

**CITY OF NEWTON**

**SELF INSURED  
WORKERS COMPENSATION  
FUNDING STUDY**

**AS OF JUNE 30, 2010**

**OCTOBER 18, 2010**



October 18, 2010

Mr. David C. Wilkinson  
Comptroller  
City of Newton  
Commonwealth Avenue and Walnut St.  
Newton Centre, MA 02159

Dear David:

Enclosed you will find our report regarding the City's self funded Workers Compensation program as of June 30, 2010.

Indicated outstanding losses and funding for the coming year are very similar to last year's indications.

It has been a pleasure being of service again to the City. Please feel free to contact me if you have any questions regarding this report.

Sincerely,

Robert W. Van Epps, FCAS, MAAA  
Managing Principal

# CITY OF NEWTON

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# CITY OF NEWTON

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## **INTRODUCTION**

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Financial Risk Analysts, LLC has been retained by the City of Newton (the City) to provide actuarial services regarding its self funded Workers Compensation program. The City has been fully self-funded on a pay as you go basis since at least 1956. Claims are handled by the City's Personnel Department which administers and processes benefits payments. Excess Workers Compensation coverage is not purchased and the City therefore assumes unlimited exposure to loss.

Financial Risk Analysts has been retained to provide indicated liability levels for the City's self funded Workers Compensation losses as of June 30, 2010. In addition, we have been requested to provide an indicated contribution to the self insurance fund for the one year period beginning July 1, 2010.

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## **CONDITIONS AND LIMITATIONS**

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### ***GENERAL***

Throughout this report and its exhibits the term "loss" is used to refer to both losses and allocated loss adjustment expenses (ALAE). ALAE provides for all expenses associated with the handling and settling of claims that can be directly attributable to a particular claim. Such expenses typically include claim handling fees, legal fees, investigatory expenses, medical reports, expert witness fees, rehabilitation costs, etc. No other costs associated with the City's self insured Workers Compensation program other than losses and ALAE have been considered in this report.

### ***DATA***

In this report we have used historical data and other information provided to us by the City of Newton. This data consist primarily of historical loss and exposure information for the City. In addition we have relied on various oral representations made to us by employees of the City. Although the data supplied have been reviewed for purposes of reasonability, we have not independently audited or verified this information and we assume it to be accurate and complete.

The results of our analysis will be contingent upon the reliability of the information supplied to us and such reliability is the responsibility of the City. Should the City become aware of any significant discrepancies in the data reported to us we should be notified of such discrepancies and this report will be amended, if necessary.

We were provided with the following data:

- Accident year losses paid during fiscal years 1988-2010 for General Government employees. Losses paid prior to 1988 were not provided to us. The term "accident year" refers to the year in which the accident leading to the injury took place. "Losses" refers to benefits paid for either indemnity (lost wages) or medical benefits.

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- Data and information for long term disability and death cases. These are referred to as "pension cases".
- Covered payroll information by class code for Fiscal Years 1992-2010 and estimated payroll for fiscal year 2011.

We have made various assumptions to adjust for any missing or incomplete data. The City should recognize, however, that given the considerable breadth and scope of its self funded program, the relatively limited data available increases the uncertainty associated with this actuarial study. The City does not fully establish case reserves for reported Workers Compensation cases. We encourage the City to establish procedures whereby such reserves are set up for all claims. This will considerably increase the accuracy of future actuarial studies and should also improve the City's ability to manage the self insurance program.

In performing our analysis we also relied on data and information obtained from insurance industry sources to supplement the actual historical data provided to us by the City. Such data include loss development patterns, loss trend factors, loss payout patterns, and benefit level changes for Massachusetts Workers Compensation.

### ***UNCERTAINTY***

Actuarial projections, by their nature, are estimates of future contingent events that cannot be known with certainty. The ultimate liability of the City for its retained losses will be subject to events that have yet to occur such as the size of future Workers Compensation awards, future economic conditions, and the propensity for workers to file claims for Workers Compensation. No assumptions have been made in this report as to any extraordinary changes in the legal, social, or judicial environment that might affect future losses.

While we believe the results presented in this report are reasonable and reflect the use of accepted actuarial principles and standards of practice, it is possible that actual future loss results of the City will differ, perhaps materially, from those projected herein. In particular, as noted

## **CITY OF NEWTON**

previously, the lack of complete historical loss information and case reserve estimates increases the degree of uncertainty in our loss estimates. In addition, since excess coverage is not purchased, the City is exposed to unlimited losses, which further increases the uncertainty associated with our projections. Nothing in this report should be construed as a warranty or guarantee as to the adequacy of the liability estimates contained herein.

### ***ASSET QUALITY/INVESTMENT INCOME***

No attempt has been made to evaluate the quality of the invested or non invested assets supporting the loss and ALAE liabilities of the City. It has been assumed that the City's loss and ALAE liabilities are supported by creditworthy assets with minimal risk of default and/or capital loss.

In this report we present the pension case losses on a discounted basis. This is a generally accepted approach for purposes of establishing liabilities for claims with fixed and determinable payment levels. Discounted reserves reflect the time value of money and represent the present value as of June 30, 2010 of the expected future loss payments.

For purposes of discounting the pension case loss estimates we used an annual interest rate of 5.0%, as selected by the City. It is important to note that interest/appreciation earned on the assets supporting these liabilities should be credited to the self insurance fund. Alternatively, future years' contributions to the self insurance fund can be increased to offset the interest amortization. Financial Risk Analysts, LLC renders no opinion on the reasonability of the use of a 5.0% rate of return or on the ability of the City to earn at least 5.0% on the invested assets supporting the self insurance liabilities.

