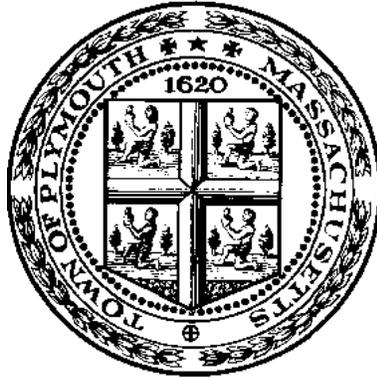


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# Town of Plymouth Other Post-Employment Benefits



Actuarial Valuation  
January 1, 2009



STONE  
CONSULTING, INC.



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## SECTION I MANAGEMENT SUMMARY

### Introduction

This report presents the results of the actuarial valuation of the Town of Plymouth Other Post-employment Benefits as of January 1, 2009. The valuation was performed for the purpose of measuring the actuarial accrued liabilities associated with these benefits and calculating a funding schedule. These results are used in satisfying the requirements under the Governmental Accounting Standards Board Statement No. 45.

The valuation was based on participant data as of January 1, 2009 supplied by Plymouth and the Massachusetts Teachers Retirement Board. The provisions reflected in the valuation are based on Chapter 32B of the General Laws of the Commonwealth of Massachusetts and related statutes and the benefits provided by the Town.

We are pleased to present the results of this valuation. We are available to respond to any questions on the content of this report. Please note that this report is meant to be used in its entirety. Use of excerpts of this report may result in inaccurate or misleading understanding of the results.

Respectfully submitted,

*STONE CONSULTING, INC.*

May 17, 2010

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## Summary of Actuarial Results

The actuarial values in this report were calculated consistent with the Governmental Accounting Standards Board (GASB) Statement No. 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions*, issued June 2004. Values at two discount rates are presented. The 7.50% discount rate represents the expected rate of return for a funded plan with a longer-term investment horizon. For an unfunded plan, the GASB Statement No. 45 calls for the use of a discount rate approximating the rate of return of Plymouth's general assets. The rate we recommend for Plymouth is 4.25%. The OPEB liability is extremely sensitive to this assumption. If the unfunded rate were used, the Annual Required Contribution (ARC), Accrued Actuarial Liability (AAL), and the Normal Cost increase dramatically.

The summary results are as follows:

- Actuarial Accrued Liability ("AAL") is the "price" attributable to benefits earned in past years. The total AAL as of January 1, 2009 (at 4.25% discount rate) is \$379,285,747. This is made up of approximately \$191.5 million for current active Plymouth employees and approximately \$187.8 million for Plymouth retirees, spouses and survivors.
- The Normal Cost is the "price" attributable to benefits earned in the current year. The Normal Cost as of January 1, 2009 (at the 4.25% discount rate) is approximately \$14.9 million.
- Based on a thirty-year funding schedule (at the 4.25% discount rate), the Fiscal 2010 contribution would be \$29,328,897. This figure is referred to as the Annual Required Contribution (ARC). This figure should be contrasted with the ARC using the fully funded 7.50% rate of \$20,655,381. These compare to the pay-as-you-go contribution of the existing costs for current retirees of \$12,728,468. For an illustration of how payment of the ARC impacts the funding of the plan over time, please refer to the "Illustrative Funding Schedule" discussion beginning on page 14 and the accompanying table on page 29. The following table shows the breakdown of the Actuarial Accrued Liability between



future retirees and current retirees, as well as the normal cost, at Plymouth's different discount rates:

<b>Actuarial Results as of January 1, 2009</b>	<b>7.50% Rate</b>	<b>4.25% Rate</b>
Current Actives	\$103,697,379	\$191,461,260
Current Retirees, Beneficiaries, Vesteds and Survivors	<u>\$139,330,567</u>	<u>\$187,824,487</u>
Total AAL	\$243,027,946	\$379,285,747
Normal Cost	\$7,098,114	\$14,885,266
ARC	\$20,655,381	\$29,328,897

The liability is materially higher than that for the prior valuation. An analysis of the reasons for this increase appears in Section II of this report.



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## Valuation Methodology and Assumptions

### *VALUATION METHOD*

The valuation of the other post-employment benefits is based upon the projected unit credit actuarial cost method. Under this method, future health care benefit cost is projected using assumed rates of annual health care cost increases (health care cost trend rates). The cost of future expected life insurance death benefits is added to the projected medical cost. The actuarial value of the future expected benefits is allocated proportionately over a health plan member's working lifetime.

A normal cost (or service cost) is determined for each year of the member's creditable service and is equal to the value of the future expected benefits divided by the total expected number of years of service. This is similar to a normal cost in a retirement actuarial valuation. The Actuarial Accrued Liability is the accumulated value of prior normal costs, similar to the actuarial accrued liability in a retirement actuarial valuation, and represents the liability associated with prior service.

### *GASB Statement No. 45*

The actuarial cost method used in this valuation is consistent with the Governmental Accounting Standards Board (GASB) Statement No. 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions*, issued June 2004. It is one of the allowable cost methods specified in that accounting standard, and is the cost method most similar to the prescribed method of accounting for these benefits in the private sector described in the Financial Accounting Standards Board Statement 106 (FAS106).

### *Difference Between FAS 106 and GASB Statement No. 45*

The GASB Statement No. 45 differs in one important regard from the actuarial cost method described in the private sector accounting standard. In the FAS 106 methodology, benefits are considered to be fully earned in the first 10 years of service, since members become vested in



the retirement benefits in 10 years. Compared to the FAS 106 method, the GASB Statement No. 45 attribution method produces a lower accrued liability for future retirees. The cost of the benefit is spread over the expected working lifetime of the employee. This makes the cost of the benefit associated with the years of service the employee is providing. This is more appropriate for the public sector due to the relative permanence of public entities compared to private entities. There are other significant differences between the GASB Statement No. 45 and FAS 106, most noticeably in the choice of discount rate. The GASB Statement No. 45 discount rate assumption is discussed below.

### *ACTUARIAL ASSUMPTIONS*

Details of the assumptions used in this valuation are shown in Section II. Here we present a brief discussion of the assumptions selected.

#### *Demographic and Financial Assumptions*

These include discount rates of 7.50%, and 4.25% as well as mortality, disability, withdrawal and retirement rates. The two discount rates apply to the two scenarios of either a fully funded or unfunded program. A fully funded program is when the employer contributes 100% of the ARC each year. An unfunded program is where the only amount contributed is used to pay benefits during the year so no assets accumulate. GASB Statement No. 45 indicates that the discount rate for an unfunded post employment benefit plan should be based on the degree to which the plan is funded. For an unfunded plan, the rate of return on the employer's general assets should be used. We have used a rate of 4.25% for this. This is the rate we are recommending for Plymouth. For a fully funded plan, GASB statement No. 45 allows one to use a long-term investment rate such as what would be used for a defined benefit pension fund. The rate we are currently using for this is 7.50%. For a plan where the Town has been setting aside some funds toward the liability above the pay-as-you-go amount, but less than the full ARC ("partially" funded), a rate in between these two levels should be used. It should be noted that the rate of return assumption could change significantly in the future due to changes in the economic environment.



We recommend that Plymouth adopt a funding policy for its OPEB benefits. The funding policy would describe the amounts and timing of the contributions. The GASB statement does not have a requirement for a formal funding policy document but indicates that a formal funding policy should be adopted. We recommend that the Town detail its intent with either a written document or in the minutes of a meeting.

The discount rate would change if the Town implements any sort of funding above the pay-as-you-go amount. Such a change would lead to a higher discount rate and a lower ARC, possibly significantly so.

### Health Care Plan Assumptions

Assumptions unique to post-retirement medical plans include initial annual health care costs and annual health care cost increase (trend) rates, Medicare eligibility, plan participation and coverage election rates.

