Valuation Assets (a. + c. + d. + e. + f. + g.)	5		5		0.00%	
8. Unfunded Actuarial Accrued Liability Bases	3		3		1.92%	
9. Components of Contribution						
a. Employer Normal Cost	0		0		0.66%	0.40%
b. UAAL Contribution	0		0		2.40%	0.93%
c. Administrative Expenses	<u>0</u>		<u>0</u>		0.00%	0.00%
d. Total (Pension Expense)	1		1		1.33%	1.33%



TRS: BWC

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	10	41	10	41	0.15%	0.12%
b. Inactives	1	13	1	13	-3.07%	-0.19%
c. Terminated Vesteds	0	6	0	6	-0.02%	0.00%
d. Retirees and Designated Annuitants	2	6	2	6	0.89%	0.12%
e. Loads	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	13	66	13	66	0.05%	0.05%
2. Present Value of Future Salary	36		36		0.00%	
3. Present Value of Future Employee Contributions	2		2		0.27%	
4. Present Value of Future Employer Normal Costs	3		4		0.47%	
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.)	5		5		-0.10%	-0.07%
b. Inactives (1.b.)	1		1		-3.07%	-0.31%
c. Terminated Vesteds (1.c.)	0		0		-0.02%	0.00%
d. Retirees (1.d.)	2		2		0.89%	0.19%
e. Loads (1.e.)	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	8		8		-0.19%	-0.19%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Cost	3		4		0.47%	
b. Present Value of Future Salary	36		36		0.00%	
c. Salary - Time 0.5	3		3		0.00%	
d. Projected Present Value of Future Salary	34		34		0.00%	
e. Normal Cost Percent	10.355%		10.403%		0.46%	
f. Salary - Time 1.5	3		3		0.00%	
g. Employer Normal Cost	0		0		0.46%	
h. TDA Fixed 1.25% One Year Term Cost	0		0		0.00%	
i. Total Employer Normal Cost	0		0		0.46%	
7. Assets						
a. Market Value of Assets	5		5		0.00%	
b. Actuarial Value of Assets	4		4		0.00%	
c. Administrative Expense	0		0		0.00%	
d. PV 1-Year Adj Employer Normal Cost	0		0		0.00%	
e. PV Future Administrative Expense Reimbursement	0		0		0.00%	
f. Administrative Expense Reimbursement 6/30/xx-1	0		0		0.00%	
g. Due (To)/From TDA	<u>0</u>		<u>0</u>		0.00%	
h. Total Valuation Assets (a. + c. + d. + e. + f. + g.)	5		5		0.00%	
8. Unfunded Actuarial Accrued Liability Bases	3		3		-0.48%	
9. Components of Contribution						
a. Employer Normal Cost	0		0		0.46%	0.23%
b. UAAL Contribution	0		0		-0.63%	-0.29%
c. Administrative Expenses	<u>0</u>		<u>0</u>		0.00%	0.00%
d. Total (Pension Expense)	1		1		-0.06%	-0.06%



TRS: OPP

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	16	68	16	68	0.13%	0.11%
b. Inactives	0	15	0	15	7.31%	0.07%
c. Terminated Vesteds	1	19	1	19	0.15%	0.01%
d. Retirees and Designated Annuitants	2	3	2	3	4.36%	0.44%
e. Loads	0		0		0.00%	0.00%
f. Total	19	105	19	105	0.64%	0.64%
2. Present Value of Future Salary	79		79		0.00%	
3. Present Value of Future Employee Contributions	3		3		-0.16%	
4. Present Value of Future Employer Normal Costs	7		8		0.30%	
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.)	5		5		0.07%	0.04%
b. Inactives (1.b.)	0		0		7.31%	0.17%
c. Terminated Vesteds (1.c.)	1		1		0.15%	0.02%
d. Retirees (1.d.)	2		2		4.36%	1.01%
e. Loads (1.e.)	0		0		0.00%	0.00%
f. Total	8		8		1.25%	1.25%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Cost	7		8		0.30%	
b. Present Value of Future Salary	79		79		0.00%	
c. Salary - Time 0.5	5		5		0.00%	
d. Projected Present Value of Future Salary	74		74		0.00%	
e. Normal Cost Percent	10.104%		10.135%		0.31%	
f. Salary - Time 1.5	5		5		0.00%	
g. Employer Normal Cost	1		1		0.31%	
h. TDA Fixed 1.25% One Year Term Cost	0		0		0.00%	
i. Total Employer Normal Cost	1		1		0.30%	
7. Assets						
a. Market Value of Assets	5		5		0.00%	
b. Actuarial Value of Assets	5		5		0.00%	
c. Administrative Expense	0		0		0.00%	
d. PV 1-Year Adj Employer Normal Cost	0		0		0.00%	
e. PV Future Administrative Expense Reimbursement	0		0		0.00%	
f. Administrative Expense Reimbursement 6/30/xx-1	0		0		0.00%	
g. Due (To)/From TDA	0		0		N/A	
h. Total Valuation Assets (a. + c. + d. + e. + f. + g.)	6		6		0.00%	
8. Unfunded Actuarial Accrued Liability Bases	3		3		3.75%	
9. Components of Contribution						
a. Employer Normal Cost	1		1		0.30%	0.20%
b. UAAL Contribution	0		0		5.07%	1.53%
c. Administrative Expenses	0		0		0.00%	0.00%
d. Total (Pension Expense)	1		1		1.73%	1.73%