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## **DISTRIBUTION AND USE**

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This report is provided solely for the use of the City of Newton in evaluating its self funded Workers Compensation liabilities as of June 30, 2010. A copy of this report may also be provided to the City's auditors with the proviso that the report is copied in its entirety and that each party receiving a copy of this report agrees to not distribute the report to any other third party.

Distribution of this report to parties other than those referenced above is not authorized without the express written consent of Financial Risk Analysts, LLC.



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## **SUMMARY AND CONCLUSIONS**

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### **Indicated Liabilities as Of June 30, 2010**

Exhibit 1.1 presents the results of our analysis by type of loss. Based upon our analysis we are recommending the following liability for expected losses as of June 30, 2010:

<b>General Government Workers Compensation Self Insured Liability As of June 30, 2010</b>	
Other Than Pension Cases	\$1,576,621
Pension Cases	\$5,108,240
<b>Total Liability</b>	<b>\$6,684,861</b>

The liability indication provided above is intended to provide for all General Government Workers Compensation losses incurred by the City from inception of its self funded program through June 30, 2010 under the terms and conditions of its statutory obligations.

The above liability provides for what is commonly known as "expected losses." Expected losses represent the best estimate of the City's outstanding losses as of June 30, 2010 and reflect a statistical confidence level of approximately 53%. This means there is a 53% likelihood that actual losses will be less than or equal to expected losses.

Any actuarial estimate of loss reserves is subject to inherent variability. While expected losses represent the best estimate of losses to be incurred, actual losses in any given year can be expected to differ from expected losses. Funding at expected loss levels will entail a degree of risk (47%) that reserve levels will be exceeded. If the City wishes to fund at a level with a higher degree of statistical confidence, i.e. with a lower probability of reserves being inadequate, it may wish to fund at a higher loss level than that indicated by expected losses.

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The liabilities indicated above include a provision for the following:

- Losses on claims that have occurred but that are not yet known and not yet reported to the City. These claims are part of the reserve provision known as *IBNR* or *Incurring But Not Reported*.
- Future loss development on known, recorded claims. This is also considered a part of the IBNR reserve.

### **Indicated Funding For Fiscal Year 2011**

As displayed on Exhibit 1.2 we indicate the City fund \$1,011,345 for expected losses occurring during the period July 1, 2010 to June 30, 2011. The indicated funding level is based on estimated payroll as shown on Exhibit 1.2 of approximately \$41.7 million for General Government employees. The fiscal year 2011 funding is intended to provide solely for losses occurring during the period July 1, 2010-2011. It does not include a provision to amortize any surplus or deficit in the fund balance as of June 30, 2010. The City may wish to make an adjustment to the extent a surplus or deficit exists.

As also shown on Exhibit 1.2 we are projecting an overall pure premium of \$2.43 for fiscal year 2011. A pure premium is defined as expected losses per unit of exposure. Losses are defined as previously noted. For Workers Compensation the standard exposure unit is \$100 of payroll. No other costs or expenses associated with the operation of the self funded program are included in our estimates.

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## ANALYSIS

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### BACKGROUND INFORMATION

This analysis reviews the City of Newton's self funded Workers Compensation program as of June 30, 2010. The City has been self funded for a considerable period of time. The actual inception date is unknown. The data provided to us include claims with date of loss going back to 1956. Our analysis therefore includes loss estimates for accident years 1956 through 2010. We have assumed no liability exists for years prior to 1956.

As mentioned previously, the data provided to us does not include any payments made on claims closed prior to 1988 nor does it include payments made prior to 1988 on all other claims.

### ASSUMPTIONS AND METHODOLOGY

#### **Indicated Outstanding Losses**

We have used two commonly applied actuarial methodologies to estimate the City's outstanding indemnity losses. For medical only claims, only the paid loss development method has been used. For other than medical only claims, the Bornhuetter-Ferguson paid loss method was used. From the results of these approaches final loss selections were made. The following is a detailed description of each of the methodologies used.

- **Paid Loss Development Method**

The paid loss development method is a method in which paid losses are projected to an ultimate level based on historical development patterns. An analysis of the changes in accident year incurred losses between various valuation points provides a basis for estimating future changes. Paid losses are projected to an ultimate level based on historical paid loss development patterns. This method assumes that loss settlement and payment patterns have remained reasonably stable over time.

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Paid loss development patterns have been derived from the City's own historical loss experience supplemented with insurance industry experience. Loss development factors are shown on Exhibits 5.1-5.3.

The actual historical loss experience of the City is shown on Exhibits 5.1-5.3. Because medical only claims are paid and closed in a relatively short period of time, we have been able to use the payment history provided to us by the City as the basis for making medical only claims projections.

For claims with indemnity experience displayed on Exhibits 5.1-5.2, we have had to adjust the losses to reflect the missing payments made prior to 1988. The losses have been adjusted using historical experience for the City and the industry. Adjusted losses are presented on Exhibits 5.1 and 5.2 and these are used for purposes of selecting loss development factors.

- **Bornhuetter-Ferguson Paid Loss Method**

This approach is essentially a credibility weighted average of two other reserving methods; the paid loss development method and the expected loss method. The expected loss method simply sets the indicated reserve equal to the difference between expected losses and paid losses. It produces very stable results but fails to incorporate actual results as they emerge.