- **Current health care costs by age**

Initial health care cost assumptions were derived from premium rates for the various health care plans in-force at January 1, 2009. Typically, we analyze the plans offered in terms of four different categories: whether the plan offered is Commercial (not integrated with Medicare) or Medicare Supplement and whether the plan is Indemnity (where reimbursements are a function of billed charges) or Managed Care (where reimbursements are a function of negotiated contracts). Grouping the plans in this manner allows us to maintain a reasonable degree of granularity in our analysis. At the same time, it avoids the problem of a lack of credibility that often arises if one attempts to analyze every plan separately.

In the case of Plymouth there are plans in all of these four categories. The Town offers a pair of Commercial Managed Care plan, a single Commercial Indemnity Plan, two Medicare Indemnity plans and a single Medicare Managed Care plan. There was a single Dental plan that was also analyzed.

For all of these groups, weighted-average costs for each plan grouping were calculated based



on the actual Plymouth active and retiree population enrollments. For categories with more than one plan, costs were based on an average weighted by enrollment. However, in order to capture the effect of aging on health care costs, an assumption is required for the increase in health care costs as a person ages. We based our aging assumption on a study sponsored by the Society of Actuaries Health Section in August 2003. The effect of this aging assumption is illustrated in the table of “Initial Monthly Health Care Costs” in the Actuarial Methods and Assumptions section of this report. This method was applied only to the Commercial plans, since these plans incorporate both retirees and active employees. By age-grading the claim costs, we account for the subsidy of older employees by younger employees implicit in a flat premium rate (also referred to as the “Attributed Cost” of each employee). That is, the cost of an active 20-year old employee, for example, is much less than the cost of a retired 80-year old employee. But, the premiums charged the Town are flat – the same for both of these people. Thus, the 20-year old in our example is overcharged and the 80-year old is undercharged by a flat rate premium. Age-grading makes this subsidy or mischarge explicit in the claim costs at each age. For the purposes of the GASB valuation, this subsidy needs to be taken into account in determining the retiree liability and normal cost.

No such age-grading was necessary for the Medicare plan because these plans cover retirees only. There is no overcharging of actives in the flat premium rate. Thus, there is no implicit subsidy to take into account.

For the Dental plans, age-grading was employed in a manner similar to the Commercial Medical plans. However, the rate at which the claim costs increased was less steep and the point at which they cease to increase was earlier than for medical. This pattern reflects the tendencies of Dental claims as opposed to Medical.

- **Cost trends**

The claim rates developed using the methodology described above must be projected over the life of each retiree. For this purpose we use trend rates calculated to reflect the general rate of increase in Health Care costs. Since we did not have adequate data to develop trend rates



unique to Plymouth's experience, we used trends based upon Stone Consulting's understanding of current health care rate increases.

We developed different trends for each of the categories of plans for which we also developed claim costs. These factors were applied to the premium-based claim rates. In the case of Plymouth, the rate increase in the first year (new rates at 7/1/2009) were known, so these figures became our first-year trend values. Subsequent year trends were based on our understanding of the trends.

It should be noted that premium rate increases typically include factors other than health care cost increases, such as aging of the covered population, that are reflected elsewhere in our valuation methodology. Therefore, premium rate increases are not themselves a proxy for health care trends. However, they do give some indication of the level of expected cost increases.

As is typical in post-retirement medical valuations, initially higher rates of health care cost trend are assumed to decrease over time to an ultimate rate consistent with long-term economic assumptions. Our general set of trend assumptions has Commercial Managed Care trends that begin at 25% and scale down to 6%. For Medicare, the Indemnity trend rates begin at 7% and scale down to 6% while the Managed Care trend rates being at 6% and scale down to 5%. For Dental, the trend rates begin at 8% and scale down to 5%. These different sets of trend rate reflect our belief that (1) Managed Care plans, with their negotiated pay levels and tighter controls, will exhibit lower trends than unmanaged Indemnity plans; and (2) Commercial plans will be subject to modestly higher trends than Medicare plans due to cost shifting induced by cutbacks in the federal government's payment of Medicare costs. We did, however, alter the first year trend rates to reflect the already known rates of change in the rates for the first year, which occurred at 7/1/2009. These factors were somewhat lower than standard for all coverages except Commercial Indemnity. The trend for that coverage in year one was much higher than our standard. These altered factors (which are shown on page 41) were based on the weighted average change in rates in each category.

These trend rates should be thought of not as a forecast but as a reasonable progression of



rates based on historic patterns. For many years, health care cost increases have been particularly volatile, and this actuarial assumption should be reviewed and, most likely, reset every year or two. Implicit in our health care cost trend assumptions is that the general rate of medical inflation will moderate due to economic pressure on insurers, employers, employees, retirees, government entities, and health care providers. As expectations of future health care cost increases change, they will be reflected in future valuations, resulting in actuarial gains/losses. These will be incorporated in the future costs and funding schedules. In this manner, there is a systematic means of adjusting to changes in the health care environment.

- **Sensitivity analysis**

The effect of increasing health care costs is extremely significant in an actuarial valuation of post-employment health benefits. As experience emerges the trend assumptions we have used are unlikely to be realized exactly. To illustrate the effect of different trend rates on the actuarial valuation results, we have included a sensitivity analysis of the effect on the actuarial accrued liability, normal cost and annual required contribution of a 1% increase or decrease in the health care cost trend assumption. We have also included a sensitivity analysis of the effect on the actuarial accrued liability, normal cost and annual required contribution of a 0.50% increase or decrease in the discount rate assumption.

- **Timing**

All values discussed in this report are based on a January 1, 2009 valuation. This means that the first year of the valuation is January 1, 2009 through December 31, 2009. It is permissible, under GASB Statement No. 45, to use these values, without adjustment for interest or any other timing factor for a limited future time period. For an entity such as Plymouth, which will be doing a valuation every two years, the standard allows use of data “not more than twenty-four months before the beginning of the first of two years for which the valuation provides the ARC.” This means that it is acceptable for us to use the January 1, 2009 results without adjustment when discussing the 2010 fiscal year. Included are projected costs for the fiscal year after the 2010 fiscal year. If you do not make any cash contributions or there are



no significant plan changes you will be able to use the results for both fiscal years.

- Medicare

Medicare eligibility is an important assumption with regard to future costs. For those entities that have adopted Section 18 of Chapter 32B of the code, we will assume that active employees who were hired after March 31, 1986 will be Medicare eligible due to their mandated participation in the Medicare program. Active employees prior to that employment date are assumed to be 85% Medicare eligible. Adoption of Section 18 will reduce costs, in some cases significantly.

- Medicare Changes

The Medicare Prescription Drug, Improvement and Modernization Act of 2003 introduced significant changes to the Medicare program and its interaction with employer-sponsored post-retirement benefits. Medicare beneficiaries are able to participate in a voluntary, prescription drug coverage program. In order to encourage employers, including public-sector employers, to continue providing prescription drug coverage to retirees, the Act provides for a cash subsidy to employers whose prescription drug coverage is deemed to be actuarially equivalent to the new Medicare Part D drug coverage. This cash subsidy can be used to offset partially the cost of retiree medical benefits, including potentially reducing the accrued liability for a portion of the drug benefits provided by a retiree medical plan. The Act may have additional impact on retiree plan choices, as Medicare-eligible retirees may opt for the Part D coverage rather than an employer's plan options. Such changes, if they occur, may affect the selection of future actuarial assumptions.



GASB has indicated that the subsidy should not be included as part of the OPEB valuation. The reason being that the subsidy is considered general governmental revenue and as such is not earmarked towards the funding of OPEB benefits.

- **Health plan coverage election**

Assumptions must also be made regarding the participation in health plans when active members retire and when those already retired turn age 65. Using data supplied by Plymouth, Stone Consulting modeled the behavior of employees as they moved from being active to being retired or moved from being an under age 65 retiree to being an age 65+ retiree. Such modeling involved an analysis of the distribution of the plans chosen by current retirees, the possible plans available to those who will retire in the future, and our opinions about the likely future course of retiree medical care. Such models are applicable to actives and to retirees not yet age 65, since both of these groups will have the option to select plans at key ages.