TRS: FLICS

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	9	43	9	43	0.20%	0.17%
b. Inactives	0	18	0	18	7.47%	0.15%
c. Terminated Vesteds	0	4	0	4	0.26%	0.01%
d. Retirees and Designated Annuitants	1	1	1	1	0.00%	0.00%
e. Loads	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	11	66	11	66	0.32%	0.32%
2. Present Value of Future Salary	50		50		0.00%	
3. Present Value of Future Employee Contributions	2		2		0.09%	
4. Present Value of Future Employer Normal Costs	5		5		0.28%	
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.)	2		2		0.14%	0.08%
b. Inactives (1.b.)	0		0		7.47%	0.39%
c. Terminated Vesteds (1.c.)	0		0		0.26%	0.02%
d. Retirees (1.d.)	1		1		0.00%	0.00%
e. Loads (1.e.)	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	4		4		0.49%	0.49%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Cost	5		5		0.28%	
b. Present Value of Future Salary	50		50		0.00%	
c. Salary - Time 0.5	3		3		0.00%	
d. Projected Present Value of Future Salary	47		47		0.00%	
e. Normal Cost Percent	9.579%		9.606%		0.28%	
f. Salary - Time 1.5	3		3		0.00%	
g. Employer Normal Cost	0		0		0.28%	
h. TDA Fixed 1.25% One Year Term Cost	0		0		0.00%	
i. Total Employer Normal Cost	0		0		0.28%	
7. Assets						
a. Market Value of Assets	3		3		0.00%	
b. Actuarial Value of Assets	2		2		0.00%	
c. Administrative Expense	0		0		0.00%	
d. PV 1-Year Adj Employer Normal Cost	0		0		0.00%	
e. PV Future Administrative Expense Reimbursement	0		0		0.00%	
f. Administrative Expense Reimbursement 6/30/xx-1	0		0		0.00%	
g. Due (To)/From TDA	<u>0</u>		<u>0</u>		N/A	
h. Total Valuation Assets (a. + c. + d. + e. + f. + g.)	3		3		0.00%	
8. Unfunded Actuarial Accrued Liability Bases	1		1		1.56%	
9. Components of Contribution						
a. Employer Normal Cost	0		0		0.28%	0.19%
b. UAAL Contribution	0		0		1.90%	0.57%
c. Administrative Expenses	<u>0</u>		<u>0</u>		0.00%	0.00%
d. Total (Pension Expense)	0		0		0.76%	0.76%



TRS: UFT

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	8	31	9	31	0.29%	0.19%
b. Inactives	1	15	1	15	-8.72%	-0.71%
c. Terminated Vesteds	1	20	1	20	0.11%	0.01%
d. Retirees and Designated Annuitants	2	3	3	3	7.89%	1.46%
e. Loads	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	13	69	13	69	0.95%	0.95%
2. Present Value of Future Salary	36		36		-0.18%	
3. Present Value of Future Employee Contributions	1		1		-0.21%	
4. Present Value of Future Employer Normal Costs	4		4		0.44%	
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.)	4		4		0.24%	0.10%
b. Inactives (1.b.)	1		1		-8.72%	-1.15%
c. Terminated Vesteds (1.c.)	1		1		0.11%	0.01%
d. Retirees (1.d.)	2		3		7.89%	2.36%
e. Loads (1.e.)	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	8		8		1.33%	1.33%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Cost	4		4		0.44%	
b. Present Value of Future Salary	36		36		-0.18%	
c. Salary - Time 0.5	2		2		0.03%	
d. Projected Present Value of Future Salary	34		33		-0.19%	
e. Normal Cost Percent	12.405%		12.483%		0.63%	
f. Salary - Time 1.5	2		2		0.07%	
g. Employer Normal Cost	0		0		0.70%	
h. TDA Fixed 1.25% One Year Term Cost	0		0		0.00%	
i. Total Employer Normal Cost	0		0		0.68%	
7. Assets						
a. Market Value of Assets	5		5		0.00%	
b. Actuarial Value of Assets	5		5		0.00%	
c. Administrative Expense	0		0		0.00%	
d. PV 1-Year Adj Employer Normal Cost	0		0		0.00%	
e. PV Future Administrative Expense Reimbursement	0		0		0.00%	
f. Administrative Expense Reimbursement 6/30/xx-1	0		0		0.00%	
g. Due (To)/From TDA	<u>0</u>		<u>0</u>		N/A	
h. Total Valuation Assets (a. + c. + d. + e. + f. + g.)	5		5		0.00%	
8. Unfunded Actuarial Accrued Liability Bases	3		3		3.87%	
9. Components of Contribution						
a. Employer Normal Cost	0		0		0.68%	0.36%
b. UAAL Contribution	0		0		4.89%	2.17%
c. Administrative Expenses	<u>0</u>		<u>0</u>		0.00%	0.00%
d. Total (Pension Expense)	1		1		2.53%	2.53%



TRS: Tubman

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	10	54	10	54	0.12%	0.11%
b. Inactives	0	14	0	14	3.28%	0.04%
c. Terminated Vesteds	1	6	1	6	0.20%	0.01%
d. Retirees and Designated Annuitants	0	1	0	1	7.33%	0.18%
e. Loads	0		0		0.00%	0.00%
f. Total	11	75	11	75	0.34%	0.34%
2. Present Value of Future Salary	51		50		-0.46%	
3. Present Value of Future Employee Contributions	2		2		0.16%	
4. Present Value of Future Employer Normal Costs	5		5		0.54%	
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.)	3		3		-0.46%	-0.34%
b. Inactives (1.b.)	0		0		3.28%	0.10%
c. Terminated Vesteds (1.c.)	1		1		0.20%	0.03%
d. Retirees (1.d.)	0		0		7.33%	0.44%
e. Loads (1.e.)	0		0		0.00%	0.00%
f. Total	5		5		0.23%	0.23%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Cost	5		5		0.54%	
b. Present Value of Future Salary	51		50		-0.46%	
c. Salary - Time 0.5	3		3		0.02%	
d. Projected Present Value of Future Salary	47		47		-0.49%	
e. Normal Cost Percent	9.957%		10.060%		1.03%	
f. Salary - Time 1.5	3		3		0.06%	
g. Employer Normal Cost	0		0		1.09%	
h. TDA Fixed 1.25% One Year Term Cost	0		0		0.00%	
i. Total Employer Normal Cost	0		0		1.06%	
7. Assets						
a. Market Value of Assets	3		3		0.00%	
b. Actuarial Value of Assets	3		3		0.00%	
c. Administrative Expense	0		0		0.00%	
d. PV 1-Year Adj Employer Normal Cost	0		0		0.00%	
e. PV Future Administrative Expense Reimbursement	0		0		0.00%	
f. Administrative Expense Reimbursement 6/30/xx-1	0		0		0.00%	
g. Due (To)/From TDA	0		0		N/A	
h. Total Valuation Assets (a. + c. + d. + e. + f. + g.)	3		3		0.00%	
8. Unfunded Actuarial Accrued Liability Bases	2		2		0.70%	
9. Components of Contribution						
a. Employer Normal Cost	0		0		1.06%	0.70%
b. UAAL Contribution	0		0		0.80%	0.24%
c. Administrative Expenses	0		0		0.00%	0.00%
d. Total (Pension Expense)	1		1		0.94%	0.94%



