

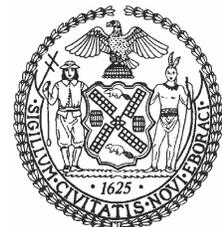
December 5, 2011

City of New York
New York City Retirement Systems
Final Independent Actuary's Statement
Second Engagement

HayGroup®

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December 5, 2011

The Honorable John C. Liu
Comptroller of the City of New York
The Office of the Comptroller - City of New York
One Centre Street
New York, New York 10007

Re: Independent Actuary's Statement Regarding the Five Actuarially-Funded New York City Retirement Systems ("NYCRS")

Dear Comptroller Liu:

Hay Group is pleased to submit this Independent Actuary's Statement, which is a key deliverable under our second biennial engagement to serve as Independent Actuary under Section 96 of the New York City Charter. This report provides our certification – based on the experience studies, audits, reviews and valuations we have conducted during the second engagement – that the NYCRS are being funded on sound financial, scientific and legal bases in order to attain the City's financing objectives.

In general, we believe that the methodologies, procedures, and actuarial assumptions used by the Office of the Actuary ("OA") were reasonable and appropriate, and in accordance with generally accepted actuarial standards and practices:

- The valuation data processes and procedures used by the NYCRS, in conjunction with those utilized by the OA, are structured to produce member data that is of sufficient quality and appropriateness to be suitable for use by the OA in performing the City's actuarial valuations. Such data is also suitable for actuarial experience studies.
- The demographic and economic assumptions used by the OA for determining the employer contributions to the NYCRS are reasonable and appropriate.
- The employer contributions determined by the OA for the NYCRS have been accurately determined, using reasonable methods.

Please do not hesitate to contact us if you have any questions relating to this report.

Respectfully submitted,



Adam E. Meyers, FSA, EA, MAAA, FCA



Craig Graby, EA, MAAA, FCA



Leslie H. Richmond, ASA, EA, MAAA, FCA



Brent Mowery, FSA, EA, MAAA, FCA



Yuri Nisenzon, ASA, EA, MAAA, FCA

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Introduction

The Office of the Comptroller, on behalf of the City of New York (the “City”), retained Hay Group in June 2008 to perform a range of actuarial audit and related review services relating to the five actuarially-funded City retirement systems (collectively, the “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 Department Pension Fund (“FIRE”)

The contract covers two consecutive engagements over two biennial periods. Each engagement includes the following for each of the five Systems:

1. An Experience Study that compares actual experience with the assumptions used to calculate employer pension contributions, and comments on the appropriateness of each assumption. (The first engagement included a review of experience data through June 30, 2007, while the second engagement reviewed experience data through June 30, 2009.)
2. An Audit of Employer Pension Contribution Calculations (“Contribution Audit”) that confirms the computations of actuarial assets and liabilities, including the software used, and the appropriateness and legality of the actuarial assumptions and methods used. (The first engagement included an audit of employer pension contribution calculations for Fiscal Year 2008 while the second engagement audited the same for Fiscal Year 2010.)
3. An Administrative Review of the actuarial data gathering process that reviews the data used in the actuarial valuation, the operational procedures used to compile, store and transmit the data, and comments on the quality, completeness, security and safety of the data.
4. Independent Actuary’s Statement that reviews the entire engagement and comments on the financial condition of the Systems and the appropriateness and probity of the City’s funding policies.

This is the Independent Actuary’s Statement under the second engagement. This report summarizes Hay Group’s conclusions as a result of the second engagement Experience Study, Contribution Audit, and Administrative Review.

Independent Actuary's Statement for the New York City Employees' Retirement System ("NYCERS")

Hay Group, Inc. ("Hay Group") was engaged by the Office of the Comptroller of the City of New York ("City") in June 2008 to conduct certain independent actuarial audits and reviews. As part of the engagement, Hay Group performed an audit of employer contributions to NYCERS for fiscal year 2010, analyzed actual demographic and economic experience from June 30, 1988 through June 30, 2009, and reviewed NYCERS' and the City's actuarial data gathering process.

Based on the audits, valuations, experience studies, and reviews we have conducted, we certify that the NYCERS is being funded on sound financial, scientific and legal bases in order to attain the City's financing objectives.

Employer Contributions to NYCERS for Fiscal Year 2010

The City's Office of the Actuary ("OA") is responsible for collecting all necessary actuarial data and calculating annual employer contributions to NYCERS.

In general, we believe that the methodologies, procedures, and actuarial assumptions used by the OA to calculate fiscal year 2010 employer contributions to NYCERS were reasonable and appropriate, and in accordance with generally accepted actuarial standards and practices. Hay Group confirms that these methods and assumptions are consistent with those adopted by NYCERS' Board of Trustees and the laws promulgated by the State Legislature.

- The valuation data processes and procedures used by NYCERS, in conjunction with those utilized by the OA, are structured to produce member data that is of sufficient quality and appropriateness to be suitable for use by the OA in performing the City's actuarial valuations. Such data is also suitable for actuarial experience studies.
- The demographic and economic assumptions used by the OA for determining employer contributions to NYCERS are reasonable and appropriate.
- The employer contribution determined by the OA for NYCERS for fiscal year 2010 (\$2,198 million) has been accurately determined, using reasonable methods. Based on our audit methodology, we believe that the City is using sound actuarial methodologies and that the OA is properly applying assumptions. It is also our opinion that the valuation software used by the OA is properly programmed and the results produced are proper valuations of the liabilities and contributions required for each System. The valuation software is leased from Buck Consultants ("Buck").

Financing Objectives

The City's funding policy is to contribute statutorily-required contributions. Together with member contributions and investment income, these statutorily-required contributions would ultimately be sufficient to pay benefits when due.

As Hay Group's audit results confirm, the OA is basing the calculation of the annual funding contribution for NYCERS on appropriate data, assumptions and methods, and the calculations are being made accurately. The current assumptions and methods utilized by the OA are also designed to produce annual employer contributions that stay level as a percentage of payroll and to provide for intergenerational equity. Assuming continued funding of NYCERS by the City on this basis, we believe the City's financing objectives can be achieved.

Appropriateness of the City's Actuarial Cost Method

The OA uses the Frozen Initial Liability Actuarial Cost Method. This is a well-known and widely accepted method for funding pension plans. In private sector pension funding, prior to recent legislation this method was one of the acceptable methods under the Internal Revenue Code and related regulations. In Hay Group's opinion, it is an actuarially sound method.

The OA applies a "one-year lag" methodology to calculate the contributions which fund the benefits payable from each System. Under this methodology, an Employer Contribution for FY 2010 is determined based on census and asset data as of June 30, 2008. Thus, the cost for benefits accruing (the "normal cost") during FY 2009 for new entrants to a System who first appear on the valuation census as of June 30, 2008 is spread, as a level percent of pay, over the remaining expected working lifetime of these new entrants. In effect, since the first contribution (for FY 2009) is skipped for new entrants, higher subsequent contributions are made - during the remaining expected working lifetime of these members - to fully fund the expected cost of future benefits. If all actuarial assumptions are met, the entire cost of an individual's benefit will be fully funded during his or her working lifetime. From this perspective, the one-year lag methodology is actuarially sound and an acceptable actuarial method for funding governmental plans. The analysis that Hay Group has performed on this methodology has confirmed that the OA's method exhibits this fundamental characteristic of actuarial soundness.