It should be kept in mind that these percentages are applicable even to actives not currently enrolled in a medical plan. The reason for this is that these people could change their behavior and enroll in a plan at retirement. The likelihood that they (or other actives) elect to do so is controlled by the participation assumption (see below). Some retiree groupings do not require any modeling. For example, retirees over age 65 are assumed to remain in the plans they have already selected. If they have opted out of Plymouth coverage, we assume they will continue to do so. Similarly, those retirees under age 65 already in Medicare plans are assumed to remain in those plans for life. These are people who are disabled or have certain medical conditions that qualify them for Medicare early. Pre age 65 retirees in Commercial plans are assumed to stay in their current plan until age 65. At that point, they may migrate to a different plan. We have modeled their possible choices at age 65 and reflected that in our assumptions. Active employees over age 65, once they retire, are assumed to make the same sorts of selections as retirees at age 65. The following table shows the way we modeled the choices at each of the key ages.



<b>Plymouth Participant Behavior at Key Ages</b>			
Status	Age	Pre-65 Retirement	65+ Retirement
Active	Under 65	80% Commercial Managed Care 20% Commercial Indemnity	94% Medicare Indemnity 5% Medicare Managed Care 1% Commercial
Active	65+	NA	94% Medicare Indemnity 5% Medicare Managed Care 1% Commercial
Retired	Under 65	Current Plan	94% Medicare Indemnity 5% Medicare Managed Care 1% Commercial or Actual Plan if already in Medicare
Retired	65+	NA	Current Plan

### Participation

In addition to determining the choices that retirees will make among plans, there is also the issue of whether the retiree will elect coverage at all. The rate at which retirees elect coverage is called the “Participation” Rate. Stone Consulting conducted a study of Plymouth retirees to determine the historical frequency at which retirees elect to take medical coverage. Based on this study, we assumed that 87.5% of future eligible retirees and spouses of retirees will elect health plan coverage. This percentage is below the percentage of past retirees who have elected coverage. The lower percentage for future retirees reflects the higher level of employee contributions (20%) which are now required versus the old levels of 1% and 10%. For Dental, we assumed at 70% of eligible retirees and spouses of retirees will elect coverage. For Life Insurance, we assumed that 98% of future retirees will elect coverage.



## Data

The participant census data for the valuation study was supplied by Plymouth and by the Massachusetts Teachers Retirement System. Participants include Plymouth active employees including teachers, retirees, disability retirees, surviving spouses, and inactive former employees with 10 or more years of service who qualify for a vested retirement benefit.

The participant census data was not audited by Stone Consulting, Inc. However, it was checked for reasonableness.

Summaries of active participants and Plymouth retiree census data are included in Section II.



## Funding

There are alternative ways to plan for the payment of post-retirement health and life insurance benefits: continue to fund on a pay-as-you go method, contribute on an ad-hoc basis to a fund for this purpose, or develop a funding schedule in which the unfunded amount is amortized over some number of years. With the funding schedule, the normal cost must continue to be paid each year to keep current.

There is no legal requirement to prefund these post-employment benefit liabilities. Nor does GASB Statement No. 45 require actual prefunding; however, its accounting requirements will serve to highlight the substantial unfunded accrued liabilities associated with these benefits.

### *ILLUSTRATIVE FUNDING SCHEDULE*

The GASB Statement No. 45 is designed to account for non-pension post-employment benefits using an approach similar to the accounting for retirement benefits. It develops an Annual Required Contribution (“ARC”) that is based on the Normal Cost plus an amortization of the Unfunded Actuarial Accrued Liability (“UAAL”). To the extent that actual contributions equal to the ARC are made by the employer to the post-employment health benefit plan, no additional liability will be required to be shown on Plymouth’s balance sheet. Employer contributions may be in the form of benefit or premium payments or contributions to a fund set aside for future benefit payments. Such a fund must meet the requirements set out in the accounting standard.

We have calculated an illustrative funding schedule for the other post-employment benefits, consistent with the GASB Statement No. 45. This funding schedule assumes that Plymouth funds 100% of the ARC and begins with Plymouth’s Fiscal Year 2010. The full schedule is shown in Section II.



*Development of Funding Schedule and Annual Required Contribution*

The contribution amount under a fully funded scenario using the 7.50% discount rate for Fiscal 2010 is \$20,655,381. Part of this comes from the amortization of the January 1, 2009 Unfunded Actuarial Accrued Liability of \$243,027,946. Because there are no funds set aside, it is equal to the total actuarial accrued liability (AAL). The UAAL is amortized over twenty-nine years using an increasing amortization payment at the rate of assumed payroll increase due to inflation (3.50%). The funding contribution is the amortization payment plus the projected normal cost. Under the GASB Statement No. 45, thirty years is the maximum amortization period allowed. Shorter periods of time and/or other amortization patterns could be considered. The thirty-year funding schedule shown produces the lowest possible Fiscal 2010 contribution under the GASB parameters other than by using a thirty-year open amortization. The difference between a twenty-nine and a thirty-year schedule is relatively small. It should be noted that the contribution is assumed to be made at the beginning of the fiscal year, so the first contribution is assumed to be made July 1, 2009. The amount of the amortization payment in the first year is \$13,557,267. For the purposes of this schedule, we have not adjusted the January 1, 2009 liability for timing by applying interest.

Yearly contributions will increase, as both normal cost and amortization payments increase each year.

The remaining part of the ARC is the cost of the current year's benefit accrual, the normal cost, of \$7,098,114. It should be noted that it is acceptable under GASB Statement No. 45 to use an "open amortization period" in which a thirty-year or shorter period is used each year. We have not used the open amortization method, but instead used a closed amortization period in which the amortization is fixed over a thirty-year period starting on the initial adoption of GASB Statement No. 45 (Fiscal Year 2010). As the closed period gets shorter (currently twenty-nine years), the difference between an open and closed schedule will increase. A re-examination of the choice of schedule types should be done at each valuation.



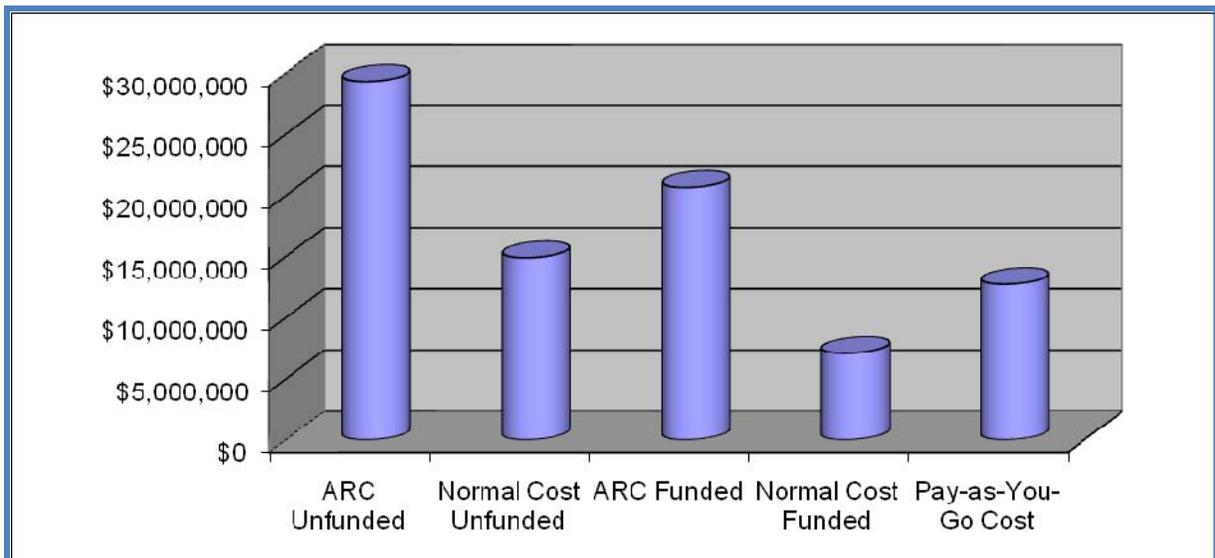
### Cash Flow Consideration

We have analyzed the cash flow of a funded post-employment medical trust by comparing the expected payouts of claims over the thirty-year period to expected contribution levels. If the actuarial assumptions are met, the funded amounts will be sufficient to cover annual benefit payments each year. Prior to adopting a funding schedule we recommend additional analysis be conducted to examine the effects of potential actuarial gains and losses on the cash flow.