TRS: KIPP NYC

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	18	46	18	46	0.11%	0.10%
b. Inactives	0	15	0	15	0.48%	0.01%
c. Terminated Vesteds	1	24	1	24	0.04%	0.00%
d. Retirees and Designated Annuitants	0	0	0	0	N/A	0.00%
e. Loads	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	19	85	19	85	0.11%	0.11%
2. Present Value of Future Salary	72		72		-0.01%	
3. Present Value of Future Employee Contributions	1		1		0.00%	
4. Present Value of Future Employer Normal Costs	9		9		0.50%	
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.)	8		8		-0.30%	-0.26%
b. Inactives (1.b.)	0		0		0.48%	0.02%
c. Terminated Vesteds (1.c.)	1		1		0.04%	0.00%
d. Retirees (1.d.)	0		0		N/A	0.00%
e. Loads (1.e.)	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	9		9		-0.24%	-0.24%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Cost	9		9		0.50%	
b. Present Value of Future Salary	72		72		-0.01%	
c. Salary - Time 0.5	4		4		0.00%	
d. Projected Present Value of Future Salary	68		68		-0.01%	
e. Normal Cost Percent	12.722%		12.788%		0.52%	
f. Salary - Time 1.5	5		5		0.00%	
g. Employer Normal Cost	1		1		0.52%	
h. TDA Fixed 1.25% One Year Term Cost	0		0		0.00%	
i. Total Employer Normal Cost	1		1		0.47%	
7. Assets						
a. Market Value of Assets	7		7		0.00%	
b. Actuarial Value of Assets	6		6		0.00%	
c. Administrative Expense	0		0		0.00%	
d. PV 1-Year Adj Employer Normal Cost	1		1		0.00%	
e. PV Future Administrative Expense Reimbursement	0		0		0.00%	
f. Administrative Expense Reimbursement 6/30/xx-1	0		0		0.00%	
g. Due (To)/From TDA	<u>0</u>		<u>0</u>		N/A	
h. Total Valuation Assets (a. + c. + d. + e. + f. + g.)	7		7		0.00%	
8. Unfunded Actuarial Accrued Liability Bases	3		3		-0.88%	
9. Components of Contribution						
a. Employer Normal Cost	1		1		0.47%	0.34%
b. UAAL Contribution	0		0		-1.24%	-0.30%
c. Administrative Expenses	<u>0</u>		<u>0</u>		0.00%	0.00%
d. Total (Pension Expense)	1		1		0.04%	0.04%



TRS: VOICE

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	10	51	10	51	0.14%	0.14%
b. Inactives	0	12	0	12	-6.71%	-0.04%
c. Terminated Vesteds	0	2	0	2	0.05%	0.00%
d. Retirees and Designated Annuitants	0	0	0	0	N/A	0.00%
e. Loads	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	10	65	10	65	0.09%	0.09%
2. Present Value of Future Salary	67		67		-0.02%	
3. Present Value of Future Employee Contributions	3		3		0.20%	
4. Present Value of Future Employer Normal Costs	5		5		0.37%	
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.)	2		2		-0.52%	-0.48%
b. Inactives (1.b.)	0		0		-6.71%	-0.21%
c. Terminated Vesteds (1.c.)	0		0		0.05%	0.00%
d. Retirees (1.d.)	0		0		N/A	0.00%
e. Loads (1.e.)	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	2		2		-0.69%	-0.69%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Cost	5		5		0.37%	
b. Present Value of Future Salary	67		67		-0.02%	
c. Salary - Time 0.5	3		3		0.00%	
d. Projected Present Value of Future Salary	63		63		-0.03%	
e. Normal Cost Percent	7.914%		7.945%		0.39%	
f. Salary - Time 1.5	4		4		0.00%	
g. Employer Normal Cost	0		0		0.39%	
h. TDA Fixed 1.25% One Year Term Cost	0		0		0.00%	
i. Total Employer Normal Cost	0		0		0.38%	
7. Assets						
a. Market Value of Assets	2		2		0.00%	
b. Actuarial Value of Assets	2		2		0.00%	
c. Administrative Expense	0		0		0.00%	
d. PV 1-Year Adj Employer Normal Cost	0		0		0.00%	
e. PV Future Administrative Expense Reimbursement	0		0		0.00%	
f. Administrative Expense Reimbursement 6/30/xx-1	0		0		0.00%	
g. Due (To)/From TDA	<u>0</u>		<u>0</u>		N/A	
h. Total Valuation Assets (a. + c. + d. + e. + f. + g.)	2		2		0.00%	
8. Unfunded Actuarial Accrued Liability Bases	0		0		-4.21%	
9. Components of Contribution						
a. Employer Normal Cost	0		0		0.38%	0.32%
b. UAAL Contribution	0		0		-4.95%	-0.51%
c. Administrative Expenses	<u>0</u>		<u>0</u>		0.00%	0.00%
d. Total (Pension Expense)	0		0		-0.19%	-0.19%