Appropriateness of the City's Actuarial Asset Valuation Method ("AAVM")

Hay Group's observations and conclusions regarding the AAVM are as follows:

- Hay Group reviewed the accuracy of the data inputs into the Actuarial Asset Value ("AAV") calculations. We believe that the asset data inputs used by the OA to compute the AAV are accurate.
- The AAV is not equal to the market value of assets. In such a case, Actuarial Standard of Practice (ASOP) No. 44, "Selection and Use of Asset Valuation Methods for Pension Plans," provides comments on characteristics of reasonable actuarial methods of valuing assets. We believe that overall, the AAVM is a reasonable method.
- Hay Group checked the mathematical calculations used by the OA to determine the AAV as of June 30, 2008 and we believe them to be arithmetically correct.

Based on the observations noted above, we believe that, overall, the AAVM used by the OA to calculate the AAV for each of the Systems is reasonable and is accurately applied.

Hay Group's Examination of Data Used by the OA in the Fiscal Year 2010 Employer Contribution Calculations

The OA performs a significant number of data checks and has made considerable improvements to the data processes over recent years. Every individual is accounted for through the OA's reconciliation process. This process maximizes data accuracy, ensures that records are not lost, and ensures that liabilities are not undervalued.

Hay Group performed a variety of reasonableness checks and found some minor data issues. We believe these issues are immaterial to the final pension contribution results, either because the issue is resolved appropriately in the OA's valuation process, or because the issue itself is very minor. Based on Hay Group's analysis of the data, we believe that the data provided to us is the same data used by the OA in the contribution calculations.

As part of the Administrative Review, the data processes and procedures were reviewed. These processes and procedures include data transferred from the Systems to the OA and from the OA to Buck.

It is our opinion that the data used to value the liabilities for NYCERS is reasonable and accurate for liability determinations.

The OA and the Systems take various approaches to protecting member data and disaster recovery, and most could take steps to make improvements in these areas. Hay Group observed that NYCERS' procedures in this regard are very thorough, and do a superior job in protecting sensitive member data.

Hay Group's Examination of Actual Demographic and Economic Experience and Comparisons to Current Actuarial Assumptions

The City uses somewhat different actuarial assumptions for valuation of each of the following six sub-parts of NYCERS: NYCERS-General, NYCERS-Transit, NYCERS-Sanitation, NYCERS-Corrections, NYCERS-TBTA and NYCERS-HP TP. Therefore, our Experience Study of NYCERS consisted of six separate sets of studies, one set corresponding to each of these sub-parts.

Hay Group has completed its experience studies of NYCERS under the second engagement, including the following key steps with respect to each of the above-referenced sub-parts of NYCERS:

- Studies of the actual demographic and economic experience of NYCERS from June 30, 1988 through June 30, 2009;
- Comparisons between the actual experience of NYCERS and the expected outcomes based upon the actuarial assumptions currently employed by the OA to calculate employer contributions required to fund NYCERS; and
- Review of the appropriateness of the actuarial assumptions used for determining employer contributions to fund NYCERS for fiscal year 2010.

Based upon the results of this Experience Study, we believe that the demographic and economic actuarial assumptions utilized for the fiscal year 2010 actuarial valuation of NYCERS were reasonable and appropriate, and in accordance with generally accepted actuarial standards and practices.

Hay Group observed that, with respect to a number of actuarial assumptions, actual past experience differed somewhat from our expectations, based upon the fiscal 2010 valuation assumptions. We are therefore recommending that the Actuary consider the following changes to economic and demographic actuarial assumptions for future calculations of employer contributions and other actuarial uses for NYCERS.

Economic Actuarial Assumptions

The timing of the second engagement economic assumption study coincided with one of the worst financial and economic crises of the last century, which closely followed a period of great volatility in the financial markets relating to technology stocks. This made our study especially challenging, as many traditional approaches and factors used by financial professionals who make recommendations for economic assumptions may not apply in this environment, or may produce unsustainable results. The following table summarizes our recommended economic assumption changes for the NYCERS. Details regarding these conclusions can be found in the full Experience Study report.

Economic Assumptions	Current Assumptions (FY 2010)	Hay Group's Best-Estimate Range	Hay Group's Recommended Assumption
Inflation	2.50%	2.50% - 3.50%	3.00%
Investment Rate of Return	8.00%	6.50% - 7.50%	7.00%
Salary Increases	General Wage Increase of 3.00% (2.50% inflation plus .50% productivity increase) plus service-related increases	General Wage Increase of 3.00% - 4.00% (2.50% - 3.50% inflation plus a .50% productivity increase) plus service-related increases	General Wage Increase of 3.50% (3.00 inflation plus a .50% productivity increase)

Demographic Actuarial Assumptions

As noted above, Hay Group observed that, with respect to a number of demographic actuarial assumptions, actual past NYCERS experience differed somewhat from our expectations, based upon the fiscal 2010 valuation assumptions. The following table summarizes our recommended demographic assumption changes for NYCERS. Details regarding these conclusions can be found in the full Experience Study report.

Summary of Recommendations Regarding Actuarial Assumptions - NYCERS

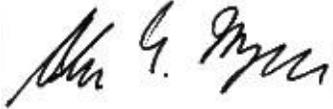
Assumption	GENERAL	TRANSIT	SANITATION	CORRECTIONS	TBTA	HP-TP
Service Retiree Mortality	Higher probabilities for female ages 58-61; else, lower probabilities	Higher probabilities for female ages 58-61; else, lower probabilities	Higher probabilities for female ages 58-61; else, lower probabilities	Higher probabilities for female ages 58-61; else, lower probabilities	Higher probabilities for female ages 58-61; else, lower probabilities	Higher probabilities for males over age 85 and female ages 58-61; else, lower probabilities
Disabled Retiree Mortality	Lower probabilities	Lower probabilities	Lower probabilities	Lower probabilities	Lower probabilities	Higher probabilities for male ages 42-48, 82-83 and over 89 and female ages 37-58; else, lower probabilities
Active Member Withdrawals	Lower probabilities	Lower probabilities	Lower probabilities	Lower probabilities	Lower probabilities	N/A
Active Member Service Retirements In 1 st Year Eligible	Improved Retirement Program: Lower probabilities Other: Higher probabilities at ages over 60; lower probabilities at ages under 61	Lower probabilities	Improved Retirement Program: Lower probabilities Other: Higher probabilities for ages 45-53; lower probabilities for all other ages	Higher probabilities	Improved Retirement Program: Higher probabilities for ages 57 and above; lower probabilities for ages below 57 Other: Higher probabilities for ages 56 and below; lower probabilities for ages above 56	N/A
Active Member Service Retirements In 2 nd Year Eligible	Lower probabilities	Lower probabilities	Improved Retirement Program: Lower probabilities Other: Higher probabilities for ages 48-54; lower probabilities for all other ages	Improved Retirement Program: Lower probabilities Other: Higher probabilities	Improved Retirement Program: Higher probabilities for ages 55 and above; lower probabilities for ages below 55 Other: Higher probabilities for ages 56 and below; lower probabilities for ages above 56	N/A
Active Member Service Retirements After 2 nd Year Eligible	Lower probabilities	Lower probabilities	Lower probabilities	Improved Retirement Program: Lower probabilities Other: Higher probabilities for ages 53 and below; lower probabilities for ages over 53	Improved Retirement Program: Higher probabilities for ages 57 and below; lower probabilities for ages above 57 Other: Higher probabilities for ages 58 and below; lower probabilities for ages above 58	N/A
Reduced Service Retirements	Lower probabilities	Higher probabilities at ages 57 and below; lower probabilities for ages over 57	Lower probabilities	No change	Higher probabilities for ages 57 and below; lower probabilities for ages above 57	N/A
Active Member Ordinary Mortality	Higher probabilities	Higher probabilities	M: Higher probabilities F: No change	Higher probabilities	Higher probabilities	N/A
Active Member Accidental Mortality	No change	No change	No change	No change	No change	N/A
Active Member Ordinary Disability	Higher probabilities	Higher probabilities	Lower probabilities	Lower probabilities	M: Higher probabilities for ages 45 and below; lower probabilities for ages above 45 F: No change	N/A