### FUNDING VERSUS PAY-AS-YOU-GO VERSUS PARTIAL FUNDING

Currently, most Massachusetts governmental entities are paying for their post-employment medical benefits on a pay-as-you-go basis. This means that no amount in excess of the actual cost for the year is paid. All such entities must report figures for GASB Statement No. 45 based on the unfunded discount rate. Plymouth has elected, to date, to follow this course of action. It has not indicated that it has any intent to fund more than the pay-as-you-go cost.

In order to understand the impact of not funding versus funding completely, a comparison of the ARCs and normal costs (the contribution amount if the UAAL was \$0) under both scenarios, and the pay-as-you-go amount is illustrated in the following chart:





The chart depicts the advantage to the entity of even a partial funding policy, since the ARC and Normal Cost are significantly higher under the unfunded scenario.

As can be seen in the funding schedule, the retiree medical plan's normal cost will increase each year, so that by the time the initial unfunded liability is fully amortized, the required annual contribution will be substantially higher than is illustrated here for the first year. The pay-as-you-go costs will also increase dramatically as more and more employees retire. A projection of annual expected retiree pay-as-you-go costs is included with the funding schedule.

It is very important to understand that, in order to utilize the higher discount rate that goes with the fully funded or partially funded scenarios, there must be a "Funding Policy." That is, the Town must intend to continue to payments and, in the future, must actually make them. Should the policy not be followed in future years, an adjustment to the discount rate would need to be made. As the figures above illustrate clearly, there is an iterative relationship between the degree of funding and the amounts that must be shown as liabilities, amortization payments, and normal cost figures. Lower funding levels lead to higher amounts for these key figures.

The partial subsidy of prescription drug benefit costs that is available under the Medicare Prescription Drug, Improvement and Modernization Act of 2003 is a potential source of funds for a portion of the retiree medical costs. To the extent that this subsidy reimburses Plymouth for drug benefits it would already be paying for, the additional cash from the subsidy could be used to help pre-fund future benefits. The magnitude of any future subsidy is only a small portion of the additional cost to fund. Other plan design changes, such as a carve-out of prescription drug coverage, may yield greater opportunities for savings.

#### *DETERMINATION OF THE NET OPEB OBLIGATION (NOO)*

The Statement does not require Plymouth to put its entire Actuarial Accrued Liability on its



books immediately as a liability. Rather, a cost is applied to its assets each year. Over time this cost, which is called the OPEB Cost, will add up to the total liability. The total liability at any point in time is called the Net OPEB Obligation (NOO).

For the first year of funding, the OPEB Cost and ARC were identical. Amounts contributed toward the cost of other post-employment benefits must then be deducted. These amounts include: 1) actual premiums paid; 2) the extra implied costs or “implicit subsidy” associated with covering retirees; 3) any additional amounts paid during the year. Item three is not applicable to an entity such as Plymouth that has chosen not to fund its obligation either in whole or in part. The Net OPEB Cost is the OPEB Cost less these amounts. For year one, where there is no prior NOO on the financial statement, the Net OPEB Cost is the same as the Net OPEB Obligation.

Starting year two (Fiscal 2009), the OPEB Cost must recognize not only the Normal Cost and Amortization Cost for the year but also add interest on the prior year’s NOO as well as subtract Annual Required Contribution (ARC) adjustment to prevent double counting of the prior year’s NOO. The interest and the ARC adjustments somewhat offset each other so the net impact is not large. The total contributions are then subtracted from the OPEB Cost and the result is added to the prior year’s NOO. In this manner, the difference between each year’s ARC and the contributions are accumulated.

Please refer to the following table on page 19 in the following discussion.

If Plymouth continues its current policy and contributes on a pay-as-you-go basis, without any prefunding, the unfunded actuarial accrued liability used in the calculation would be \$379,285,747. We have not illustrated this with a “funding” schedule. The following chart projects the ARC, Pay-As-You-Go, Annual OPEB Cost and the Net OPEB Obligation for 8 years under the unfunded scenario. The Annual OPEB cost is the ARC plus an adjustment for interest not included in the ARC calculation. The Net OPEB Obligation is the accumulation of the Annual OPEB Cost minus any contributions. This is the amount that is subtracted from the Net Assets on your balance sheet. In the unfunded case, the contributions are the attributed pay-as-you-go amounts.



CALCULATION OF NET OPEB OBLIGATION

“Funding” Schedule at 4.25%

Year	UAL	Normal Cost <sup>1</sup>	Amort. <sup>1</sup>	ARC	Interest on NOO <sup>1</sup>	ARC Adjust. <sup>1</sup>	OPEB Cost	Total Contribs. <sup>1</sup>	Change in NOO <sup>2</sup>	NOO <sup>23</sup>
2009	\$379,285,747	\$14,885,266	\$14,443,631	\$29,328,897	\$494,842	\$443,392	\$29,380,347	\$12,728,468	\$16,651,879	\$28,295,224
2010	\$397,927,147	\$15,517,890	\$15,640,091	\$31,157,981	\$1,202,547	\$1,112,113	\$31,248,415	\$14,146,885	\$17,101,530	\$45,396,754
2011	\$416,572,073	\$16,177,400	\$16,920,147	\$33,097,547	\$1,929,362	\$1,843,906	\$33,183,003	\$15,475,318	\$17,707,685	\$63,104,438
2012	\$435,340,579	\$16,864,940	\$18,298,507	\$35,163,446	\$2,681,939	\$2,652,445	\$35,192,940	\$16,150,858	\$19,042,082	\$82,146,520
2013	\$454,933,760	\$17,581,700	\$19,817,471	\$37,399,170	\$3,491,227	\$3,578,403	\$37,311,995	\$17,345,901	\$19,966,094	\$102,112,614
2014	\$474,886,701	\$18,328,922	\$21,473,220	\$39,802,142	\$4,339,786	\$4,617,284	\$39,524,644	\$18,134,915	\$21,389,729	\$123,502,343
2015	\$495,661,015	\$19,107,901	\$23,305,144	\$42,413,045	\$5,248,850	\$5,806,872	\$41,855,023	\$18,602,666	\$23,252,357	\$146,754,700
2016	\$517,652,735	\$19,919,987	\$25,356,265	\$45,276,252	\$6,237,075	\$7,188,508	\$44,324,818	\$18,905,375	\$25,419,443	\$172,174,143

<sup>1</sup>For all years, Total Contributions are equal to the implicit premiums paid.

<sup>2</sup>NOO is Net OPEB Obligation.

<sup>3</sup>NOO for Plymouth at the end of Fiscal 2008 was \$11,643,345.



## Implementation

According to the GASB Statement No. 45, its provisions would be effective for Plymouth fiscal years beginning after December 15, 2009. The timing is due to Plymouth being a “Tier 2 government under GASB 34”. In the first fiscal year of adoption, Fiscal 2010, Plymouth would need to record a liability on its balance sheet to the extent that its contributions (including benefit payments) for other post-employment benefits were less than the Annual Required Contribution (“ARC”) determined in accordance with the GASB standard and described above. The total actuarial liability is determined by a valuation to be performed at least every two years. The total actuarial liability is reduced by any assets set aside to pre-fund the post-retirement benefits, with the resulting unfunded actuarial liability being amortized according to a funding schedule similar to that illustrated in this report.