The Bornhuetter-Ferguson method blends the paid loss development method and the expected loss method by splitting expected losses into two distinct pieces; expected paid losses and expected unpaid losses. As an accident year matures, the expected paid losses are replaced with actual reported losses plus expected unreported losses. Thus, as the year matures, the initial expected incurred loss estimate becomes less important while the actual paid loss experience increases in importance. In order to use this method, one must estimate both the initial expected losses and the expected loss payment pattern.

For fiscal years 2009 and 2010 initial expected indemnity losses are derived on Exhibit 3.1. They are based on results for the more recent years projected to current benefit and trend levels. Years prior to 2009 have been left unchanged from our previous analysis. Expected

## CITY OF NEWTON

loss payment patterns are developed from the paid loss development factors on Exhibits 5.1 and 5.2.

We relied on the results of the Bornhuetter-Ferguson approach. The more recent years will be the most uncertain ones and will exhibit the greatest volatility. Use of the Bornhuetter-Ferguson approach will dampen this volatility and should produce more stable and reliable results. The results of this method appear on Exhibit 2.1.

Note that for both methods adjusted paid losses rather than actual paid losses have been used. Our results therefore produce a valid estimate of ultimate losses for a particular year even though payments made prior to 1988 are missing.

### Pension Cases

Pension cases have been analyzed separately on Exhibit 2.3. US Life Tables 2001 Vital Statistics for Males and Females have been used to determine annuity values for these claims using a 5.0% annual rate of interest. Amortizing such claims for mortality and interest is a common practice when establishing liabilities for these types of claims.

It has been assumed for the permanent total and death claims that benefits will be payable for life. For the temporary disability claims it has been assumed that benefits will be paid for the statutory maximum eleven years.

Effective July 1, 1999 the City elected to opt out of the Massachusetts Workers Compensation Trust Fund. As a result the City's liability for pension claims increased significantly. Prior to July 1, 1999, the City's net liability for pension claims was limited to the base benefit for each claim. The base benefit is the benefit established at the time of injury. It is a function of the injured worker's salary at the time of injury.

Benefits for pension claims are subject to annual cost of living adjustments. As a participant in the Trust Fund the City was not responsible for paying cost of living adjustments. By opting out the City is now responsible for paying a benefit equal to the initial base benefit plus the

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accumulated cost of living adjustments. In addition, the City will be responsible for paying future cost of living adjustments. We used a 3.5% annual cost of living adjustment in the pension claim calculation. Offsetting this somewhat is the fact that the City will no longer be subject to assessment by the Trust Fund.

### **Fiscal Year 2011 Funding**

Exhibit 1.2 displays recommended funding separately for non-pension indemnity and medical claims for the July 1, 2010-2011 period. Funding is determined by multiplying the pure premium in column (1) by the covered payroll in column (2). The City may wish to adjust the indicated funding if actual payroll amounts are different from those displayed on Exhibit 1.2. A provision for pension claims has also been included based on the City's historical experience for these types of claims.

Based on the payroll data provided to us, we are indicating funding of \$1,011,345 for General Government employees. Overall, our analysis produces indicated funding of \$2.43 per \$100 of payroll for General Government employees. This consists of \$2.02 for non-pension indemnity claims, \$0.16 for medical only claims, and \$0.25 for pension claims.

**CITY OF NEWTON**

Exhibit 1.1

WORKERS COMPENSATION  
INDICATED LIABILITY  
AS OF JUNE 30, 2010  
SUMMARY OF RESULTS

<b>Indicated Liability As of June 30, 2010</b>	
GENERAL GOVERNMENT	
A. Other Than Pension Claims	\$1,576,621
B. Pension Claims	\$5,108,240
C. Total	<u>\$6,684,861</u>

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- A. Exhibits 2.1 and 2.2
  - B. Exhibit 2.3

**CITY OF NEWTON**

WORKERS COMPENSATION  
INDICATED FUNDING  
FISCAL YEAR 2011

	<u>Expected Loss Cost</u> (1)	<u>Exposure (Payroll \$00)</u> (2)	<u>Expected Losses</u> (3)=(1)x(2)
<u>Non-Pension Claims</u>			
Indemnity	\$2.02	\$416,654	841,641
<u>Medical Only</u>	<u>\$0.16</u>	\$416,654	<u>66,665</u>
Total	\$2.18		908,306
Pension Claims			103,039
TOTAL	\$2.43		1,011,345