Summary of Recommendations Regarding Actuarial Assumptions - NYCERS (Cont'd)

Assumption	GENERAL	TRANSIT	SANITATION	CORRECTIONS	TBTA	HP-TP
Active Member Accidental Disability	Higher probabilities	Lower probabilities	Higher probabilities	Lower probabilities	M: Lower probabilities F: No change	N/A
Salary Increases – Merit Only	Lower increases for all service levels except 0 and 1	Lower increases	Lower increases	Lower increases	Higher increases at service levels 5 through 11 years; lower increases for all other service levels	N/A
Overtime Pay (OT) For All Years	Higher OT	Higher OT for service levels 10 to 15 years; lower OT for other service levels	Higher OT increases for service levels less than 7; lower OT increases for service levels 7 and over	Higher OT for service levels less than 9 and greater than 16; no change for service levels of 9 to 16 years	Higher OT	N/A
OT in Year Before Service Retirement	Higher OT for service levels over 19 years; lower OT for service levels under 20 years	Lower OT	Lower OT	Lower OT	Higher OT for service levels from 15 to 29; lower OT for service levels less than 15 or more than 29 years	N/A
OT in Year Before Disability Retirement	Higher OT for service levels 10-20; lower OT for other service levels	Lower OT	Lower OT	Lower OT	No change	N/A

Note: Unless specifically noted otherwise, the impact listed in the chart is the overall net impact of the recommended assumption change.

Respectfully submitted,



Adam E. Meyers, FSA, EA, MAAA, FCA



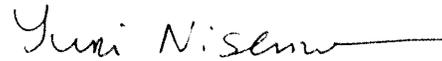
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Leslie H. Richmond, ASA, EA, MAAA, FCA



Brent Mowery, FSA, EA, MAAA, FCA



Yuri Nisenzon, ASA, EA, MAAA, FCA

Independent Actuary's Statement for the Teachers' Retirement System of the City of New York ("TRS")

Hay Group, Inc. ("Hay Group") was engaged by the Office of the Comptroller of the City of New York ("City") in June 2008 to conduct certain independent actuarial audits and reviews. As part of the engagement, Hay Group performed an audit of employer contributions to TRS for fiscal year 2010, analyzed actual demographic and economic experience from June 30, 1988 through June 30, 2009, and reviewed TRS' and the City's actuarial data gathering process.

Based on the audits, valuations, experience studies, and reviews we have conducted, we certify that the TRS is being funded on sound financial, scientific and legal bases in order to attain the City's financing objectives.

Employer Contributions to TRS for Fiscal Year 2010

The City's Office of the Actuary ("OA") is responsible for collecting all necessary actuarial data and calculating annual employer contributions to TRS.

In general, we believe that the methodologies, procedures, and actuarial assumptions used by the OA to calculate fiscal year 2010 employer contributions to TRS were reasonable and appropriate, and in accordance with generally accepted actuarial standards and practices. Hay Group confirms that these methods and assumptions are consistent with those adopted by TRS' Board of Trustees and the laws promulgated by the State Legislature.

- The valuation data processes and procedures used by TRS, in conjunction with those utilized by the OA, are structured to produce member data that is of sufficient quality and appropriateness to be suitable for use by the OA in performing the City's actuarial valuations. Such data is also suitable for actuarial experience studies.
- The demographic and economic assumptions used by the OA for determining employer contributions to TRS are reasonable and appropriate.
- The employer contribution determined by the OA for TRS for fiscal year 2010 (\$2,484 million) has been accurately determined, using reasonable methods. Based on our audit methodology, we believe that the City is using sound actuarial methodologies and that the OA is properly applying assumptions. It is also our opinion that the valuation software used by the OA is properly programmed and the results produced are proper valuations of the liabilities and contributions required for each System. The valuation software is leased from Buck Consultants ("Buck").

Financing Objectives

The City's funding policy is to contribute statutorily-required contributions. Together with member contributions and investment income, these statutorily-required contributions would ultimately be sufficient to pay benefits when due.

As Hay Group's audit results confirm, the OA is basing the calculation of the annual funding contribution for TRS on appropriate data, assumptions and methods, and the calculations are being made accurately. The current assumptions and methods utilized by the OA are also designed to produce annual employer contributions that stay level as a percentage of payroll and to provide for intergenerational equity. Assuming continued funding of TRS by the City on this basis, we believe the City's financing objectives can be achieved.

Appropriateness of the City's Actuarial Cost Method

The OA uses the Frozen Initial Liability Actuarial Cost Method. This is a well-known and widely accepted method for funding pension plans. In private sector pension funding, prior to recent legislation this method was one of the acceptable methods under the Internal Revenue Code and related regulations. In Hay Group's opinion, it is an actuarially sound method.

The OA applies a "one-year lag" methodology to calculate the contributions which fund the benefits payable from each System. Under this methodology, an Employer Contribution for FY 2010 is determined based on census and asset data as of June 30, 2008. Thus, the cost for benefits accruing (the "normal cost") during FY 2009 for new entrants to a System who first appear on the valuation census as of June 30, 2008 is spread, as a level percent of pay, over the remaining expected working lifetime of these new entrants. In effect, since the first contribution (for FY 2009) is skipped for new entrants, higher subsequent contributions are made - during the remaining expected working lifetime of these members - to fully fund the expected cost of future benefits. If all actuarial assumptions are met, the entire cost of an individual's benefit will be fully funded during his or her working lifetime. From this perspective, the one-year lag methodology is actuarially sound and an acceptable actuarial method for funding governmental plans. The analysis that Hay Group has performed on this methodology has confirmed that the OA's method exhibits this fundamental characteristic of actuarial soundness.

Appropriateness of the City's Actuarial Asset Valuation Method ("AAVM")

Hay Group's observations and conclusions regarding the AAVM are as follows:

- Hay Group reviewed the accuracy of the data inputs into the Actuarial Asset Value ("AAV") calculations. We believe that the asset data inputs used by the OA to compute the AAV are accurate.
- The AAV is not equal to the market value of assets. In such a case, Actuarial Standard of Practice (ASOP) No. 44, "Selection and Use of Asset Valuation Methods for Pension Plans," provides comments on characteristics of reasonable actuarial methods of valuing assets. We believe that overall, the AAVM is a reasonable method.
- Hay Group checked the mathematical calculations used by the OA to determine the AAV as of June 30, 2008 and we believe them to be arithmetically correct.

Based on the observations noted above, we believe that, overall, the AAVM used by the OA to calculate the AAV for each of the Systems is reasonable and is accurately applied.