To be considered a funded system, the retiree medical plan assets must be “segregated and restricted in a trust, or equivalent arrangement, in which (a) employer contributions to the plan are irrevocable, (b) assets are dedicated to providing benefits to retirees and their beneficiaries, and (c) assets are legally protected from creditors of the employers or plan administrator, for the payment of benefits in accordance with the terms of the plan.” (GASB 45, p. 47, “Plan Assets”). Therefore, for Plymouth to receive “credit” under the GASB accounting standard for assets set aside to pre-fund post-retirement benefits, these assets must be segregated in a trust or other account that is not subject to use for any other purpose by Plymouth.



## Recommendations and Comments

Post-employment medical benefits are a significant long-term liability that is only now starting to be addressed by Massachusetts government employers. In managing this liability, any governmental entity needs to consider the parameters that can significantly influence the level of the liability. To facilitate such a review, we recommend that Plymouth maintain a continuing group that is cognizant of the relevant financial and employee benefits issues raised by GASB Statement No. 45 that will provide leadership to the Town. We would recommend that the group review the following:

- 1) Funding Policy: As previously discussed, the funding policy is critical to the valuation not only because it impacts the funds backing the liability but also because it impacts the discount rate that is used to calculate all of the relevant figures. Plymouth needs to bear in mind that it is the formulation of a funding policy that is essential, not simply the contribution of funds. Of course, if a funding policy is developed, it needs to be implemented, not just formulated. Thus, we recommend that the Town maintain a written funding policy that it reviews each year.
- 2) Plan Design: One of the major factors influencing costs is the design of the plans that Plymouth offers to retirees. To the extent that any part of these plans changes materially, costs may either increase or decrease. In order to keep costs under control, the Town should review the design of all its medical plans annually. Changes in plan characteristics such as deductibles, coinsurance levels, out-of-pocket maximums, and covered services can help mitigate the impacts of ever-increasing medical costs. In addition, the Town should review the networks it is using to be sure that it is getting the most competitive reimbursement levels available.



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- 3) Contribution Levels: The extent to which the Town subsidizes the cost of retiree benefits is one of the most significant factors in the ultimate costs. Currently, retired Plymouth employees and their spouses pay anywhere from 1% to 20% of the premium cost for their medical insurance. The 20% figure will hold for future retirees. It is fairly common for Massachusetts public entities to require a 25% contribution. At the extremes, some municipal entities require as much as 50% for all participants (the most that retirees can be asked to contribute) while other require as little as 10% or 15%. Thus, Plymouth is more generous to its retirees than are its average peer entities. Contribution levels have a double impact on costs. First off, there is a direct relationship between contributions and costs in that higher contribution levels mean that more of the cost of the plan is born by the Town. Secondly, higher contribution levels lead to higher participation rates because the plan becomes less costly to the retiree. In the case of cities and towns where a substantial portion of the medical costs are paid by the employer, participation rates tend to be very high. Plymouth's participation level of 87.5% for retirees (which is based on the 20% contribution level) is consistent with what we would expect for a plan with contributions levels where Plymouth currently sets them.

In general, a very-well subsidized plan will have many participants enrolled at a high cost. Also, to the extent that other employers are cutting back or eliminating their programs, there is increased likelihood that a favorably subsidized plan will be elected by retirees, since no coverage or only very expensive coverage may be available from other sources such as their spouse's employer. There has been a very definite move toward reducing the subsidies paid by Massachusetts public entities.

- 4) Eligibility: The extent to which retirees are eligible for benefits is another variable that very directly impacts costs. Plymouth should review its eligibility criteria each year to be sure that they are accord with town goals for controlling costs and for providing well-deserved benefits for those who have worked for the town. Retirement system policies can also affect the eligibility for benefits. In the case of Plymouth, the Town



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pays for medical benefits for those who reach ten years of service, even if they do not retire from the Town immediately upon separation from service. This will produce a higher liability and ARC for Plymouth than if only those actually retiring from the Town were covered.

In addition to reviewing the above items regularly, we recommend that the Town continue working toward an organized method of keeping its data. This is an issue faced by virtually all public entities with respect to GASB Statement No. 45. Some of the typical issues are:

- 1) Be sure that it has a record of those eligible for coverage who do not take coverage. This should cover not only actives who are not enrolled but retired employees who opted out.
- 2) To the extent possible, make sure that all databases can be tied together by a single identifier, such as social security number or employee number. Some entities keep certain data by, for example, social security number, but organize other data on some other basis. This greatly increases the time and effort to tie all the relevant pieces of data together. This need is particularly acute when the records for those in the school system are not kept by Plymouth directly.



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## SECTION II

### ACTUARIAL VALUATION DETAILS

#### Population Data

*A. DISTRIBUTION BY AGE: INACTIVES, RETIREES, BENEFICIARIES, TERMINATED VESTEDS AND SURVIVORS (Includes retirees with life only or no coverage)*

Age	Number
0-19	0
20-24	0
25-29	0
30-34	0
35-39	2
40-44	3
45-49	18
50-54	27
55-59	124
60-64	242
65-69	307
70-74	210
75-79	123
80-84	80
85-89	64
90-94	24
95-99	14
100+	2
<b>TOTAL</b>	<b>1,240</b>



PLAN DEFINITION TABLE

Plan Name	Plan Type	Individual Rate <sup>1</sup>	Family Rate <sup>1</sup>	Retiree Contribution % <sup>2</sup>
Blue Choice	Commercial Managed Care	\$601.00	\$1,423.00	20.00%
Blue Care Elect	Commercial Managed Care	\$653.00	\$1,505.00	20.00%
Master Medical	Commercial Indemnity	\$708.00	\$1,586.00	20.00%
Medex	Medicare Indemnity	\$368.00	NA	20.00%
Carve Out	Medicare Indemnity	\$443.00	NA	20.00%
Managed Blue for Seniors	Medicare Managed Care	\$420.32	NA	20.00%
Dental	Dental	\$33.00	\$126.00	10.00%

<sup>1</sup>Rates at 1/1/2009

<sup>2</sup>Percentage for current actives is shown, grandfathered employees have a 10% contribution rate.

*B. FUTURE RETIREES – ACTIVE PARTICIPANTS*

# OF PARTICIPANTS\*

Current Plan	Medicare Eligible	Not Medicare Eligible	Total
No Medical/ Unknown	137	14	151
Indemnity	70	55	125
Managed Care	1,016	137	1,153
<b>TOTAL</b>	<b>1,223</b>	<b>206</b>	<b>1,429</b>

\* “Pre-Medicare eligible” means hired March 31, 1986 or before and “Medicare eligible” means hired after March 31, 1986. Employees hired March 31, 1986 or before do not contribute to Medicare.



C. DISTRIBUTION BY AGE AND SERVICE: ACTIVE PARTICIPANTS

Age Group	0-4	5-9	10-15	15-19	20-24	25-29	30-34	35-39	40+	Total
0-19	0	0	0	0	0	0	0	0	0	0
20-24	21	0	0	0	0	0	0	0	0	21
25-29	101	7	0	0	0	0	0	0	0	108
30-34	88	42	6	0	0	0	0	0	0	136
35-39	84	44	34	5	0	0	0	0	0	167
40-44	63	59	35	24	11	0	0	0	0	192
45-49	45	39	38	20	33	1	0	0	0	176
50-54	28	41	40	22	53	16	16	1	0	217
55-59	29	27	34	46	57	28	58	7	0	286
60-64	16	10	17	13	34	8	9	3	0	110
65-69	2	3	3	1	5	1	0	0	0	15
70-74	0	0	0	0	1	0	0	0	0	1
75-79	0	0	0	0	0	0	0	0	0	0
80-84	0	0	0	0	0	0	0	0	0	0
85-89	0	0	0	0	0	0	0	0	0	0
90-94	0	0	0	0	0	0	0	0	0	0
95-99	0	0	0	0	0	0	0	0	0	0
100+	0	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>	<b>477</b>	<b>272</b>	<b>207</b>	<b>131</b>	<b>194</b>	<b>54</b>	<b>83</b>	<b>11</b>	<b>0</b>	<b>1429</b>