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(1) Exhibits 3.1 and 3.2

(2) Exhibit 6



## CITY OF NEWTON

WORKERS COMPENSATION  
INDEMNITY  
INDICATED OUTSTANDING LOSSES  
FISCAL YEARS 1988-2010

Fiscal Year	Exposure	Initial Expected Pure Premium	Initial Expected Losses	Expected Percent of Losses Paid	Paid Losses	
					Actual	Expected
(1)	(2)	(3)	(4)=(2)x(3)	(5)	(6)	(7)=(4)x(5)
1988	\$207,265	\$4.90	\$1,015,599	100.0%	\$731,803	\$1,015,599
1989	217,129	5.16	1,120,386	100.0%	\$550,947	1,120,386
1990	220,084	5.39	1,186,253	100.0%	403,358	1,186,253
1991	222,813	5.00	1,114,065	100.0%	1,043,766	1,114,065
1992	226,774	4.63	1,049,964	100.0%	525,993	1,049,964
1993	233,157	4.74	1,105,164	100.0%	361,292	1,105,164
1994	253,882	4.22	1,071,382	100.0%	362,024	1,071,382
1995	256,823	4.41	1,132,589	100.0%	490,317	1,132,589
1996	270,263	4.04	1,091,863	100.0%	356,685	1,091,863
1997	282,380	2.58	728,540	100.0%	727,631	728,540
1998	287,177	2.73	783,993	100.0%	429,643	783,993
1999	309,695	2.56	792,819	100.0%	316,195	792,819
2000	314,406	1.85	581,651	100.0%	677,135	581,651
2001	322,083	1.89	608,737	99.8%	506,773	607,520
2002	354,569	1.80	638,224	99.2%	594,958	633,118
2003	362,190	1.94	702,649	98.3%	1,222,594	690,704
2004	362,318	1.85	670,288	96.9%	782,021	649,509
2005	365,553	2.00	731,106	94.1%	797,111	687,971
2006	378,519	2.01	760,823	90.0%	423,686	684,741
2007	405,875	2.02	819,868	82.6%	567,703	677,211
2008	415,644	2.13	885,322	71.8%	711,641	635,661
2009	414,492	2.13	882,868	58.4%	795,191	515,595
2010	420,324	2.08	874,274	26.5%	223,339	231,683
Total	\$7,103,415		\$20,348,427		\$13,601,806	\$18,787,981

Fiscal Year	Expected Percent of Losses Unpaid	Expected Unpaid Losses	Indicated Ultimate Losses	Indicated Ultimate Pure Premium
(1)	(8)=1.0-(5)	(9)=(8)x(4)	(10)=(6)+(9)	(11)=(10)/(2)
1988	0.0%	\$0	\$731,803	\$3.53
1989	0.0%	0	550,947	2.54
1990	0.0%	0	403,358	1.83
1991	0.0%	0	1,043,766	4.68
1992	0.0%	0	525,993	2.32
1993	0.0%	0	361,292	1.55
1994	0.0%	0	362,024	1.43
1995	0.0%	0	490,317	1.91
1996	0.0%	0	356,685	1.32
1997	0.0%	0	727,631	2.58
1998	0.0%	0	429,643	1.50
1999	0.0%	0	316,195	1.02
2000	0.0%	0	677,135	2.15
2001	0.2%	1,217	507,990	1.58
2002	0.8%	5,106	600,064	1.69
2003	1.7%	11,945	1,234,539	3.41
2004	3.1%	20,779	802,800	2.22
2005	5.9%	43,135	840,246	2.30
2006	10.0%	76,082	499,768	1.32
2007	17.4%	142,657	710,360	1.75
2008	28.2%	249,661	961,302	2.31
2009	41.6%	367,273	1,162,464	2.80
2010	73.5%	642,591	865,930	2.06
Total		\$1,560,446	\$15,162,252	\$2.13

(2) Exhibit 6

(3) Exhibit 3.2 for 2009 and 2010. Prior years from 6/30/09 analysis.

(5) Reciprocal of cumulative factors from Exhibits 5.1 and 5.2.

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WORKERS COMPENSATION  
 MEDICAL ONLY  
 INDICATED OUTSTANDING LOSSES

Fiscal Year (1)	Paid Losses (2)	Development Factor (3)	Indicated Ultimate Losses (4)=(2)x(3)	Indicated Outstanding Losses (5)=(4)-(2)
1992	\$50,185	1.000	\$50,185	\$0
1993	55,048	1.000	55,048	0
1994	41,715	1.000	41,715	0
1995	30,253	1.000	30,253	0
1996	38,256	1.000	38,256	0
1997	52,656	1.000	52,656	0
1998	21,654	1.000	21,654	0
1999	26,186	1.000	26,186	0
2000	29,828	1.000	29,828	0
2001	52,518	1.000	52,518	0
2002	57,813	1.000	57,813	0
2003	48,175	1.000	48,175	0
2004	97,765	1.000	97,765	0
2005	54,109	1.002	54,217	108
2006	45,839	1.004	46,022	183
2007	63,186	1.011	63,881	695
2008	53,967	1.036	55,910	1,943
2009	36,677	1.072	39,318	2,641
2010	16,700	1.635	27,305	10,605
<b>TOTAL</b>	<b>\$872,530</b>		<b>\$888,705</b>	<b>\$16,175</b>

(2), (3) Exhibit 5.3

**CITY OF NEWTON**

**WORKERS COMPENSATION  
PENSION CLAIMS**

<b>Permanent Total Disability Claims</b>						
<u>Claimant Name</u> (1)	<u>Sex</u> (2)	<u>Date Of Birth</u> (3)	<u>Nearest Age</u> (4)	<u>Net Weekly Benefit</u> (5)	<u>Annuity Factor</u> (6)	<u>Present Value Of Benefit</u> (7)
Brennan, Lawrence	M	12/29/51	59	\$784.68	16.907	\$689,862
Forte, Salvatore	M	08/19/32	78	\$914.03	7.685	365,265
Gentile, Joseph	M	08/24/25	85	\$903.43	5.179	243,301
Hayes, Thomas	M	08/27/49	61	\$1,086.50	15.836	894,702
Kelly, Stephen	M	12/07/27	83	\$1,083.11	5.813	327,398
Machain, Eugene	M	12/05/36	74	\$626.60	9.393	306,054
Marchand, Kathleen	F	07/02/21	89	\$727.81	4.842	183,251
McMahon, Robert	M	09/14/44	66	\$1,059.52	13.234	729,128
Piselli, Lawrence	M	10/03/26	84	\$945.41	5.490	269,896
<b>TOTAL</b>						<b>\$4,008,857</b>