Hay Group's Examination of Data Used by the OA in the Fiscal Year 2010 Employer Contribution Calculations

The OA performs a significant number of data checks and has made considerable improvements to the data processes over recent years. Every individual is accounted for through the OA's reconciliation process. This process maximizes data accuracy, ensures that records are not lost, and ensures that liabilities are not undervalued.

Hay Group performed a variety of reasonableness checks and found some minor data issues. We believe these issues are immaterial to the final pension contribution results, either because the issue is resolved appropriately in the OA's valuation process, or because the issue itself is very minor. Based on Hay Group's analysis of the data, we believe that the data provided to us is the same data used by the OA in the contribution calculations.

As part of the Administrative Review, the data processes and procedures were reviewed. These processes and procedures include data transferred from the Systems to the OA and from the OA to Buck.

It is our opinion that the data used to value the liabilities for TRS is reasonable and accurate for liability determinations.

The OA and the Systems take various approaches to protecting member data and disaster recovery, and most could take steps to make improvements in these areas. Hay Group observed that TRS' procedures in this regard are very thorough. TRS would be well-advised to remain vigilant regarding threats to the security of sensitive member data.

Hay Group's Examination of Actual Demographic and Economic Experience and Comparisons to Current Actuarial Assumptions

Hay Group has completed its Experience Study of TRS under the second engagement, including the following key steps:

- Studies of the actual demographic and economic experience of TRS from June 30, 1988 through June 30, 2009;
- Comparisons between the actual experience of TRS and the expected outcomes based upon the actuarial assumptions currently employed by the OA to calculate employer contributions required to fund TRS; and
- Review of the appropriateness of the actuarial assumptions used for determining employer contributions to fund TRS for fiscal year 2010.

Based upon the results of this Experience Study, we believe that the demographic and economic actuarial assumptions utilized for the fiscal year 2010 actuarial valuation of TRS were reasonable and appropriate, and in accordance with generally accepted actuarial standards and practices.

Hay Group observed that, with respect to a number of actuarial assumptions, actual past TRS experience differed somewhat from our expectations, based upon the fiscal 2010 valuation assumptions. We are therefore recommending that the Actuary consider the following changes to economic and demographic actuarial assumptions for future calculations of employer contributions and other actuarial uses for TRS.

Economic Actuarial Assumptions

The timing of the second engagement economic assumption study coincided with one of the worst financial and economic crises of the last century, which closely followed a period of great volatility in the financial markets relating to technology stocks. This made our study especially challenging, as many traditional approaches and factors used by financial professionals who make recommendations for economic assumptions may not apply in this environment, or may produce unsustainable results. The following table summarizes our recommended economic assumption changes for the NYCERS. Details regarding these conclusions can be found in the full Experience Study report.

Economic Assumptions	Current Assumptions (FY 2010)	Hay Group's Best-Estimate Range	Hay Group's Recommended Assumption
Inflation	2.50%	2.50% - 3.50%	3.00%
Investment Rate of Return	8.00%	6.50% - 7.50%	7.00%
Salary Increases	General Wage Increase of 3.00% (2.50% inflation plus .50% productivity increase) plus service-related increases	General Wage Increase of 3.00% - 4.00% (2.50% - 3.50% inflation plus a .50% productivity increase) plus service-related increases	General Wage Increase of 3.50% (3.00 inflation plus a 50% productivity increase)

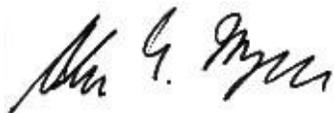
Demographic Actuarial Assumptions

As noted above, Hay Group observed that, with respect to a number of demographic actuarial assumptions, actual past TRS experience differed somewhat from our expectations, based upon the fiscal 2010 valuation assumptions. The following table summarizes our recommended demographic assumption changes for TRS. Details regarding these conclusions can be found in the full Experience Study report.

Summary of Recommendations Regarding Actuarial Assumptions	
Assumption	TRS
Service Retiree Mortality	Lower probabilities
Disabled Retiree Mortality	Higher probabilities for males under age 52; else, lower probabilities
Active Member Withdrawals	Higher probabilities below 18 years of service; lower probabilities at service 18 and over
Active Member Service Retirements In 1 st Year Eligible	Higher probabilities for age 61 and below; lower probabilities, over age 61
Active Member Service Retirements In 2 nd Year Eligible	Higher probabilities for age 62 and below; lower probabilities, over age 62
Active Member Service Retirements After 2 nd Year Eligible	M: No change for ages 61 and below, lower probabilities for ages 62 and over F: No change for ages 64 and below, lower probabilities for ages 65 and over
Reduced Service Retirements	M: Lower probabilities at ages 59-61; F: Lower probabilities at ages 60-61
Active Member Ordinary Mortality	Higher probabilities
Active Member Accidental Mortality	No change
Active Member Ordinary Disability	Higher probabilities
Active Member Accidental Disability	M: Lower probabilities for ages 55 to 59; F: Lower probabilities for ages 33 to 39, higher probabilities for age 50 and over
Salary Increases – Merit Only	Higher increases at most service levels under 10; lower increases for most service levels 10 and over
Overtime Pay (OT) For All Years	No change (keep 0%)
OT in Year Before Service Retirement	No change (keep 0%)
OT in Year Before Disability Retirement	No change (keep 0%)

Note: Unless specifically noted otherwise, the impact listed in the chart is the overall net impact of the recommended assumption change.

Respectfully submitted,



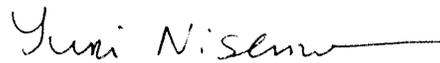
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Leslie H. Richmond, ASA, EA, MAAA, FCA

Independent Actuary's Statement for the Board of Education Retirement System of the City of New York ("BERS")

Hay Group, Inc. ("Hay Group") was engaged by the Office of the Comptroller of the City of New York ("City") in June 2008 to conduct certain independent actuarial audits and reviews. As part of the engagement, Hay Group performed an audit of employer contributions to BERS for fiscal year 2010, analyzed actual demographic and economic experience from June 30, 1988 through June 30, 2009, and reviewed BERS' and the City's actuarial data gathering process.

Based on the audits, valuations, experience studies, and reviews we have conducted, we certify that the BERS is being funded on sound financial, scientific and legal bases in order to attain the City's financing objectives.

Employer Contributions to BERS for Fiscal Year 2010

The City's Office of the Actuary ("OA") is responsible for collecting all necessary actuarial data and calculating annual employer contributions to BERS.

In general, we believe that the methodologies, procedures, and actuarial assumptions used by the OA to calculate fiscal year 2010 employer contributions to BERS were reasonable and appropriate, and in accordance with generally accepted actuarial standards and practices. Hay Group confirms that these methods and assumptions are consistent with those adopted by BERS' Board of Trustees and the laws promulgated by the State Legislature.

- The valuation data processes and procedures used by BERS, in conjunction with those utilized by the OA, are structured to produce member data that is of sufficient quality and appropriateness to be suitable for use by the OA in performing the City's actuarial valuations. Such data is also suitable for actuarial experience studies.
- The demographic and economic assumptions used by the OA for determining employer contributions to BERS are reasonable and appropriate.
- The employer contribution determined by the OA for BERS for fiscal year 2010 (\$147 million) has been accurately determined, using reasonable methods. Based on our audit methodology, we believe that the City is using sound actuarial methodologies and that the OA is properly applying assumptions. It is also our opinion that the valuation software used by the OA is properly programmed and the results produced are proper valuations of the liabilities and contributions required for each System. The valuation software is leased from Buck Consultants ("Buck").