SUMMARY OF RESULTS

<b>Actives</b>	
- Already in Medicare	0
- Pre-Medicare Coverage	206
- Post-Medicare Coverage	<u>1223</u>
Total	1429
<b>Retired, Disabled, Vested, Survivors and Beneficiaries</b>	1225

	at 7.50% discount	at 4.25% discount
Active Employees	\$103,697,379	\$191,461,260
Current Retirees	\$139,330,567	\$187,824,487
<b>TOTAL</b>	<b>\$243,027,946</b>	<b>\$379,285,747</b>
<b>Unfunded Accrued Liability</b>		
January 1, 2009	\$243,027,946	\$379,285,747
<b>Normal (Service) Cost as of</b>		
January 1, 2009	\$7,098,114	\$14,885,266



SUMMARY OF RESULTS

(continued)

Annual Required Contribution (ARC) Calculation		
	At 7.50% discount	At 4.25% discount
Thirty year amortization of UAAL	\$13,557,267	\$14,443,631
Normal Cost	\$7,098,114	\$14,885,266
<b>TOTAL</b>	<b>\$20,655,381</b>	<b>\$29,328,897</b>

Expected Claims

- Fiscal 2010 \$12,728,468

Schedule of Funding Progress Other Post-Employment Benefits

(Dollars in Thousands)

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Liability (AAL) [Projected Unit Credit] (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll (b-a)/c
1/1/2009	\$0	379,285.000	379,285	0.00%	\$90,445	419%



*Other Post-Employment Benefits Valuation  
as of January 1, 2009*

<b>Funding Schedule at 7.50%</b>					
Fiscal Year	Normal Cost <sup>1</sup>	Amortization <sup>2</sup>	Contribution	Year-End AAL	Projected Annual Benefit Cost <sup>3</sup>
2009	7,098,114	13,557,267	20,655,381	246,680,980	12,728,468
2010	7,630,473	14,031,771	21,662,244	250,097,899	14,146,885
2011	8,202,758	14,522,883	22,725,641	253,243,142	15,475,318
2012	8,817,965	15,031,184	23,849,149	256,077,855	16,150,858
2013	9,479,312	15,557,276	25,036,588	258,559,623	17,345,901
2014	10,190,261	16,101,780	26,292,041	260,642,180	18,134,915
2015	10,954,530	16,665,343	27,619,873	262,275,101	18,602,666
2016	11,776,120	17,248,630	29,024,750	263,403,456	18,905,375
2017	12,659,329	17,852,332	30,511,661	263,967,459	18,794,521
2018	13,608,779	18,477,163	32,085,942	263,902,068	18,928,247
2019	14,629,437	19,123,864	33,753,301	263,136,569	19,393,686
2020	15,726,645	19,793,199	35,519,844	261,594,123	19,680,114
2021	16,906,143	20,485,961	37,392,104	259,191,274	20,076,468
2022	18,174,104	21,202,970	39,377,074	255,837,427	20,447,400
2023	19,537,162	21,945,074	41,482,235	251,434,279	21,067,193
2024	21,002,449	22,713,151	43,715,600	245,875,213	21,539,809
2025	22,577,632	23,508,112	46,085,744	239,044,634	21,966,839
2026	24,270,955	24,330,896	48,601,850	230,817,268	22,413,249
2027	26,091,276	25,182,477	51,273,753	221,057,401	22,725,490
2028	28,048,122	26,063,864	54,111,986	209,618,053	23,019,364
2029	30,151,731	26,976,099	57,127,830	196,340,100	23,375,287
2030	32,413,111	27,920,262	60,333,374	181,051,326	23,506,807
2031	34,844,095	28,897,471	63,741,566	163,565,393	23,650,392
2032	37,457,402	29,908,883	67,366,285	143,680,749	23,675,397
2033	40,266,707	30,955,694	71,222,401	121,179,434	23,588,774
2034	43,286,710	32,039,143	75,325,853	95,825,813	23,471,332
2035	46,533,213	33,160,513	79,693,726	67,365,197	23,272,551
2036	50,023,204	34,321,131	84,344,335	35,522,371	22,918,373
2037	53,774,944	35,522,371	89,297,315	0	22,500,391

<sup>1</sup>Assumes 7.50% annual increase in normal cost and a static group of actives

<sup>2</sup>Assumes 3.50% annual increase in amortization payment

<sup>3</sup>The Pay-As-You-Go amount is for the current group of actives and retirees and is shown for the calendar year. It does not include any future hires. It is not directly comparable to the funding contribution but it included for illustrative purposes only. It does illustrate in the short-term, the estimated amount of claims costs for retirees. However, the retiree amount is expected to grow as new employees retire or become disabled.



## Sensitivity Analysis

The results of any actuarial valuation are sensitive to the assumptions used. That is, a change in an actuarial assumption will produce a change in the actuarial accrued liability and/or normal cost each year of the valuation. To illustrate this sensitivity, we performed valuations in which we changed two different inputs: the trend rate and the discount rate.

### A) Trend Rate Sensitivity

For postretirement medical plans in particular, the calculated actuarial values are highly sensitive to the assumed rate of health care cost trend. This is due to the compounding effect of the annual trend rates assumed for medical costs, as opposed to pension valuations where benefit levels typically remain fixed.

The following table illustrates the effect on our valuation results of a 1% increase or decrease in the assumed rates of health care cost trend in each year.

As of January 1, 2009	Health Care Cost Trend Rates		
	As Reported (4.25%)	+1% Each Year	-1% Each Year
<b>Liability for:</b>			
• Future Retirees	\$191,461,260	\$237,662,424	\$156,201,126
• Current Retirees, Beneficiaries, and Survivors	<u>\$187,824,487</u>	<u>\$210,092,698</u>	<u>\$168,394,091</u>
<b>Total AAL</b>	\$379,285,747	\$447,755,122	\$324,595,217
Normal Cost	\$14,885,266	\$19,323,199	\$11,639,136
<b>Annual Required Contribution for Fiscal Year 2010:</b>	\$29,328,897	\$36,374,221	\$24,000,090

The cumulative effect of a 1% increase in health care cost trend increases the AAL by approximately 18%, the normal cost by 30%, and the ARC by 24%. A 1% decrease in trend would decrease the AAL by 14%, the normal cost by 22% and the ARC by 18%.



There is the likelihood – based on historical experience – of significant deviations from the smooth rates of health care cost increase typically projected in any actuarial valuation. Therefore, emerging experience under the plan is likely to differ from the assumptions made as of any valuation date. This will produce actuarial gains and losses each year, even if the underlying assumptions remain reasonable for the future. Amortization of gains and losses will affect the updated funding schedule calculated at any point in the future.



B) Discount Rate Sensitivity

We also examined the sensitivity of the various key numbers to changes in the discount rate. For this testing, we varied the discount rate by 0.50%, or in other words, we used rates of 3.75% and 4.75%. The following table shows the results we obtained:

As of January 1, 2009	Discount Rates		
	As Reported (4.25%)	Plus 0.50% (4.75%)	Minus 0.50% (3.75%)
<b>Liability for:</b>			
• Future Retirees	\$191,461,260	\$172,395,408	\$213,547,260
• Current Retirees, Beneficiaries, and Survivors	\$187,824,487	\$174,364,574	\$195,535,890
<b>Total AAL</b>	\$379,285,747	\$346,759,982	\$409,083,150
Normal Cost	\$14,885,266	\$13,115,599	\$17,092,365
<b>Annual Required Contribution for Fiscal Year 2010:</b>	\$29,328,897	\$27,190,135	\$31,680,296

Thus, the cumulative effect of a 0.50% decrease in the discount rate is to increase the AAL by approximately 8%, the normal cost by 15%, and the ARC by 8%. A 0.50% increase in the discount rate would decrease the AAL by 9%, the normal cost by 12% and the ARC by 7%. It is prudent, and GASB Statement No. 45 requires, an updated actuarial valuation be performed periodically. For an entity of Plymouth's size, a new valuation will be required at least every two years.