TRS: Univ Prep

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	15	42	15	42	0.18%	0.17%
b. Inactives	0	1	0	1	5.85%	0.14%
c. Terminated Vesteds	0	6	0	6	-0.15%	0.00%
d. Retirees and Designated Annuitants	0	0	0	0	N/A	0.00%
e. Loads	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	16	49	16	49	0.31%	0.31%
2. Present Value of Future Salary	64		64		0.00%	
3. Present Value of Future Employee Contributions	1		1		-0.10%	
4. Present Value of Future Employer Normal Costs	7		7		0.17%	
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.)	7		7		0.26%	0.23%
b. Inactives (1.b.)	0		0		5.85%	0.31%
c. Terminated Vesteds (1.c.)	0		0		-0.15%	-0.01%
d. Retirees (1.d.)	0		0		N/A	0.00%
e. Loads (1.e.)	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	7		7		0.53%	0.53%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Cost	7		7		0.17%	
b. Present Value of Future Salary	64		64		0.00%	
c. Salary - Time 0.5	4		4		0.00%	
d. Projected Present Value of Future Salary	60		60		0.00%	
e. Normal Cost Percent	12.072%		12.092%		0.17%	
f. Salary - Time 1.5	4		4		0.00%	
g. Employer Normal Cost	1		1		0.17%	
h. TDA Fixed 1.25% One Year Term Cost	0		0		0.00%	
i. Total Employer Normal Cost	1		1		0.16%	
7. Assets						
a. Market Value of Assets	4		4		0.00%	
b. Actuarial Value of Assets	4		4		0.00%	
c. Administrative Expense	0		0		0.00%	
d. PV 1-Year Adj Employer Normal Cost	0		0		0.00%	
e. PV Future Administrative Expense Reimbursement	0		0		0.00%	
f. Administrative Expense Reimbursement 6/30/xx-1	0		0		0.00%	
g. Due (To)/From TDA	<u>0</u>		<u>0</u>		N/A	
h. Total Valuation Assets (a. + c. + d. + e. + f. + g.)	4		4		0.00%	
8. Unfunded Actuarial Accrued Liability Bases	3		3		1.27%	
9. Components of Contribution						
a. Employer Normal Cost	1		1		0.16%	0.10%
b. UAAL Contribution	0		0		1.35%	0.54%
c. Administrative Expenses	<u>0</u>		<u>0</u>		0.00%	0.00%
d. Total (Pension Expense)	1		1		0.63%	0.63%



TRS: South Bronx

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	2	9	2	9	0.01%	0.01%
b. Inactives	0	0	0	0	N/A	0.00%
c. Terminated Vesteds	0	0	0	0	N/A	0.00%
d. Retirees and Designated Annuitants	0	0	0	0	N/A	0.00%
e. Loads	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	2	9	2	9	0.01%	0.01%
2. Present Value of Future Salary	11		11		0.00%	
3. Present Value of Future Employee Contributions	0		0		0.25%	
4. Present Value of Future Employer Normal Costs	1		1		1.18%	
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.)	0		0		-3.50%	-3.43%
b. Inactives (1.b.)	0		0		N/A	0.00%
c. Terminated Vesteds (1.c.)	0		0		N/A	0.00%
d. Retirees (1.d.)	0		0		N/A	0.00%
e. Loads (1.e.)	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	0		0		-3.43%	-3.43%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Cost	1		1		1.18%	
b. Present Value of Future Salary	11		11		0.00%	
c. Salary - Time 0.5	1		1		0.00%	
d. Projected Present Value of Future Salary	10		10		0.00%	
e. Normal Cost Percent	8.700%		8.802%		1.17%	
f. Salary - Time 1.5	1		1		0.00%	
g. Employer Normal Cost	0		0		1.17%	
h. TDA Fixed 1.25% One Year Term Cost	0		0		0.00%	
i. Total Employer Normal Cost	0		0		1.16%	
7. Assets						
a. Market Value of Assets	0		0		N/A	
b. Actuarial Value of Assets	0		0		N/A	
c. Administrative Expense	0		0		0.00%	
d. PV 1-Year Adj Employer Normal Cost	0		0		N/A	
e. PV Future Administrative Expense Reimbursement	0		0		0.00%	
f. Administrative Expense Reimbursement 6/30/xx-1	0		0		N/A	
g. Due (To)/From TDA	<u>0</u>		<u>0</u>		N/A	
h. Total Valuation Assets (a. + c. + d. + e. + f. + g.)	0		0		0.00%	
8. Unfunded Actuarial Accrued Liability Bases	0		0		-3.45%	
9. Components of Contribution						
a. Employer Normal Cost	0		0		1.16%	0.65%
b. UAAL Contribution	0		0		-3.45%	-1.45%
c. Administrative Expenses	<u>0</u>		<u>0</u>		0.00%	0.00%
d. Total (Pension Expense)	0		0		-0.80%	-0.80%



TRS: BOARD OF ED

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	38,318	111,842	38,335	111,842	0.05%	0.02%
b. Inactives	496	6,358	496	6,358	-0.02%	0.00%
c. Terminated Vesteds	950	14,049	966	14,049	1.70%	0.02%
d. Retirees and Designated Annuitants	40,280	81,391	40,740	81,504	1.14%	0.56%
e. Loads	<u>2,812</u>		<u>2,812</u>		0.00%	0.00%
f. Total	82,855	213,640	83,349	213,753	0.60%	0.60%
2. Present Value of Future Salary	111,446		111,317		-0.12%	
3. Present Value of Future Employee Contributions	2,523		2,524		0.02%	
4. Present Value of Future Employer Normal Costs	12,631		12,655		0.19%	
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.)	23,163		23,156		-0.03%	-0.01%
b. Inactives (1.b.)	496		496		-0.02%	0.00%
c. Terminated Vesteds (1.c.)	950		966		1.70%	0.02%
d. Retirees (1.d.)	40,280		40,740		1.14%	0.68%
e. Loads (1.e.)	<u>2,812</u>		<u>2,812</u>		0.00%	0.00%
f. Total	67,701		68,170		0.69%	0.69%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Cost	12,631		12,655		0.19%	
b. Present Value of Future Salary	111,446		111,317		-0.12%	
c. Salary - Time 0.5	8,814		8,814		0.00%	
d. Projected Present Value of Future Salary	102,926		102,796		-0.13%	
e. Normal Cost Percent	12.272%		12.311%		0.32%	
f. Salary - Time 1.5	8,857		8,855		-0.02%	
g. Employer Normal Cost	1,086		1,090		0.30%	
h. TDA Fixed 1.25% One Year Term Cost	33		33		0.00%	
i. Total Employer Normal Cost	1,120		1,123		0.29%	
7. Assets						
a. Market Value of Assets	42,355		42,355		0.00%	
b. Actuarial Value of Assets	39,817		39,817		0.00%	
c. Administrative Expense	45		45		0.00%	
d. PV 1-Year Adj Employer Normal Cost	1,046		1,046		0.00%	
e. PV Future Administrative Expense Reimbursement	47		47		0.00%	
f. Administrative Expense Reimbursement 6/30/xx-1	49		49		0.00%	
g. Due (To)/From TDA	<u>-479</u>		<u>-479</u>		0.00%	
h. Total Valuation Assets (a. + c. + d. + e. + f. + g.)	40,480		40,480		0.00%	
8. Unfunded Actuarial Accrued Liability Bases	27,221		27,690		1.72%	
9. Components of Contribution						
a. Employer Normal Cost	1,120		1,123		0.29%	0.09%
b. UAAL Contribution	2,562		2,617		2.17%	1.49%
c. Administrative Expenses	<u>52</u>		<u>52</u>		0.00%	0.00%
d. Total (Pension Expense)	3,734		3,793		1.57%	1.57%