Financing Objectives

The City's funding policy is to contribute statutorily-required contributions. Together with member contributions and investment income, these statutorily-required contributions would ultimately be sufficient to pay benefits when due.

As Hay Group's audit results confirm, the OA is basing the calculation of the annual funding contribution for BERS on appropriate data, assumptions and methods, and the calculations are being made accurately. The current assumptions and methods utilized by the OA are also designed to produce annual employer contributions that stay level as a percentage of payroll and to provide for intergenerational equity. Assuming continued funding of BERS by the City on this basis, we believe the City's financing objectives can be achieved.

Appropriateness of the City's Actuarial Cost Method

The OA uses the Frozen Initial Liability Actuarial Cost Method. This is a well-known and widely accepted method for funding pension plans. In private sector pension funding, prior to recent legislation this method was one of the acceptable methods under the Internal Revenue Code and related regulations. In Hay Group's opinion, it is an actuarially sound method.

The OA applies a "one-year lag" methodology to calculate the contributions which fund the benefits payable from each System. Under this methodology, an Employer Contribution for FY 2010 is determined based on census and asset data as of June 30, 2008. Thus, the cost for benefits accruing (the "normal cost") during FY 2009 for new entrants to a System who first appear on the valuation census as of June 30, 2008 is spread, as a level percent of pay, over the remaining expected working lifetime of these new entrants. In effect, since the first contribution (for FY 2009) is skipped for new entrants, higher subsequent contributions are made - during the remaining expected working lifetime of these members - to fully fund the expected cost of future benefits. If all actuarial assumptions are met, the entire cost of an individual's benefit will be fully funded during his or her working lifetime. From this perspective, the one-year lag methodology is actuarially sound and an acceptable actuarial method for funding governmental plans. The analysis that Hay Group has performed on this methodology has confirmed that the OA's method exhibits this fundamental characteristic of actuarial soundness.

Appropriateness of the City's Actuarial Asset Valuation Method ("AAVM")

Hay Group's observations and conclusions regarding the AAVM are as follows:

- Hay Group reviewed the accuracy of the data inputs into the Actuarial Asset Value ("AAV") calculations. We believe that the asset data inputs used by the OA to compute the AAV are accurate.
- The AAV is not equal to the market value of assets. In such a case, Actuarial Standard of Practice (ASOP) No. 44, "Selection and Use of Asset Valuation Methods for Pension Plans," provides comments on characteristics of reasonable actuarial methods of valuing assets. We believe that overall, the AAVM is a reasonable method.
- Hay Group checked the mathematical calculations used by the OA to determine the AAV as of June 30, 2008 and we believe them to be arithmetically correct.

Based on the observations noted above, we believe that, overall, the AAVM used by the OA to calculate the AAV for each of the Systems is reasonable and is accurately applied.

Hay Group's Examination of Data Used by the OA in the Fiscal Year 2010 Employer Contribution Calculations

The OA performs a significant number of data checks and has made considerable improvements to the data processes over recent years. Every individual is accounted for through the OA's reconciliation process. This process maximizes data accuracy, ensures that records are not lost, and ensures that liabilities are not undervalued.

Hay Group performed a variety of reasonableness checks and found some minor data issues. We believe these issues are immaterial to the final pension contribution results, either because the issue is resolved appropriately in the OA's valuation process, or because the issue itself is very minor. Based on Hay Group's analysis of the data, we believe that the data provided to us is the same data used by the OA in the contribution calculations.

As part of the Administrative Review, the data processes and procedures were reviewed. These processes and procedures include data transferred from the Systems to the OA and from the OA to Buck.

It is our opinion that the data used to value the liabilities for BERS is reasonable and accurate for liability determinations.

The OA and the Systems take various approaches to protecting member data and disaster recovery, and most could take steps to make improvements in these areas. Hay Group observed that BERS' procedures in this regard are thorough. BERS would be well-advised to remain vigilant regarding threats to the security of sensitive member data.

Hay Group's Examination of Actual Demographic and Economic Experience and Comparisons to Current Actuarial Assumptions

Hay Group has completed its Experience Study of BERS under the second engagement, including the following key steps:

- Studies of the actual demographic and economic experience of BERS from June 30, 1988 through June 30, 2009;
- Comparisons between the actual experience of BERS and the expected outcomes based upon the actuarial assumptions currently employed by the OA to calculate employer contributions required to fund BERS; and
- Review of the appropriateness of the actuarial assumptions used for determining employer contributions to fund BERS for fiscal year 2010.

Based upon the results of this Experience Study, we believe that the demographic and economic actuarial assumptions utilized for the fiscal year 2010 actuarial valuation of BERS were reasonable and appropriate, and in accordance with generally accepted actuarial standards and practices.

Hay Group observed that, with respect to a number of actuarial assumptions, actual past BERS experience differed somewhat from our expectations, based upon the fiscal 2010 valuation assumptions. We are therefore recommending that the Actuary consider the following changes to economic and demographic actuarial assumptions for future calculations of employer contributions and other actuarial uses for BERS.

Economic Actuarial Assumptions

The timing of the second engagement economic assumption study coincided with one of the worst financial and economic crises of the last century, which closely followed a period of great volatility in the financial markets relating to technology stocks. This made our study especially challenging, as many traditional approaches and factors used by financial professionals who make recommendations for economic assumptions may not apply in this environment, or may produce unsustainable results. The following table summarizes our recommended economic assumption changes for the NYCERS. Details regarding these conclusions can be found in the full Experience Study report.

Economic Assumptions	Current Assumptions (FY 2010)	Hay Group's Best-Estimate Range	Hay Group's Recommended Assumption
Inflation	2.50%	2.50% - 3.50%	3.00%
Investment Rate of Return	8.00%	6.50% - 7.50%	7.00%
Salary Increases	General Wage Increase of 3.00% (2.50% inflation plus .50% productivity increase) plus service-related increases	General Wage Increase of 3.00% - 4.00% (2.50% - 3.50% inflation plus a .50% productivity increase) plus service-related increases	General Wage Increase of 3.50% (3.00 inflation plus a .50% productivity increase)

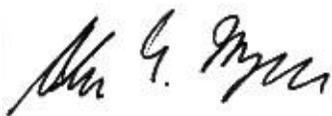
Demographic Actuarial Assumptions

As noted above, Hay Group observed that, with respect to a number of demographic actuarial assumptions, actual past BERS experience differed somewhat from our expectations, based upon the fiscal 2010 valuation assumptions. The following table summarizes our recommended demographic assumption changes for BERS. Details regarding these conclusions can be found in the full Experience Study report.