<b>Widow Claims</b>						
<u>Claimant Name</u> (1)	<u>Sex</u> (2)	<u>Date Of Birth</u> (3)	<u>Nearest Age</u> (4)	<u>Net Weekly Benefit</u> (5)	<u>Annuity Factor</u> (6)	<u>Present Value Of Benefit</u> (7)
Adams, Barbara	F	12/03/38	72	\$766.24	12.198	486,023
Cardarelli, Catherine	F	08/07/48	62	\$643.48	17.604	589,047
<b>TOTAL</b>						<b>\$1,075,070</b>

<b>Temporary Disability Claims</b>						
<u>Claimant Name</u> (1)	<u>Sex</u> (2)	<u>Date Of Birth</u> (3)	<u>Nearest Age</u> (4)	<u>Net Weekly Benefit</u> (5)	<u>Annuity Factor</u> (6)	<u>Present Value Of Benefit</u> (7)
Hooker, Michael	M	12/12/61	49	\$467.55	1.000	24,313
<b>TOTAL</b>						<b>\$24,313</b>

<b>GRAND TOTAL PENSION CASES</b>	<b>\$5,108,240</b>
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**CITY OF NEWTON**

Exhibit 3.1

WORKERS COMPENSATION  
INDEMNITY  
PROJECTED PURE PREMIUMS

Fiscal Year (1)	Initial Projected Ultimate Losses (2)	Exposure (3)	Developed Pure Premium (4)=(2)/(3)	Benefit Level Adjust. Factor (5)	Trend Factor To 1/1/11 (6)	On Level Pure Premium (7)
2002	599,718	354,569	1.69	1.057	0.775	1.38
2003	1,243,378	362,190	3.43	1.055	0.797	2.88
2004	807,046	362,318	2.23	1.055	0.820	1.93
2005	847,329	365,553	2.32	1.048	0.844	2.05
2006	470,715	378,519	1.24	1.037	0.868	1.12
2007	687,488	405,875	1.69	1.026	0.893	1.55
2008	991,316	415,644	2.39	1.015	0.919	2.23
2009	1,362,162	414,492	3.29	1.003	0.945	3.12
2010	841,765	420,324	2.00	1.000	0.972	1.94
8. MEAN						2.02
9. LATEST 5						1.99
10. LATEST 3						2.43
11. BEST 3						1.91
12. SELECTED						2.02
				(13)	(14)	(15)
				SELECTED	ON LEVEL FACTOR	TRENDED ON LEVEL
				2.02	0.948	2.13
				2.02	0.972	2.08
				2.02	1.000	2.02

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- (2) Exhibit 4.1
  - (3) Exhibit 6
  - (5) Based on Massachusetts benefit level changes
  - (6) -2.8% annual trend based on 2010 WCRIB MA filing
  - (7) (4) x (5) x (6)
  - (14) (5) x (6)
  - (15) (13)/(14)

WORKERS COMPENSATION  
 MEDICAL ONLY  
 PROJECTED PURE PREMIUMS

Fiscal Year (1)	Initial Projected Ultimate Losses (2)	Exposure (3)	Developed Pure Premium (4)=(2)/(3)	Benefit Level Adjust. Factor (5)	Trend Factor To 1/1/11 (6)	On Level Pure Premium (7)
2002	57,813	354,569	0.16	1.101	1.045	0.18
2003	48,175	362,190	0.13	1.068	1.040	0.14
2004	97,765	362,318	0.27	1.046	1.035	0.29
2005	54,217	365,553	0.15	1.034	1.030	0.16
2006	46,022	378,519	0.12	1.032	1.025	0.13
2007	63,881	405,875	0.16	1.032	1.020	0.17
2008	55,910	415,644	0.13	1.032	1.015	0.14
2009	39,318	414,492	0.09	1.024	1.010	0.09
2010	27,305	420,324	0.06	1.000	1.005	0.06
8. MEAN						0.15
9. LATEST 5						0.12
10. LATEST 3						0.10
11. BEST 3						0.12
12. SELECTED						0.16
				(13)	(14)	(15)
				2011 SELECTED	ON LEVEL FACTOR	TRENDED ON LEVEL
				0.16	1.000	0.16

- (2) Exhibit 4.2
- (3) Exhibit 6
- (5) Based on Massachusetts benefit level changes
- (6) +0.5% annual trend based on 2010 WCRIB MA filing
- (7) (4) x (5) x (6)
- (14) (5) x (6)
- (15) (13)/(14)

**CITY OF NEWTON**WORKERS COMPENSATION  
INDEMNITY  
PROJECTED ULTIMATE LOSSES

<u>Fiscal</u> <u>Year</u> (1)	<u>Paid</u> <u>Losses</u> (2)	<u>Paid</u> <u>LDF</u> (3)	<u>Initial</u> <u>Projected</u> <u>Ultimate</u> <u>Losses</u> (4)=(2)x(3)
1998	429,643	1.000	429,643
1999	316,195	1.000	316,195
2000	677,135	1.000	677,135
2001	506,773	1.002	507,787
2002	594,958	1.008	599,718
2003	1,222,594	1.017	1,243,378
2004	782,021	1.032	807,046
2005	797,111	1.063	847,329
2006	423,686	1.111	470,715
2007	567,703	1.211	687,488
2008	711,641	1.393	991,316
2009	795,191	1.713	1,362,162
2010	223,339	3.769	841,765
<b>TOTAL</b>	<b>8,047,991</b>		<b>9,781,677</b>

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(2),(3) Exhibits 5.1 and 5.2