BERS Results (Total)



BERS Comparison of Results

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives						
Retirement	3,274		3,294		0.62%	0.33%
Ordinary Disability	231		231		0.00%	0.00%
Accidental Disability	13		13		-0.18%	0.00%
Ordinary Death	75		76		0.96%	0.01%
Accidental Death	0		0		N/A	N/A
Deferred Vested	142		144		1.81%	0.04%
Non-Vested Return of Contributions	<u>11</u>		<u>11</u>		5.93%	0.01%
Total	3,745	25,864	3,769	25,864	0.65%	0.39%
b. Inactives	46	2,629	47	2,629	3.70%	0.03%
c. Terminated Vesteds	43	851	44	851	2.55%	0.02%
d. Retirees and Designated Annuitants	2,273	16,937	2,280	16,937	0.28%	0.10%
e. Loads	<u>25</u>		<u>25</u>		0.00%	0.00%
f. Total	6,133	46,281	6,166	46,281	0.54%	0.54%
2. Present Value of Future Salary	10,443		10,383		-0.57%	
3. Present Value of Future Employee Contributions	266		272		2.07%	
4. Present Value of Future Employer Normal Costs	1,098		1,097		-0.10%	
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.)	2,380		2,400		0.83%	0.41%
b. Inactives (1.b.)	46		47		3.70%	0.04%
c. Terminated Vesteds (1.c.)	43		44		2.55%	0.02%
d. Retirees (1.d.)	2,273		2,280		0.28%	0.13%
e. Loads (1.e.)	<u>25</u>		<u>25</u>		0.00%	0.00%
f. Total	4,768		4,797		0.61%	0.61%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Cost	1,098		1,097		-0.10%	
b. Present Value of Future Salary	10,443		10,383		-0.57%	
c. Salary - Time 0.5	1,116		1,118		0.19%	
d. Projected Present Value of Future Salary	9,364		9,302		-0.66%	
e. Normal Cost Percent	11.731%		11.796%		0.55%	
f. Salary - Time 1.5	1,088		1,088		-0.06%	
g. Employer Normal Cost	128		128		0.49%	
h. TDA Fixed 1.25% One Year Term Cost	10		10		0.00%	
i. Total Employer Normal Cost	138		139		0.45%	
7. Assets						
a. Market Value of Assets - Fixed	3,374		3,374		0.00%	
b. Market Value of Assets - Variable	43		43		0.00%	
c. Market Value of Assets - Total	3,416		3,416		0.00%	
d. Actuarial Value of Assets	2,859		2,859		0.00%	
e. Administrative Expense	13		13		0.00%	
f. PV 1-Year Adj Employer Normal Cost	122		122		0.00%	
g. PV Future Administrative Expense Reimbursement	13		13		0.00%	
h. Administrative Expense Reimbursement 6/30/xx-1	12		12		0.00%	
i. Due (To)/From TDA	<u>2</u>		<u>2</u>		0.00%	
j. Total Valuation Assets (c. + e. + f. + g. + h. + i.)	3,008		3,008		0.00%	
8. Unfunded Actuarial Accrued Liability Bases	1,760		1,789		1.65%	
9. Components of Contribution						
a. Employer Normal Cost	138		139		0.45%	0.20%
b. UAAL Contribution	166		169		2.06%	1.08%
c. Administrative Expenses	<u>15</u>		<u>15</u>		0.00%	0.00%
d. Total (Pension Expense)	319		323		1.27%	1.27%



BERS Results

(by Obligor)



BERS: SCA

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	191	595	193	595	0.79%	0.55%
b. Inactives	2	35	2	35	2.83%	0.02%
c. Terminated Vesteds	2	20	2	20	-8.70%	-0.06%
d. Retirees and Designated Annuitants	75	240	75	240	0.21%	0.06%
e. Loads	<u>1</u>		<u>1</u>		0.00%	0.00%
f. Total	270	890	272	890	0.57%	0.57%
2. Present Value of Future Salary	473		469		-0.74%	
3. Present Value of Future Employee Contributions	14		14		0.94%	
4. Present Value of Future Employer Normal Costs	47		47		0.19%	
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.)	131		132		0.98%	0.61%
b. Inactives (1.b.)	2		2		2.83%	0.02%
c. Terminated Vesteds (1.c.)	2		2		-8.70%	-0.08%
d. Retirees (1.d.)	75		75		0.21%	0.07%
e. Loads (1.e.)	<u>1</u>		<u>1</u>		0.00%	0.00%
f. Total	210		211		0.63%	0.63%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Cost	47		47		0.19%	
b. Present Value of Future Salary	473		469		-0.74%	
c. Salary - Time 0.5	57		57		0.29%	
d. Projected Present Value of Future Salary	418		414		-0.88%	
e. Normal Cost Percent	11.153%		11.273%		1.08%	
f. Salary - Time 1.5	55		55		-0.29%	
g. Employer Normal Cost	6		6		0.78%	
h. TDA Fixed 1.25% One Year Term Cost	0		0		0.00%	
i. Total Employer Normal Cost	6		6		0.78%	
7. Assets						
a. Market Value of Assets - Fixed	0		0		0.00%	
b. Market Value of Assets - Variable	0		0		0.00%	
c. Market Value of Assets - Total	152		152		0.00%	
d. Actuarial Value of Assets	127		127		0.00%	
e. Administrative Expense	0		0		0.00%	
f. PV 1-Year Adj Employer Normal Cost	6		6		0.00%	
g. PV Future Administrative Expense Reimbursement	0		0		0.00%	
h. Administrative Expense Reimbursement 6/30/xx-1	1		1		0.00%	
i. Due (To)/From TDA	<u>0</u>		<u>0</u>		0.00%	
j. Total Valuation Assets (c. + e. + f. + g. + h. + i.)	134		134		0.00%	
8. Unfunded Actuarial Accrued Liability Bases	76		78		1.72%	
9. Components of Contribution						
a. Employer Normal Cost	6		6		0.78%	0.35%
b. UAAL Contribution	4		4		0.00%	0.00%
c. Administrative Expenses	<u>0</u>		<u>0</u>		0.00%	0.00%
d. Total (Pension Expense)	14		14		1.50%	1.50%