### Analysis of Increase from the Prior Valuation

The AAL for this valuation was materially higher than that determined in the prior valuation. The difference was as follows:

	1/1/2009	1/1/2007	% Change
Liability for:			
• Future Retirees	\$191,461,260	\$131,836,517	145.23%
• Current Retirees, Beneficiaries, and Survivors	<u>\$187,824,487</u>	<u>\$133,154,897</u>	<u>141.06%</u>
Total AAL (medical and dental)	\$379,285,747	\$264,991,414	143.13%
Normal Cost	\$14,885,266	\$10,553,931	141.04%
Annual Required Contribution for first Fiscal Year:	\$29,328,897	\$20,340,389	144.19%

We analyzed the reasons for this increase and developed the following contributors to the increase:

- 1) Changes in trend rates. For the 2009 valuation, we incorporated known rate increases into our trend rates. These are increases that occurred on 7/1/2009. In the case of one of our claim categories, this increase was nearly 50% of the rate. Other increases were less but were still positive. These contrast to the increases in the early years of the prior valuation (where two years of actual increases were known). Some of these trend factors were actually negative . The impact of this change was significant and increased the liability by 21.6%.
- 2) Change in the valuation discount rate: The rate we used for the unfunded liability was decreased from 4.5% to 4.25%. Thus, all projected cash flows are brought back to the present at a lower rate and future costs are “worth more” in present dollars. We



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estimated the impact of this change as a 4.1% increase in the liability.

- 3) Change in the valuation mortality rates: For the current valuation we incorporated actuarially accepted rates of mortality improvement into our tables. This means that those receiving benefits will live longer than we expected for the 2007 valuation. We estimated the impact of this change as a 2.8% increase in the liability.
- 4) Change in population: The number of people in the 2009 valuation was marginally larger and also the mix somewhat different. The new population resulted in a 2.3% increase in the liability.
- 5) Other: The remainder of the change came from methodological changes adopted by Stone Consulting. These changes, which are unrelated to Plymouth, are designed to reflect more accurately the liability. In particular, we increased the cost of dependents under our retiree medical valuations. This was the bulk of the change. We also revised our method for valuing dental benefits. While the impact of this was not the largest part of the figures, it did serve to widen the change.



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## Actuarial Methods and Assumptions

- |    |                             |  |
|----|-----------------------------|--|
| 1. | Actuarial Cost Method       | Costs are attributed between past and future service using the Projected Unit Credit cost method. For attribution purposes, benefits are assumed to accrue over all employee service until decrement.  |
| 2. | Interest Rate/Discount Rate | 7.50% per year net of investment expenses for funded program.<br>4.25% per year net of investment expenses for an unfunded program.  |
| 3. | Mortality                   | Actives: The RP-2000 Mortality Tables (Sex-distinct) for Employees projected 9 years.<br>Retirees: The RP-2000 Mortality Tables (Sex-distinct) for Healthy Annuitants projected 9 years.<br>Disabled: The RP-2000 Mortality Tables (Sex-distinct) for Healthy Annuitants projected 9 years and set forward 2 years |



Actuarial Methods and Assumptions  
(Continued)

4. Withdrawal Prior to Retirement (all except teachers) Based on age.

<i>Age</i>	<i>Groups 1 and 2</i>	<i>Group 4</i>
25	28.23%	2.85%
30	17.35%	2.48%
35	10.07%	1.88%
40	7.21%	0.84%
45	5.68%	0.06%
50	4.57%	0.00%
55	0.00%	0.00%
60	0.00%	0.00%

5. Withdrawal Prior to Retirement (Teachers) Based on age and years of service. Representative rates are shown.

<i>Male</i>			
<i>Service:</i>	<i>0</i>	<i>5</i>	<i>10</i>
<i>Age</i>			
25	9.00%	4.00%	1.50%
35	11.00	4.80	3.70
45	7.60	4.60	2.50
55	5.04	3.70	1.50

<i>Female</i>			
<i>Service:</i>	<i>0</i>	<i>5</i>	<i>10</i>
<i>Age</i>			
25	6.30%	9.00%	4.00%
35	13.60	8.30	3.70
45	9.10	5.80	2.50
55	5.04	3.20	1.50



Actuarial Methods and Assumptions  
(Continued)

6. Eligibility for Vested Post-Retirement Medical Benefits upon Withdrawal 10 years of Service; assumed that individuals who withdraw prior to age 40 will elect a return of pension contributions and therefore be ineligible for retiree medical coverage
7. Disability Prior to Retirement The rates shown at the following sample ages illustrate the assumption regarding the incidence of disability. Disability is assumed to be 50% ordinary and 50% accidental for Group 1 and 10% ordinary and 90% accidental for Group 4 and 55% ordinary and 45% accidental for Teachers.

Age	Rate of Disability		
	Groups 1 and 2	Group 4	Teachers
20	0.03%	0.10%	0.004%
25	0.04	0.12	0.004
30	0.06	0.18	0.004
35	0.08	0.26	0.004
40	0.12	0.38	0.004
45	0.18	0.58	0.005
50	0.31	0.98	0.006
55	0.50	1.60	0.006
60	0.61	1.97	0.010



Actuarial Methods and Assumptions  
(Continued)

8a. Rates of Retirement: Non-Teachers Retirement rates apply once members reach 20 years of service or age 55 with 10 years of service. Group 4 members do not require 10 years of service.

<i>Age</i>	<i>Groups 1 and 2 Male and Female</i>	<i>Group 4</i>
50	NA	2.00%
51	NA	2.00%
52	NA	2.00%
53	NA	2.00%
54	NA	5.00%
55	10.00%	5.00%
56	3.00%	5.00%
57	3.00%	5.00%
58	3.00%	5.00%
59	5.00%	5.00%
60	5.00%	10.00%
61	5.00%	10.00%
62	10.00%	20.00%
63	10.00%	20.00%
64	10.00%	20.00%
65	50.00%	100.00%
66	35.00%	100.00%
67	35.00%	100.00%
68	35.00%	100.00%
69	35.00%	100.00%
70	100.00%	100.00%



Actuarial Methods and Assumptions  
(Continued)

8b. Rates of Retirement Teachers

<b>Male Teachers</b>			
Service: Age	<20 years	20-29 years	>29 years
50	N/A	1.0%	1.0%
51	N/A	1.0%	1.0%
52	N/A	1.0%	1.0%
53	N/A	1.0%	1.0%
54	N/A	2.0%	3.5%
55	2.0%	3.0%	6.0%
56	4.0%	3.0%	18.0%
57	7.0%	5.0%	30.0%
58	8.0%	7.0%	40.0%
59	9.0%	10.0%	40.0%
60	12.0%	20.0%	35.0%
61	15.0%	30.0%	35.0%
62	18.0%	35.0%	40.0%
63	15.0%	35.0%	40.0%
64	25.0%	30.0%	40.0%
65	40.0%	50.0%	40.0%
66	40.0%	30.0%	40.0%
67	40.0%	30.0%	40.0%
68	40.0%	30.0%	40.0%
69	40.0%	40.0%	40.0%
70	100.0%	100.0%	100.0%



Actuarial Methods and Assumptions  
(Continued)

8b. Rates of Retirement Teachers (cont'd)

Female Teachers			
Service:	<20 years	20-29 years	>29 years
Age			
50	N/A	1.0%	1.0%
51	N/A	1.0%	1.0%
52	N/A	1.0%	1.0%
53	N/A	1.0%	1.0%
54	N/A	1.0%	3.5%
55	2.0%	4.0%	6.0%
56	4.0%	4.0%	18.0%
57	7.0%	5.0%	30.0%
58	8.0%	7.0%	40.0%
59	9.0%	11.0%	40.0%
60	12.0%	16.0%	35.0%
61	15.0%	20.0%	35.0%
62	18.0%	25.0%	40.0%
63	15.0%	25.0%	40.0%
64	25.0%	30.0%	40.0%
65	40.0%	40.0%	40.0%
66	40.0%	30.0%	40.0%
67	40.0%	25.0%	40.0%
68	40.0%	35.0%	40.0%
69	40.0%	35.0%	40.0%
70	100.0%	100.0%	100.0%