**CITY OF NEWTON**

WORKERS COMPENSATION  
 MEDICAL ONLY  
 PROJECTED ULTIMATE LOSSES

Fiscal <u>Year</u> (1)	Paid <u>Losses</u> (2)	Paid <u>LDF</u> (3)	Initial Projected Ultimate <u>Losses</u> (4)=(2)x(3)
1998	21,654	1.000	21,654
1999	26,186	1.000	26,186
2000	29,828	1.000	29,828
2001	52,518	1.000	52,518
2002	57,813	1.000	57,813
2003	48,175	1.000	48,175
2004	97,765	1.000	97,765
2005	54,109	1.002	54,217
2006	45,839	1.004	46,022
2007	63,186	1.011	63,881
2008	53,967	1.036	55,910
2009	36,677	1.072	39,318
2010	16,700	1.635	27,305
TOTAL	604,417		620,592

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(2),(3) Exhibit 5.3

WORKERS COMPENSATION  
INDEMNITY  
LOSS DEVELOPMENT FACTORS

Fiscal Year	Adjusted Cumulative Paid Losses & ALAE Valued As Of (Months)								
	12	24	36	48	60	72	84	96	108
1981									13,014
1982								50,271	79,896
1983							85,974	151,711	190,854
1984						104,034	131,996	136,739	141,551
1985					47,779	73,645	97,884	112,151	145,836
1986				162,488	213,185	253,463	291,687	355,426	372,283
1987			133,598	187,011	244,851	257,161	257,537	293,215	294,936
1988		309,658	422,764	500,503	574,645	703,346	731,742	731,742	731,742
1989	125,123	302,209	400,338	495,906	533,152	543,317	543,317	543,317	543,317
1990	61,057	136,259	240,897	345,480	396,190	399,793	401,285	401,609	402,383
1991	251,479	533,452	803,595	949,121	983,668	1,004,961	1,024,987	1,034,376	1,043,766
1992	200,283	389,798	473,625	508,353	523,441	525,908	525,991	525,991	525,993
1993	236,354	328,415	357,812	361,292	361,292	361,292	361,292	361,292	361,292
1994	256,041	307,371	323,286	336,139	349,228	362,024	362,024	362,024	362,024
1995	252,218	364,159	408,641	433,274	453,377	482,933	487,876	489,671	489,857
1996	140,989	274,415	297,650	313,820	326,365	338,770	351,657	352,487	355,159
1997	196,695	406,077	486,522	531,195	593,981	655,648	684,784	695,698	695,777
1998	226,291	423,091	425,054	425,054	425,054	429,643	429,643	429,643	429,643
1999	128,232	265,674	316,163	316,163	316,195	316,195	316,195	316,195	316,195
2000	179,744	347,949	437,667	506,255	563,350	573,221	585,234	628,446	651,134
2001	256,216	437,942	494,943	498,590	505,217	506,687	506,773	506,773	506,773
2002	226,861	384,059	466,692	558,877	558,877	587,350	587,350	594,358	594,958
2003	240,012	455,997	511,759	784,841	909,623	941,992	1,129,698	1,222,594	
2004	338,477	480,882	563,330	643,668	694,186	755,783	782,021		
2005	198,850	483,368	658,754	711,630	774,374	797,111			
2006	234,892	421,979	422,760	422,760	423,686				
2007	157,547	373,629	522,594	567,703					
2008	363,698	591,259	711,641						
2009	316,944	795,191							
2010	223,339								

  

Fiscal Year	Development Factors								
	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120
1981									1.577
1982								1.589	1.327
1983							1.765	1.258	1.221
1984						1.269	1.036	1.035	1.243
1985					1.541	1.329	1.146	1.300	1.034
1986				1.312	1.189	1.151	1.219	1.047	1.000
1987			1.400	1.309	1.050	1.001	1.139	1.006	1.006
1988		1.365	1.184	1.148	1.224	1.040	1.000	1.000	1.000
1989	2.415	1.325	1.239	1.075	1.019	1.000	1.000	1.000	1.000
1990	2.232	1.768	1.434	1.147	1.009	1.004	1.001	1.002	1.000
1991	2.121	1.506	1.181	1.036	1.022	1.020	1.009	1.009	1.000
1992	1.946	1.215	1.073	1.030	1.005	1.000	1.000	1.000	1.000
1993	1.390	1.090	1.010	1.000	1.000	1.000	1.000	1.000	1.000
1994	1.200	1.052	1.040	1.039	1.037	1.000	1.000	1.000	1.000
1995	1.444	1.122	1.060	1.046	1.065	1.010	1.004	1.000	1.000
1996	1.946	1.085	1.054	1.040	1.038	1.038	1.002	1.008	1.004
1997	2.065	1.198	1.092	1.118	1.104	1.044	1.016	1.000	1.022
1998	1.870	1.005	1.000	1.000	1.011	1.000	1.000	1.000	1.000
1999	2.072	1.190	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2000	1.936	1.258	1.157	1.113	1.018	1.021	1.074	1.036	1.018
2001	1.709	1.130	1.007	1.013	1.003	1.000	1.000	1.000	1.000
2002	1.693	1.215	1.198	1.000	1.051	1.000	1.012	1.001	
2003	1.900	1.122	1.534	1.159	1.036	1.199	1.082		
2004	1.421	1.171	1.143	1.078	1.089	1.035			
2005	2.431	1.363	1.080	1.088	1.029				
2006	1.796	1.002	1.000	1.002					
2007	2.372	1.399	1.086						
2008	1.626	1.204							
2009	2.509								
Mean	1.909	1.228	1.141	1.084	1.073	1.055	1.072	1.062	1.044
3 Yr. Mean	2.169	1.201	1.056	1.056	1.051	1.078	1.031	1.012	1.006
5 Yr. Mean	2.147	1.228	1.169	1.066	1.042	1.051	1.034	1.007	1.008
Best 3	2.200	1.246	1.103	1.056	1.039	1.019	1.029	1.000	1.006
Selected	2.200	1.230	1.150	1.090	1.045	1.030	1.015	1.009	1.006
Cumulative	3.769	1.713	1.393	1.211	1.111	1.063	1.032	1.017	1.008