BERS: REN

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	1	16	1	16	0.24%	0.24%
b. Inactives	0	1	0	1	-5.37%	-0.05%
c. Terminated Vesteds	0	0	0	0	0.00%	0.00%
d. Retirees and Designated Annuitants	0	0	0	0	0.00%	0.00%
e. Loads	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	1	17	1	17	0.19%	0.19%
2. Present Value of Future Salary	5		5		0.00%	
3. Present Value of Future Employee Contributions	0		0		0.00%	
4. Present Value of Future Employer Normal Costs	1		1		0.53%	
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.)	1		1		0.10%	0.09%
b. Inactives (1.b.)	0		0		-5.37%	-0.09%
c. Terminated Vesteds (1.c.)	0		0		0.00%	0.00%
d. Retirees (1.d.)	0		0		0.00%	0.00%
e. Loads (1.e.)	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	1		1		0.01%	0.01%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Cost	1		1		0.53%	
b. Present Value of Future Salary	5		5		0.00%	
c. Salary - Time 0.5	1		1		0.00%	
d. Projected Present Value of Future Salary	4		4		0.00%	
e. Normal Cost Percent	12.432%		12.498%		0.53%	
f. Salary - Time 1.5	1		1		0.00%	
g. Employer Normal Cost	0		0		0.53%	
h. TDA Fixed 1.25% One Year Term Cost	0		0		0.00%	
i. Total Employer Normal Cost	0		0		0.53%	
7. Assets						
a. Market Value of Assets - Fixed	0		0		0.00%	
b. Market Value of Assets - Variable	0		0		0.00%	
c. Market Value of Assets - Total	1		1		0.00%	
d. Actuarial Value of Assets	0		0		0.00%	
e. Administrative Expense	0		0		0.00%	
f. PV 1-Year Adj Employer Normal Cost	0		0		0.00%	
g. PV Future Administrative Expense Reimbursement	0		0		0.00%	
h. Administrative Expense Reimbursement 6/30/xx-1	0		0		0.00%	
i. Due (To)/From TDA	<u>0</u>		<u>0</u>		0.00%	
j. Total Valuation Assets (c. + e. + f. + g. + h. + i.)	1		1		0.00%	
8. Unfunded Actuarial Accrued Liability Bases	0		0		0.02%	
9. Components of Contribution						
a. Employer Normal Cost	0		0		0.53%	0.44%
b. UAAL Contribution	0		0		0.00%	0.00%
c. Administrative Expenses	<u>0</u>		<u>0</u>		0.00%	0.00%
d. Total (Pension Expense)	0		0		0.44%	0.44%



BERS: KIPP

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	0	0	0	0	0.00%	0.00%
b. Inactives	0	0	0	0	0.00%	0.00%
c. Terminated Vesteds	0	1	0	1	2.63%	2.63%
d. Retirees and Designated Annuitants	0	0	0	0	0.00%	0.00%
e. Loads	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	0	1	0	1	2.63%	2.63%
2. Present Value of Future Salary	0		0		0.00%	
3. Present Value of Future Employee Contributions	0		0		0.00%	
4. Present Value of Future Employer Normal Costs	0		0		0.00%	
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.)	0		0		0.00%	0.00%
b. Inactives (1.b.)	0		0		0.00%	0.00%
c. Terminated Vesteds (1.c.)	0		0		2.63%	2.63%
d. Retirees (1.d.)	0		0		0.00%	0.00%
e. Loads (1.e.)	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	0		0		2.63%	2.63%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Cost	0		0		0.00%	
b. Present Value of Future Salary	0		0		0.00%	
c. Salary - Time 0.5	0		0		0.00%	
d. Projected Present Value of Future Salary	0		0		0.00%	
e. Normal Cost Percent	0.000%		0.000%		0.00%	
f. Salary - Time 1.5	0		0		0.00%	
g. Employer Normal Cost	0		0		0.00%	
h. TDA Fixed 1.25% One Year Term Cost	0		0		0.00%	
i. Total Employer Normal Cost	0		0		0.00%	
7. Assets						
a. Market Value of Assets - Fixed	0		0		0.00%	
b. Market Value of Assets - Variable	0		0		0.00%	
c. Market Value of Assets - Total	0		0		0.00%	
d. Actuarial Value of Assets	0		0		0.00%	
e. Administrative Expense	0		0		0.00%	
f. PV 1-Year Adj Employer Normal Cost	0		0		0.00%	
g. PV Future Administrative Expense Reimbursement	0		0		0.00%	
h. Administrative Expense Reimbursement 6/30/xx-1	0		0		0.00%	
i. Due (To)/From TDA	<u>0</u>		<u>0</u>		0.00%	
j. Total Valuation Assets (c. + e. + f. + g. + h. + i.)	0		0		0.00%	
8. Unfunded Actuarial Accrued Liability Bases	0		0		8.86%	
9. Components of Contribution						
a. Employer Normal Cost	0		0		0.00%	0.00%
b. UAAL Contribution	0		0		0.00%	0.00%
c. Administrative Expenses	<u>0</u>		<u>0</u>		0.00%	0.00%
d. Total (Pension Expense)	0		0		4.93%	4.93%