Actuarial Methods and Assumptions  
(Continued)

9. Initial Claim Costs:

Age	Managed Care Commercial Individual	Managed Care Commercial Blended <sup>1</sup>	Indemnity Commercial Individual	Indemnity Commercial Blended <sup>1</sup>	Managed Care Medicare <sup>2</sup>	Indemnity Medicare <sup>2</sup>
55	\$8,563.73	\$15,351.33	\$7,118.49	\$12,808.67	\$5,043.84	\$4,644.43
60	\$10,220.25	\$18,320.81	\$8,495.45	\$15,286.31	\$5,043.84	\$4,644.43
65	\$12,554.52	\$22,505.22	\$10,435.78	\$18,777.65	\$5,043.84	\$4,644.43
70	\$14,554.13	\$26,089.72	\$12,097.93	\$21,768.44	\$5,043.84	\$4,644.43
75	\$16,466.66	\$29,518.13	\$13,687.70	\$24,629.00	\$5,043.84	\$4,644.43
80	\$18,180.53	\$32,590.40	\$15,112.32	\$27,192.40	\$5,043.84	\$4,644.43
85	\$19,107.91	\$34,252.83	\$15,883.21	\$28,579.49	\$5,043.84	\$4,644.43

<sup>1</sup>Rates above age 64 shown for illustrative purposes only.

<sup>2</sup>Medicare rates are not age-graded

10. Trend Rates by Plan

Year	Commercial Managed Care	Commercial Indemnity	Medicare Managed Care	Medicare Indemnity	Dental
2009	0.00%	47.99%	3.55%	3.23%	0.00%
2010	9.00%	10.00%	8.00%	9.00%	7.00%
2011	8.50%	9.50%	7.50%	8.50%	6.50%
2012	8.00%	9.00%	7.00%	8.00%	6.00%
2013	7.50%	8.50%	6.50%	7.50%	5.50%
2014	7.00%	8.00%	6.00%	7.00%	5.00%
2015	6.50%	7.50%	5.50%	6.50%	5.00%
2016	6.00%	7.00%	5.00%	6.00%	5.00%
2017	5.50%	6.50%	5.00%	6.00%	5.00%
2018+	5.00%	6.00%	5.00%	6.00%	5.00%



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## Actuarial Methods and Assumptions (Continued)

11. Medicare Eligibility	Employees: 100% if hired March 31, 1986 or after; 85% if hired pre-March 31, 1986 Spouses:100%
12. Participation Rates	<p>Current retirees and spouses are assumed to continue the same coverage they have as of the valuation date. No future election of coverage is assumed for those retirees and spouses who currently have not elected coverage.</p> <p>All Retirees: 87.5% of the active employees eligible for post-employment medical benefits are assumed to elect coverage immediately upon. For Dental Insurance 70.0% of the active employees eligible for post-employment benefits are assumed to elect coverage immediately upon retirement For Life Insurance 98.0% of the active employees eligible for post-employment benefits are assumed to elect coverage immediately upon retirement.</p> <p>For all Retirees: Of those electing coverage, 85% are assumed to have a covered spouse at retirement. Participants with no or unknown current coverage (e.g. active employees and/or vested inactives who do not currently participate in Plymouth's medical plans) are assumed to elect retiree coverage at the same rates as currently covered active employees. Medicare-eligible retirees currently under age 65 are assumed to elect a Medicare plan option at age 65.</p>
13. Expenses	Administrative expenses are included in the per capita medical cost assumption.



## Actuarial Methods and Assumptions

(Continued)

14. Projections

The January 1, 2009 valuation was not adjusted for timing when determining the funding schedule at Plymouth. This means that the Pay-as-you-go amount as well as the Actuarial Valuation results have not been modified for interest or any other timing factor in our presentation.

15. Massachusetts Teachers Retirement System (MTRS)

In this report, members of the Massachusetts Teachers Retirement System are sometimes referred to as Teachers.

16. Amortization Period

A closed amortization period has been used.



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## Principal Plan Provisions Recognized in Valuation

- |    |                          |  |
|----|--------------------------|--|
| 1. | Eligibility for Benefits | <p>Current retirees, beneficiaries and spouses of Plymouth are eligible for medical benefits.</p> <p>Current employees or spouses who retiree with a benefit from the Plymouth Retirement System or the Massachusetts Teachers' Retirement System.</p> <p>Survivors of Plymouth employees and retirees are also eligible for medical benefits.</p> |
| 2. | Medical Benefits         | Various medical plans offered by Plymouth to its own employees.  |
| 3. | Life Insurance           | Plymouth retirees are eligible for a \$5,000 life insurance benefit offered by Plymouth, provided the retiree makes the required contributions. Each employee pays \$0.02/month out of the \$1.38/month premium.   |
| 4. | Retiree Contributions    | Based on data provided by Plymouth.  |
| 5. | Section 18               | Section 18 of Chapter 32B of the Massachusetts General Laws has been accepted by the Town of Plymouth. This section requires those employees who are eligible, to enroll in Medicare.  |





## Glossary

Actuarial Accrued Liability	The portion, as determined by a particular Actuarial Cost Method, of the present value of benefits which is not provided for by future Normal Costs.
Actuarial Assumptions	Assumptions as to the occurrence of future events affecting Other Post-employment Benefits such as: mortality rates, disability rates, withdrawal rates, and retirement rates, the discount assumption, and the trend rates.
Actuarial Cost Method	A procedure for determining the Actuarial Present Value of Total Projected benefits and for developing an actuarially equivalent allocation of such value to time periods, usually in the form of a Normal and an Actuarial Accrued Liability.
Amortization Payment	The portion of the OPEB contribution designed to pay interest and to amortize the Unfunded Actuarial Accrued Liability.
Annual OPEB Cost	The accrual-basis measure of the periodic cost of an employer's participation in a defined-benefit OPEB plan.
Annual Required Contribution (ARC)	The employer's periodic contributions to a defined benefit OPEB plan, calculated in accordance with the parameters defined in GASB 45. This is defined as the sum of the Normal Cost and the Amortization payment.
Commercial Plans	Plans designed to cover the medical expenses of those not otherwise covered by Medicare.
GASB	The Governmental Accounting Standards Board is the organization that establishes financial reporting standards for state and local governments.



**Glossary**  
(continued)

Investment return Assumptions (Discount Rate)	The rate used to adjust a series of future benefit payments to reflect the time value of money. Under GASB 45, this rate is related to the degree to which the OPEB program is funded.
Healthcare Cost Trend Rate	The rate of change in per capita health claims costs over time as a result of factors such as medical inflation, utilization of healthcare services, the intensity of the delivery of services, technological developments, and cost-shifting.
Medicare Plans	Medical plans sold to those over 65 who are also covered by Medicare. These plans are supplemental to the Medicare plan, which is considered primary.
Net OPEB Obligation	The cumulative difference, since the effective date of GASB 45, between the annual OPEB cost and the employer's contributions to the plan.
Normal Cost	The portion of the Actuarial Present value of plan benefits that is allocated to a valuation year by the Actuarial Cost Method.
OPEB	Other Postemployment benefits other than pensions. This does not include plans such as severance plans or sick-time buyouts.
Pay-as-You-Go	The amount of benefits paid out to plan participants during the year.
Per Capita Claims Cost	The current average annual cost of providing postretirement health care benefits per individual.
Unfunded Actuarial Accrued Liability	The portion of the Actuarial Accrued Liability that is not covered by plan assets. For a plan that is completely unfunded, this amount is equivalent to the Actuarial Accrued Liability.
Valuation Date	The point from which all future plan experience is projected and as of which all present values are calculated.



### Acknowledgement of Qualifications

I, Lawrence Stone, am a consultant for Stone Consulting, Inc. I am a member of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

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