WORKERS COMPENSATION  
INDEMNITY  
LOSS DEVELOPMENT FACTORS

Fiscal Year	Adjusted Cumulative Paid Losses & ALAE												
	Valued As Of (Months)												
	120	132	144	156	168	180	192	204	216	228	240	252	264
1978			21,834	21,834	21,834	21,834	21,834	21,834	21,834	21,834	21,834	21,834	21,834
1979		48,767	73,098	110,017	132,877	144,057	145,357	145,357	145,357	145,357	145,357	145,357	145,357
1980	35,296	54,135	73,763	94,286	110,435	110,435	110,435	110,435	110,435	110,435	110,435	110,435	110,435
1981	20,529	27,144	33,759	40,405	42,640	44,884	47,119	49,354	51,589	53,824	56,059	58,294	60,529
1982	106,029	122,456	140,818	159,999	160,887	160,887	160,887	160,887	160,887	160,887	160,887	160,887	160,887
1983	233,090	249,208	260,364	269,481	278,497	287,513	298,111	302,775	307,239	311,703	316,167	320,631	325,295
1984	175,886	181,486	185,599	186,549	186,549	186,549	186,549	186,549	186,549	186,549	186,549	186,549	186,549
1985	150,852	150,852	150,852	150,852	150,852	150,852	150,852	150,852	150,852	150,852	150,852	150,852	150,852
1986	372,283	372,283	372,283	372,283	372,283	372,283	372,283	372,283	372,283	372,283	372,283	372,283	372,283
1987	296,657	297,654	297,654	297,654	297,654	297,654	297,654	297,654	297,654	297,654	297,654	297,654	297,654
1988	731,742	731,742	731,742	731,742	731,742	731,742	731,803	731,803	731,803	731,803	731,803	731,803	731,803
1989	543,317	543,317	543,317	543,317	543,317	543,317	543,317	543,317	543,317	550,947	550,947	550,947	550,947
1990	402,383	403,358	403,358	403,358	403,358	403,358	403,358	403,358	403,358	403,358	403,358	403,358	403,358
1991	1,043,766	1,043,766	1,043,766	1,043,766	1,043,766	1,043,766	1,043,766	1,043,766	1,043,766	1,043,766	1,043,766	1,043,766	1,043,766
1992	525,993	525,993	525,993	525,993	525,993	525,993	525,993	525,993	525,993	525,993	525,993	525,993	525,993
1993	361,292	361,292	361,292	361,292	361,292	361,292	361,292	361,292	361,292	361,292	361,292	361,292	361,292
1994	362,024	362,024	362,024	362,024	362,024	362,024	362,024	362,024	362,024	362,024	362,024	362,024	362,024
1995	489,857	489,857	489,857	489,913	489,969	489,969	490,317	490,317	490,317	490,317	490,317	490,317	490,317
1996	356,685	356,685	356,685	356,685	356,685	356,685	356,685	356,685	356,685	356,685	356,685	356,685	356,685
1997	711,015	711,075	711,212	711,212	711,712	711,712	711,712	711,712	711,712	711,712	711,712	711,712	711,712
1998	429,643	429,643	429,643	429,643	429,643	429,643	429,643	429,643	429,643	429,643	429,643	429,643	429,643
1999	316,195	316,195	316,195	316,195	316,195	316,195	316,195	316,195	316,195	316,195	316,195	316,195	316,195
2000	663,048	677,135	677,135	677,135	677,135	677,135	677,135	677,135	677,135	677,135	677,135	677,135	677,135
2001	506,773	506,773	506,773	506,773	506,773	506,773	506,773	506,773	506,773	506,773	506,773	506,773	506,773

Fiscal Year	Development Factors												
	120-132	132-144	144-156	156-168	168-180	180-192	192-204	204-216	216-228	228-240	240-252	252-264	264-Ult.
1978			1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1979		1.499	1.505	1.208	1.084	1.009	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1980	1.534	1.363	1.278	1.171	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1981	1.322	1.244	1.197	1.055	1.053	1.050	1.047	1.045	1.043	1.042	1.040	1.038	1.028
1982	1.155	1.150	1.136	1.006	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1983	1.069	1.045	1.035	1.033	1.032	1.037	1.016	1.015	1.015	1.014	1.014	1.015	1.000
1984	1.032	1.023	1.005	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1985	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1986	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1987	1.003	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1988	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1989	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.014	1.000	1.000	1.000	1.000
1990	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1991	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1992	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1993	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1994	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1995	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.001	1.001	1.001	1.001	1.001	1.001
1996	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1997	1.000	1.000	1.001	1.022	1.022	1.022	1.022	1.022	1.022	1.022	1.022	1.022	1.022
1998	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2000	1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021
2001	1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021
Mean	1.054	1.063	1.055	1.025	1.009	1.005	1.004	1.004	1.005	1.004	1.004	1.004	1.003
3 Yr. Mean	1.007	1.000	1.000	1.007	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
5 Yr. Mean	1.004	1.000	1.000	1.004	1.000	1.000	1.000	1.000	1.003	1.000	1.000	1.000	1.000
Best 3	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Selected	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Cumulative	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