BERS: BWC

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	0	1	0	1	-0.10%	-0.06%
b. Inactives	0	1	0	1	-6.46%	-0.71%
c. Terminated Vesteds	0	0	0	0	0.00%	0.00%
d. Retirees and Designated Annuitants	0	1	0	1	1.00%	0.25%
e. Loads	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	0	3	0	3	-0.53%	-0.53%
2. Present Value of Future Salary	0		0		0.00%	
3. Present Value of Future Employee Contributions	0		0		0.00%	
4. Present Value of Future Employer Normal Costs	0		0		0.60%	
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.)	0		0		-0.27%	-0.16%
b. Inactives (1.b.)	0		0		-6.46%	-0.82%
c. Terminated Vesteds (1.c.)	0		0		0.00%	0.00%
d. Retirees (1.d.)	0		0		1.00%	0.28%
e. Loads (1.e.)	<u>0</u>		<u>0</u>		0.00%	0.00%
f. Total	0		0		-0.69%	-0.69%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Cost	0		0		0.60%	
b. Present Value of Future Salary	0		0		0.00%	
c. Salary - Time 0.5	0		0		0.00%	
d. Projected Present Value of Future Salary	0		0		0.00%	
e. Normal Cost Percent	17.758%		17.865%		0.60%	
f. Salary - Time 1.5	0		0		0.00%	
g. Employer Normal Cost	0		0		0.60%	
h. TDA Fixed 1.25% One Year Term Cost	0		0		0.00%	
i. Total Employer Normal Cost	0		0		0.60%	
7. Assets						
a. Market Value of Assets - Fixed	0		0		0.00%	
b. Market Value of Assets - Variable	0		0		0.00%	
c. Market Value of Assets - Total	0		0		0.00%	
d. Actuarial Value of Assets	0		0		0.00%	
e. Administrative Expense	0		0		0.00%	
f. PV 1-Year Adj Employer Normal Cost	0		0		0.00%	
g. PV Future Administrative Expense Reimbursement	0		0		0.00%	
h. Administrative Expense Reimbursement 6/30/xx-1	0		0		0.00%	
i. Due (To)/From TDA	<u>0</u>		<u>0</u>		0.00%	
j. Total Valuation Assets (c. + e. + f. + g. + h. + i.)	0		0		0.00%	
8. Unfunded Actuarial Accrued Liability Bases	0		0		-2.12%	
9. Components of Contribution						
a. Employer Normal Cost	0		0		0.60%	0.31%
b. UAAL Contribution	0		0		0.00%	0.00%
c. Administrative Expenses	<u>0</u>		<u>0</u>		0.00%	0.00%
d. Total (Pension Expense)	0		0		-0.92%	-0.92%



BERS: All Others

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives	3,553	25,252	3,575	25,252	0.64%	0.39%
b. Inactives	44	2,592	46	2,592	3.74%	0.03%
c. Terminated Vesteds	41	830	42	830	3.06%	0.02%
d. Retirees and Designated Annuitants	2,199	16,696	2,205	16,696	0.29%	0.11%
e. Loads	<u>24</u>		<u>24</u>		0.00%	0.00%
f. Total	5,860	45,370	5,892	45,370	0.54%	0.54%
2. Present Value of Future Salary	9,965		9,909		-0.56%	
3. Present Value of Future Employee Contributions	253		258		2.14%	
4. Present Value of Future Employer Normal Costs	1,051		1,050		-0.11%	
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.)	2,249		2,267		0.82%	0.41%
b. Inactives (1.b.)	44		46		3.74%	0.04%
c. Terminated Vesteds (1.c.)	41		42		3.06%	0.03%
d. Retirees (1.d.)	2,199		2,205		0.29%	0.14%
e. Loads (1.e.)	<u>24</u>		<u>24</u>		0.00%	0.00%
f. Total	4,557		4,584		0.61%	0.61%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Cost	1,051		1,050		-0.11%	
b. Present Value of Future Salary	9,965		9,909		-0.56%	
c. Salary - Time 0.5	1,058		1,060		0.18%	
d. Projected Present Value of Future Salary	8,942		8,884		-0.65%	
e. Normal Cost Percent	11.757%		11.820%		0.54%	
f. Salary - Time 1.5	1,033		1,032		-0.05%	
g. Employer Normal Cost	121		122		0.48%	
h. TDA Fixed 1.25% One Year Term Cost	10		10		0.00%	
i. Total Employer Normal Cost	132		132		0.44%	
7. Assets						
a. Market Value of Assets - Fixed	0		0		0.00%	
b. Market Value of Assets - Variable	0		0		0.00%	
c. Market Value of Assets - Total	3,264		3,264		0.00%	
d. Actuarial Value of Assets	2,731		2,731		0.00%	
e. Administrative Expense	0		0		0.00%	
f. PV 1-Year Adj Employer Normal Cost	116		116		0.00%	
g. PV Future Administrative Expense Reimbursement	13		13		0.00%	
h. Administrative Expense Reimbursement 6/30/xx-1	12		12		0.00%	
i. Due (To)/From TDA	<u>2</u>		<u>2</u>		0.00%	
j. Total Valuation Assets (c. + e. + f. + g. + h. + i.)	2,873		2,873		0.00%	
8. Unfunded Actuarial Accrued Liability Bases	1,683		1,711		1.64%	
9. Components of Contribution						
a. Employer Normal Cost	132		132		0.44%	0.19%
b. UAAL Contribution	113		113		0.00%	0.00%
c. Administrative Expenses	<u>14</u>		<u>14</u>		0.00%	0.00%
d. Total (Pension Expense)	305		309		1.26%	1.26%