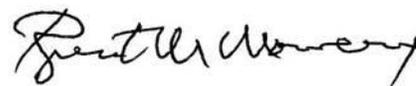
Summary of Recommendations Regarding Actuarial Assumptions	
Assumption	BERS
Service Retiree Mortality	Lower probabilities
Disabled Retiree Mortality	Lower probabilities
Active Member Withdrawals	Lower probabilities
Active Member Service Retirements In 1 st Year Eligible	Improved Retirement Program: No change Other: Higher probabilities at ages 57 and below; lower probabilities over age 57
Active Member Service Retirements In 2 nd Year Eligible	Improved Retirement Program: No change Other: No change for ages 62 and below; lower probabilities over age 62
Active Member Service Retirements After 2 nd Year Eligible	Improved Retirement Program: No change Other: Higher probabilities
Reduced Service Retirements	Higher probabilities at ages 57 and below; lower probabilities over age 57
Active Member Ordinary Mortality	Higher probabilities
Active Member Accidental Mortality	No change
Active Member Ordinary Disability	Higher probabilities
Active Member Accidental Disability	Lower probabilities for females under age 55; else, higher probabilities
Salary Increases – Merit Only	Lower increases at service levels below 12
Overtime Pay (OT) For All Years	No change (keep 0%)
OT in Year Before Service Retirement	No change (keep 0%)
OT in Year Before Disability Retirement	No change (keep 0%)

Note: Unless specifically noted otherwise, the impact listed in the chart is the overall net impact of the recommended assumption change.

Respectfully submitted,



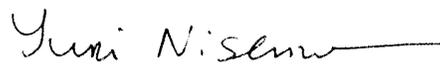
Adam E. Meyers, FSA, EA, MAAA, FCA



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Yuri Nisenzon, ASA, EA, MAAA, FCA



Leslie H. Richmond, ASA, EA, MAAA, FCA

Independent Actuary's Statement for the New York City Police Pension Fund ("POLICE")

Hay Group, Inc. ("Hay Group") was engaged by the Office of the Comptroller of the City of New York ("City") in June 2008 to conduct certain independent actuarial audits and reviews. As part of the engagement, Hay Group performed an audit of employer contributions to POLICE for fiscal year 2010, analyzed actual demographic and economic experience from June 30, 1988 through June 30, 2009, and reviewed POLICE's and the City's actuarial data gathering process.

Based on the audits, valuations, experience studies, and reviews we have conducted, we certify that the POLICE is being funded on sound financial, scientific and legal bases in order to attain the City's financing objectives.

Employer Contributions to POLICE for Fiscal Year 2010

The City's Office of the Actuary ("OA") is responsible for collecting all necessary actuarial data and calculating annual employer contributions to POLICE.

In general, we believe that the methodologies, procedures, and actuarial assumptions used by the OA to calculate fiscal year 2010 employer contributions to POLICE were reasonable and appropriate, and in accordance with generally accepted actuarial standards and practices. Hay Group confirms that these methods and assumptions are consistent with those adopted by POLICE's Board of Trustees and the laws promulgated by the State Legislature.

- The valuation data processes and procedures used by POLICE, in conjunction with those utilized by the OA, are structured to produce member data that is of sufficient quality and appropriateness to be suitable for use by the OA in performing the City's actuarial valuations. Such data is also suitable for actuarial experience studies.
- The demographic and economic assumptions used by the OA for determining employer contributions to POLICE are reasonable and appropriate.
- The employer contribution determined by the OA for POLICE for fiscal year 2010 (\$1,981 million) has been accurately determined, using reasonable methods. Based on our audit methodology, we believe that the City is using sound actuarial methodologies and that the OA is properly applying assumptions. It is also our opinion that the valuation software used by the OA is properly programmed and the results produced are proper valuations of the liabilities and contributions required for each System. The valuation software is leased from Buck Consultants ("Buck").

Financing Objectives

The City's funding policy is to contribute statutorily-required contributions. Together with member contributions and investment income, these statutorily-required contributions would ultimately be sufficient to pay benefits when due.

As Hay Group's audit results confirm, the OA is basing the calculation of the annual funding contribution for POLICE on appropriate data, assumptions and methods, and the calculations are being made accurately. The current assumptions and methods utilized by the OA are also designed to produce annual employer contributions that stay level as a percentage of payroll and to provide for intergenerational equity. Assuming continued funding of POLICE by the City on this basis, we believe the City's financing objectives can be achieved.

Appropriateness of the City's Actuarial Cost Method

The OA uses the Frozen Initial Liability Actuarial Cost Method. This is a well-known and widely accepted method for funding pension plans. In private sector pension funding, prior to recent legislation this method was one of the acceptable methods under the Internal Revenue Code and related regulations. In Hay Group's opinion, it is an actuarially sound method.

The OA applies a "one-year lag" methodology to calculate the contributions which fund the benefits payable from each System. Under this methodology, an Employer Contribution for FY 2010 is determined based on census and asset data as of June 30, 2008. Thus, the cost for benefits accruing (the "normal cost") during FY 2009 for new entrants to a System who first appear on the valuation census as of June 30, 2008 is spread, as a level percent of pay, over the remaining expected working lifetime of these new entrants. In effect, since the first contribution (for FY 2009) is skipped for new entrants, higher subsequent contributions are made - during the remaining expected working lifetime of these members - to fully fund the expected cost of future benefits. If all actuarial assumptions are met, the entire cost of an individual's benefit will be fully funded during his or her working lifetime. From this perspective, the one-year lag methodology is actuarially sound and an acceptable actuarial method for funding governmental plans. The analysis that Hay Group has performed on this methodology has confirmed that the OA's method exhibits this fundamental characteristic of actuarial soundness.

Appropriateness of the City's Actuarial Asset Valuation Method ("AAVM")

Hay Group's observations and conclusions regarding the AAVM are as follows:

- Hay Group reviewed the accuracy of the data inputs into the Actuarial Asset Value ("AAV") calculations. We believe that the asset data inputs used by the OA to compute the AAV are accurate.
- The AAV is not equal to the market value of assets. In such a case, Actuarial Standard of Practice (ASOP) No. 44, "Selection and Use of Asset Valuation Methods for Pension Plans," provides comments on characteristics of reasonable actuarial methods of valuing assets. We believe that overall, the AAVM is a reasonable method.
- Hay Group checked the mathematical calculations used by the OA to determine the AAV as of June 30, 2008 and we believe them to be arithmetically correct.

Based on the observations noted above, we believe that, overall, the AAVM used by the OA to calculate the AAV for each of the Systems is reasonable and is accurately applied.

Hay Group's Examination of Data Used by the OA in the Fiscal Year 2010 Employer Contribution Calculations

The OA performs a significant number of data checks and has made considerable improvements to the data processes over recent years. Every individual is accounted for through the OA's reconciliation process. This process maximizes data accuracy, ensures that records are not lost, and ensures that liabilities are not undervalued.

Hay Group performed a variety of reasonableness checks and found some minor data issues. We believe these issues are immaterial to the final pension contribution results, either because the issue is resolved appropriately in the OA's valuation process, or because the issue itself is very minor. Based on Hay Group's analysis of the data, we believe that the data provided to us is the same data used by the OA in the contribution calculations.

As part of the Administrative Review, the data processes and procedures were reviewed. These processes and procedures include data transferred from the Systems to the OA and from the OA to Buck.

It is our opinion that the data used to value the liabilities for POLICE is reasonable and accurate for liability determinations.

The OA and the Systems take various approaches to protecting member data and disaster recovery, and most could take steps to make improvements in these areas. Hay Group observed that POLICE's procedures in this regard are thorough. Unfortunately, during the course of the first engagement, POLICE experienced a data security breach, which was dealt with expeditiously and appropriately. To our knowledge, no further security breaches have occurred. POLICE would be well-advised to remain vigilant regarding threats to the security of sensitive member data.