## CITY OF NEWTON

WORKERS COMPENSATION  
MEDICAL ONLY  
HISTORICAL LOSS DATA

Fiscal Year	Cumulative Paid Losses & ALAE Valued As Of (Months)										
	12	24	36	48	60	72	84	96	108	120	132
1989	16,707	23,305	23,305	23,305	23,305	23,905	23,905	23,905	23,905	23,905	23,905
1990	23,114	29,040	29,646	29,646	29,646	29,646	29,646	29,646	29,646	29,646	29,646
1991	2,960	3,346	12,650	41,187	41,187	41,187	41,187	41,187	41,187	41,187	41,187
1992	33	17,928	50,185	50,185	50,185	50,185	50,185	50,185	50,185	50,185	50,185
1993	10,419	54,025	55,048	55,048	55,048	55,048	55,048	55,048	55,048	55,048	55,048
1994	18,509	41,202	41,715	41,715	41,715	41,715	41,715	41,715	41,715	41,715	41,715
1995	22,975	30,235	30,253	30,253	30,253	30,253	30,253	30,253	30,253	30,253	30,253
1996	23,877	37,491	37,710	38,256	38,256	38,256	38,256	38,256	38,256	38,256	38,256
1997	24,696	36,216	52,656	52,656	52,656	52,656	52,656	52,656	52,656	52,656	52,656
1998	15,742	20,874	21,654	21,654	21,654	21,654	21,654	21,654	21,654	21,654	21,654
1999	21,591	25,809	26,098	26,098	26,164	26,164	26,186	26,186	26,186	26,186	26,186
2000	18,865	29,410	29,504	29,828	29,828	29,828	29,828	29,828	29,828	29,828	29,828
2001	30,657	48,528	48,754	52,518	52,518	52,518	52,518	52,518	52,518	52,518	52,518
2002	38,981	56,866	56,866	57,332	57,392	57,392	57,813	57,813	57,813	57,813	57,813
2003	40,915	47,993	48,175	48,175	48,175	48,175	48,175	48,175	48,175	48,175	48,175
2004	50,291	83,306	85,102	93,370	96,404	97,277	97,765	97,765	97,765	97,765	97,765
2005	35,622	50,864	54,109	54,109	54,109	54,109	54,109	54,109	54,109	54,109	54,109
2006	29,844	45,820	45,820	45,820	45,820	45,839	45,839	45,839	45,839	45,839	45,839
2007	50,432	63,186	63,186	63,186	63,186	63,186	63,186	63,186	63,186	63,186	63,186
2008	49,696	53,830	53,967	53,967	53,967	53,967	53,967	53,967	53,967	53,967	53,967
2009	23,767	36,677	36,677	36,677	36,677	36,677	36,677	36,677	36,677	36,677	36,677
2010	16,700	16,700	16,700	16,700	16,700	16,700	16,700	16,700	16,700	16,700	16,700

  

Fiscal Year	Development Factors										
	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-132	132-Ult.
1989	1.395	1.000	1.000	1.000	1.026	1.000	1.000	1.000	1.000	1.000	1.000
1990	1.256	1.021	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1991	1.130	3.781	3.256	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1992	543.273	2.799	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1993	5.185	1.019	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1994	2.226	1.012	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1995	1.316	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1996	1.570	1.006	1.014	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1997	1.466	1.454	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1998	1.326	1.037	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1999	1.195	1.011	1.000	1.003	1.000	1.001	1.000	1.000	1.000	1.000	1.000
2000	1.559	1.003	1.011	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2001	1.583	1.005	1.077	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2002	1.459	1.000	1.008	1.001	1.000	1.007	1.000	1.000	1.000	1.000	1.000
2003	1.173	1.004	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2004	1.656	1.022	1.097	1.032	1.009	1.005	1.000	1.000	1.000	1.000	1.000
2005	1.428	1.064	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2006	1.535	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2007	1.253	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2008	1.083	1.003	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2009	1.543	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Mean	27.410	1.262	1.130	1.002	1.002	1.001	1.000	1.000	1.000	1.000	1.000
3 Yr. Mean	1.293	1.001	1.000	1.011	1.003	1.004	1.000	1.000	1.000	1.000	1.000
5 Yr. Mean	1.368	1.018	1.019	1.007	1.002	1.002	1.000	1.000	1.000	1.000	1.000
Best 3	1.405	1.008	1.000	1.000	1.000	1.002	1.000	1.000	1.000	1.000	1.000
Selected	1.525	1.035	1.025	1.007	1.002	1.002	1.000	1.000	1.000	1.000	1.000
Cumulative	1.635	1.072	1.036	1.011	1.004	1.002	1.000	1.000	1.000	1.000	1.000

# CITY OF NEWTON

Exhibit 6

## WORKERS COMPENSATION EXPOSURE INFORMATION

<u>Fiscal Year</u> <u>Ending</u> <u>June 30,</u> (1)	<u>Covered</u> <u>Payroll</u> <u>(\$00)</u> (2)
1992	226,774
1993	233,157
1994	253,882
1995	256,823
1996	270,263
1997	282,380
1998	287,177
1999	309,695
2000	314,406
2001	322,083
2002	354,569
2003	362,190
2004	362,318
2005	365,553
2006	378,519
2007	405,875
2008	415,644
2009	414,492
2010	420,324
2011	416,654

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Provided by the City