Police Results



Police Comparison of Results

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives						
Retirement	N/A		17,799		N/A	N/A
Ordinary Disability	N/A		775		N/A	N/A
Accidental Disability	N/A		7,438		N/A	N/A
Ordinary Death	N/A		160		N/A	N/A
Accidental Death	N/A		164		N/A	N/A
Deferred Vested	N/A		286		N/A	N/A
Non-Vested Return of Contributions	<u>N/A</u>		<u>4</u>		N/A	N/A
Total	26,646	35,961	26,624	35,961	-0.08%	-0.03%
b. Inactives	103	1,659	101	1,659	-1.48%	0.00%
c. Terminated Vesteds	87	574	87	574	-0.37%	0.00%
d. Retirees	28,380	49,151	28,433	49,151	0.19%	0.09%
e. Loads	700		700		0.00%	0.00%
f. VSFs	<u>6,433</u>		<u>6,346</u>		-1.34%	-0.14%
g. Total	62,348	87,345	62,292	87,345	-0.09%	-0.09%
2. Present Value of Future Salary	35,143		35,168		0.07%	
3. Present Value of Future Employee Contributions	859		860		0.05%	
4. Present Value of Future Employer Normal Costs						
a. Actives	10,180		10,126		-0.54%	-0.50%
b. VSFs	<u>816</u>		<u>729</u>		-10.65%	-0.79%
c. Total	10,997		10,855		-1.29%	-1.29%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	15,606		15,639		0.21%	0.07%
b. Inactives (1.b.)	103		101		-1.48%	0.00%
c. Terminated Vesteds (1.c.)	87		87		-0.37%	0.00%
d. Retirees (1.d.)	28,380		28,433		0.19%	0.11%
e. Loads (1.e.)	700		700		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	5,616		5,617		0.01%	0.00%
g. Total	50,492		50,578		0.17%	0.17%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	10,997		10,855		-1.29%	
b. Present Value of Future Salary	35,143		35,168		0.07%	
c. Salary - Time 0.5	3,696		3,696		0.02%	
d. Projected Present Value of Future Salary	31,570		31,595		0.08%	
e. Normal Cost Percent	34.833%		34.356%		-1.37%	
f. Salary - Time 1.5	3,650		3,652		0.04%	
g. Employer Normal Cost	1,272		1,255		-1.33%	
7. Assets (Main Fund)						
a. Market Value of Assets	33,483		33,483		0.00%	
b. Actuarial Value of Assets	33,693		33,693		0.00%	
c. PV 1-Year Adj Employer Normal Cost	1,195		1,195		0.00%	
d. PV Future Admin Expense Reimbursement	<u>39</u>		<u>39</u>		0.00%	
e. Total Main Fund Valuation Assets (b.+ c.+ d.)	34,927		34,927		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	2,020		2,020		0.00%	
b. Actuarial Value of Assets	2,432		2,432		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	13,133		13,219		0.65%	
10. Components of Contribution						
a. Employer Normal Cost	1,272		1,255		-1.33%	-0.70%
b. UAAL Contribution	1,123		1,132		0.86%	0.40%
c. Administrative Expenses	<u>21</u>		<u>21</u>		0.00%	0.00%
d. Total (Pension Expense)	2,415		2,408		-0.30%	-0.30%



Fire Results



Fire Comparison of Results

	Office of the Actuary		Bolton		Tolerance Test	
	Liabilities	Count	Liabilities	Count	Individual	Total
1. Present Value of Benefits						
a. Actives						
Retirement	3,400		3,379		-0.61%	-0.08%
Ordinary Disability	790		792		0.24%	0.01%
Accidental Disability	6,685		6,597		-1.31%	-0.35%
Ordinary Death	106		107		0.80%	0.00%
Accidental Death	242		242		-0.04%	0.00%
Deferred Vested	28		28		0.21%	0.00%
Non-Vested Return of Contributions	0		0		-0.01%	0.00%
Total	11,250	10,951	11,145	10,951	-0.94%	-0.42%
b. Inactives	6	21	6	21	-0.67%	0.00%
c. Terminated Vested	10	58	10	58	1.15%	0.00%
d. Retirees	12,667	16,647	12,664	16,647	-0.03%	-0.01%
e. Loads	157		157		0.00%	0.00%
f. VSFs	<u>1,064</u>		<u>1,070</u>		0.52%	0.02%
g. Total	25,154	27,677	25,051	27,677	-0.41%	-0.41%
2. Present Value of Future Salary	12,242		12,250		0.06%	
3. Present Value of Future Employee Contributions	217		217		-0.01%	
4. Present Value of Future Employer Normal Costs						
a. Actives	3,799		3,781		-0.47%	-0.45%
b. VSFs	<u>164</u>		<u>162</u>		-0.96%	-0.04%
c. Total	3,963		3,944		-0.49%	-0.49%
5. Actuarial Accrued Liability						
a. Actives (1.a. - 3. - 4.a.)	7,235		7,147		-1.21%	-0.42%
b. Inactives (1.b.)	6		6		-0.67%	0.00%
c. Terminated Vested (1.c.)	10		10		1.15%	0.00%
d. Retirees (1.d.)	12,667		12,664		-0.03%	-0.02%
e. Loads (1.e.)	157		157		0.00%	0.00%
f. VSFs (1.f. - 4.b.)	<u>900</u>		<u>908</u>		0.79%	0.03%
g. Total	20,975		20,891		-0.40%	-0.40%
6. Development of Employer Normal Cost						
a. Present Value of Future Employer Normal Costs	3,963		3,944		-0.49%	
b. Present Value of Future Salary	12,242		12,250		0.06%	
c. Salary - Time 0.5	1,168		1,167		-0.03%	
d. Projected Present Value of Future Salary	11,113		11,121		0.07%	
e. Normal Cost Percent	35.661%		35.460%		-0.56%	
f. Salary - Time 1.5	1,161		1,161		-0.02%	
g. Employer Normal Cost	414		412		-0.58%	
7. Assets (Main Fund)						
a. Market Value of Assets	10,900		10,900		0.00%	
b. Actuarial Value of Assets	11,082		11,082		0.00%	
c. PV 1-Year Adj Employer Normal Cost	396		396		0.00%	
d. PV Future Admin Expense Reimbursement	<u>NA</u>		<u>0</u>			
e. Total Main Fund Valuation Assets (b.+ c.+ d.)	11,478		11,478		0.00%	
8. Assets (VSFs)						
a. Market Value of Assets	838		838		0.00%	
b. Actuarial Value of Assets	849		849		0.00%	
9. Unfunded Actuarial Accrued Liability Bases	8,647		8,563		-0.97%	
10. Components of Contribution						
a. Employer Normal Cost	414		412		-0.58%	-0.20%
b. UAAL Contribution	786		776		-1.27%	-0.83%
c. Administrative Expenses	<u>NA</u>		<u>NA</u>			
d. Total (Pension Expense)	1,200		1,188		-1.03%	-1.03%