Hay Group's Examination of Actual Demographic and Economic Experience and Comparisons to Current Actuarial Assumptions

Hay Group has completed its Experience Study of POLICE under the first engagement, including the following key steps:

- Studies of the actual demographic and economic experience of POLICE from June 30, 1988 through June 30, 2009;
- Comparisons between the actual experience of POLICE and the expected outcomes based upon the actuarial assumptions currently employed by the OA to calculate employer contributions required to fund POLICE; and
- Review of the appropriateness of the actuarial assumptions used for determining employer contributions to fund POLICE for fiscal year 2010.

Based upon the results of this Experience Study, we believe that the demographic and economic actuarial assumptions utilized for the fiscal year 2010 actuarial valuation of POLICE were reasonable and appropriate, and in accordance with generally accepted actuarial standards and practices.

Hay Group observed that, with respect to a number of actuarial assumptions, actual past POLICE experience differed somewhat from our expectations, based upon the fiscal 2010 valuation assumptions. We are therefore recommending that the Actuary consider the following changes to economic and demographic actuarial assumptions for future calculations of employer contributions and other actuarial uses for POLICE.

Economic Actuarial Assumptions

The timing of the second engagement economic assumption study coincided with one of the worst financial and economic crises of the last century, which closely followed a period of great volatility in the financial markets relating to technology stocks. This made our study especially challenging, as many traditional approaches and factors used by financial professionals who make recommendations for economic assumptions may not apply in this environment, or may produce unsustainable results. The following table summarizes our recommended economic assumption changes for the NYCRS. Details regarding these conclusions can be found in the full Experience Study report.

Economic Assumptions	Current Assumptions (FY 2010)	Hay Group's Best-Estimate Range	Hay Group's Recommended Assumption
Inflation	2.50%	2.50% - 3.50%	3.00%
Investment Rate of Return	8.00%	6.50% - 7.50%	7.00%
Salary Increases	General Wage Increase of 3.00% (2.50% inflation plus .50% productivity increase) plus service-related increases	General Wage Increase of 3.00% - 4.00% (2.50% - 3.50% inflation plus a .50% productivity increase) plus service-related increases	General Wage Increase of 3.50% (3.00% inflation plus a .50% productivity increase)

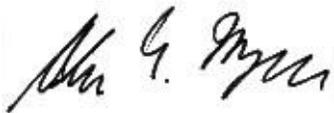
Demographic Actuarial Assumptions

As noted above, Hay Group observed that, with respect to a number of demographic actuarial assumptions, actual past POLICE experience differed somewhat from our expectations, based upon the fiscal 2010 valuation assumptions. The following table summarizes our recommended demographic assumption changes for POLICE. Details regarding these conclusions can be found in the full Experience Study report.

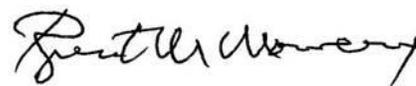
Summary of Recommendations Regarding Actuarial Assumptions	
Assumption	POLICE
Service Retiree Mortality	Higher probabilities for males over age 81; else, lower probabilities
Disabled Retiree Mortality	Higher probabilities for males under age 49 or over age 90 and females under age 59; else, lower probabilities
Active Member Withdrawals	Overall lower probabilities: Higher probabilities at service levels 5 to 10, lower at other service levels
Active Member Service Retirements In 1 st Year Eligible	Overall higher probabilities
Active Member Service Retirements In 2 nd Year Eligible	Lower probabilities
Active Member Service Retirements After 2 nd Year Eligible	Lower probabilities
Reduced Service Retirements	N/A
Active Member Ordinary Mortality	M:Lower probabilities F:No change
Active Member Accidental Mortality	Higher probabilities for ages 35 and over; lower probabilities under age 35
Active Member Ordinary Disability	Lower probabilities
Active Member Accidental Disability	With WTC code: Higher probabilities; Without WTC code: Lower probabilities
Salary Increases – Merit Only	Higher increases at service 5 and under; lower increase at service over 5
Overtime Pay (OT) For All Years	Higher OT for service levels of 25 and under; lower for service levels over 25
OT in Year Before Service Retirement	Higher OT at service of 19 and under; lower at service over 19
OT in Year Before Disability Retirement	Higher OT at service 15 and over; lower at service under 15

Note: Unless specifically noted otherwise, the impact listed in the chart is the overall net impact of the recommended assumption change.

Respectfully submitted,



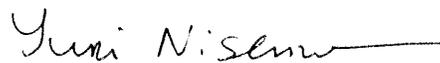
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Leslie H. Richmond, ASA, EA, MAAA, FCA

Independent Actuary's Statement for the New York City Fire Department Pension Fund ("FIRE")

Hay Group, Inc. ("Hay Group") was engaged by the Office of the Comptroller of the City of New York ("City") in June 2008 to conduct certain independent actuarial audits and reviews. As part of the engagement, Hay Group performed an audit of employer contributions to FIRE for fiscal year 2010, analyzed actual demographic and economic experience from June 30, 1988 through June 30, 2009, and reviewed FIRE's and the City's actuarial data gathering process.

Based on the audits, valuations, experience studies, and reviews we have conducted, we certify that the FIRE is being funded on sound financial, scientific and legal bases in order to attain the City's financing objectives.

Employer Contributions to FIRE for Fiscal Year 2010

The City's Office of the Actuary ("OA") is responsible for collecting all necessary actuarial data and calculating annual employer contributions to FIRE.

In general, we believe that the methodologies, procedures, and actuarial assumptions used by the OA to calculate fiscal year 2010 employer contributions to FIRE were reasonable and appropriate, and in accordance with generally accepted actuarial standards and practices. Hay Group confirms that these methods and assumptions are consistent with those adopted by FIRE's Board of Trustees and the laws promulgated by the State Legislature.

- The valuation data processes and procedures used by FIRE, in conjunction with those utilized by the OA, are structured to produce member data that is of sufficient quality and appropriateness to be suitable for use by the OA in performing the City's actuarial valuations. Such data is also suitable for actuarial experience studies.
- The demographic and economic assumptions used by the OA for determining employer contributions to FIRE are reasonable and appropriate.
- The employer contribution determined by the OA for FIRE for fiscal year 2010 (\$874 million) has been accurately determined, using reasonable methods. Based on our audit methodology, we believe that the City is using sound actuarial methodologies and that the OA is properly applying assumptions. It is also our opinion that the valuation software used by the OA is properly programmed and the results produced are proper valuations of the liabilities and contributions required for each System. The valuation software is leased from Buck Consultants ("Buck").

Financing Objectives

The City's funding policy is to contribute statutorily-required contributions. Together with member contributions and investment income, these statutorily-required contributions would ultimately be sufficient to pay benefits when due.

As Hay Group's audit results confirm, the OA is basing the calculation of the annual funding contribution for FIRE on appropriate data, assumptions and methods, and the calculations are being made accurately. The current assumptions and methods utilized by the OA are also designed to produce annual employer contributions that stay level as a percentage of payroll and to provide for intergenerational equity. Assuming continued funding of FIRE by the City on this basis, we believe the City's financing objectives can be achieved.

Appropriateness of the City's Actuarial Cost Method

The OA uses the Frozen Initial Liability Actuarial Cost Method. This is a well-known and widely accepted method for funding pension plans. In private sector pension funding, prior to recent legislation this method was one of the acceptable methods under the Internal Revenue Code and related regulations. In Hay Group's opinion, it is an actuarially sound method.

The OA applies a "one-year lag" methodology to calculate the contributions which fund the benefits payable from each System. Under this methodology, an Employer Contribution for FY 2010 is determined based on census and asset data as of June 30, 2008. Thus, the cost for benefits accruing (the "normal cost") during FY 2009 for new entrants to a System who first appear on the valuation census as of June 30, 2008 is spread, as a level percent of pay, over the remaining expected working lifetime of these new entrants. In effect, since the first contribution (for FY 2009) is skipped for new entrants, higher subsequent contributions are made - during the remaining expected working lifetime of these members - to fully fund the expected cost of future benefits. If all actuarial assumptions are met, the entire cost of an individual's benefit will be fully funded during his or her working lifetime. From this perspective, the one-year lag methodology is actuarially sound and an acceptable actuarial method for funding governmental plans. The analysis that Hay Group has performed on this methodology has confirmed that the OA's method exhibits this fundamental characteristic of actuarial soundness.

Appropriateness of the City's Actuarial Asset Valuation Method ("AAVM")

Hay Group's observations and conclusions regarding the AAVM are as follows:

- Hay Group reviewed the accuracy of the data inputs into the Actuarial Asset Value ("AAV") calculations. We believe that the asset data inputs used by the OA to compute the AAV are accurate.
- The AAV is not equal to the market value of assets. In such a case, Actuarial Standard of Practice (ASOP) No. 44, "Selection and Use of Asset Valuation Methods for Pension Plans," provides comments on characteristics of reasonable actuarial methods of valuing assets. We believe that overall, the AAVM is a reasonable method.
- Hay Group checked the mathematical calculations used by the OA to determine the AAV as of June 30, 2008 and we believe them to be arithmetically correct.

Based on the observations noted above, we believe that, overall, the AAVM used by the OA to calculate the AAV for each of the Systems is reasonable and is accurately applied.

Hay Group's Examination of Data Used by the OA in the Fiscal Year 2010 Employer Contribution Calculations

The OA performs a significant number of data checks and has made considerable improvements to the data processes over recent years. Every individual is accounted for through the OA's reconciliation process. This process maximizes data accuracy, ensures that records are not lost, and ensures that liabilities are not undervalued.

Hay Group performed a variety of reasonableness checks and found some minor data issues. We believe these issues are immaterial to the final pension contribution results, either because the issue is resolved appropriately in the OA's valuation process, or because the issue itself is very minor. Based on Hay Group's analysis of the data, we believe that the data provided to us is the same data used by the OA in the contribution calculations.

As part of the Administrative Review, the data processes and procedures were reviewed. These processes and procedures include data transferred from the Systems to the OA and from the OA to Buck.

It is our opinion that the data used to value the liabilities for FIRE is reasonable and accurate for liability determinations.

The OA and the Systems take various approaches to protecting member data and disaster recovery, and most could take steps to make improvements in these areas. Hay Group observed that FIRE's procedures in this regard are thorough. FIRE would be well-advised to remain vigilant regarding threats to the security of sensitive member data.

Hay Group's Examination of Actual Demographic and Economic Experience and Comparisons to Current Actuarial Assumptions

Hay Group has completed its Experience Study of FIRE under the first engagement, including the following key steps:

- Studies of the actual demographic and economic experience of FIRE from June 30, 1988 through June 30, 2009;
- Comparisons between the actual experience of FIRE and the expected outcomes based upon the actuarial assumptions currently employed by the OA to calculate employer contributions required to fund FIRE; and
- Review of the appropriateness of the actuarial assumptions used for determining employer contributions to fund FIRE for fiscal year 2010.

Based upon the results of this Experience Study, we believe that the demographic and economic actuarial assumptions utilized for the fiscal year 2010 actuarial valuation of FIRE were reasonable and appropriate, and in accordance with generally accepted actuarial standards and practices.

Hay Group observed that, with respect to a number of actuarial assumptions, actual past FIRE experience differed somewhat from our expectations, based upon the fiscal 2010 valuation assumptions. We are therefore recommending that the Actuary consider the following changes to economic and demographic actuarial assumptions for future calculations of employer contributions and other actuarial uses for FIRE.

Economic Actuarial Assumptions

The timing of the second engagement economic assumption study coincided with one of the worst financial and economic crises of the last century, which closely followed a period of great volatility in the financial markets relating to technology stocks. This made our study especially challenging, as many traditional approaches and factors used by financial professionals who make recommendations for economic assumptions may not apply in this environment, or may produce unsustainable results. The following table summarizes our recommended economic assumption changes for the NYCERS. Details regarding these conclusions can be found in the full Experience Study report.

Economic Assumptions	Current Assumptions (FY 2010)	Hay Group's Best-Estimate Range	Hay Group's Recommended Assumption
Inflation	2.50%	2.50% - 3.50%	3.00%
Investment Rate of Return	8.00%	6.50% - 7.50%	7.00%
Salary Increases	General Wage Increase of 3.00% (2.50% inflation plus .50% productivity increase) plus service-related increases	General Wage Increase of 3.00% - 4.00% (2.50% - 3.50% inflation plus a .50% productivity increase) plus service-related increases	General Wage Increase of 3.50% (3.00 inflation plus a 50% productivity increase)

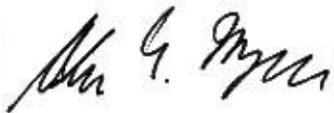
Demographic Actuarial Assumptions

As noted above, Hay Group observed that, with respect to a number of demographic actuarial assumptions, actual past FIRE experience differed somewhat from our expectations, based upon the fiscal 2010 valuation assumptions. The following table summarizes our recommended demographic assumption changes for FIRE. Details regarding these conclusions can be found in the full Experience Study report.

Summary of Recommendations Regarding Actuarial Assumptions	
Assumption	FIRE
Service Retiree Mortality	Higher probabilities for male ages 44-52 and female ages 58-61; else, lower probabilities
Disabled Retiree Mortality	Higher probabilities for males under 58 and female ages 37-58; else, lower probabilities
Active Member Withdrawals	Higher probabilities at service levels under 9; lower probabilities at service 9 and over
Active Member Service Retirements In 1 st Year Eligible	Lower probabilities
Active Member Service Retirements In 2 nd Year Eligible	Lower probabilities
Active Member Service Retirements After 2 nd Year Eligible	Lower probabilities
Reduced Service Retirements	N/A
Active Member Ordinary Mortality	Lower probabilities
Active Member Accidental Mortality	Lower probabilities
Active Member Ordinary Disability	No change
Active Member Accidental Disability	With WTC code: Higher probabilities; Without WTC code: No change
Salary Increases – Merit Only	Higher increases at service levels 15 and under; lower increases at service over 15
Overtime Pay (OT) For All Years	Higher OT at service levels 0-26; lower at service over 26
OT in Year Before Service Retirement	Higher OT at service levels 17-33; lower at other service levels
OT in Year Before Disability Retirement	Higher OT at service levels 32 and under; lower at service over 32

Note: Unless specifically noted otherwise, the impact listed in the chart is the overall net impact of the recommended assumption change.

Respectfully submitted,



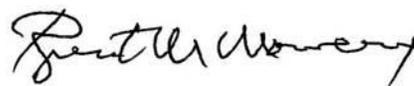
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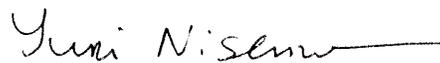
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