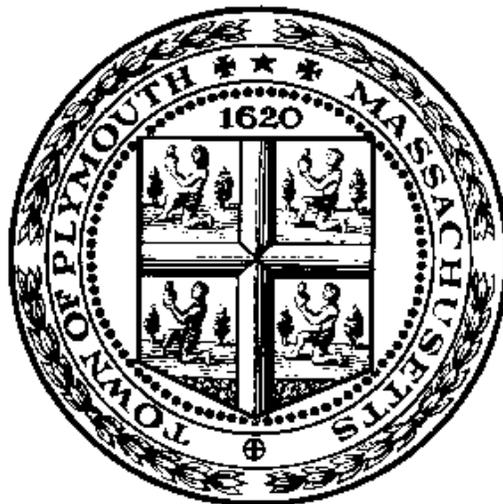

Town of Plymouth Other Post-Employment Benefits



Actuarial Valuation
July 1, 2006



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SECTION I MANAGEMENT SUMMARY

Introduction

This report presents the results of the actuarial valuation of the Town of Plymouth Post-employment Medical and Life Insurance Benefits as of July 1, 2006. 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 July 1, 2006 supplied by the Town of Plymouth. 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.

Respectfully submitted,
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April 15, 2009

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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 Plymouth discount rates are presented. The 7.75% 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 currently recommend for Plymouth is 4.50%. The OPEB liability is extremely sensitive to this assumption. Thus, 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 July 1, 2006 (at 4.50% discount rate) is \$264,991,414. This is made up of \$131.8 million for current active Plymouth employees, and \$133.2 million for Plymouth retirees, spouses and survivors. The total AAL is greater than the two parts due to rounding.
- The Normal Cost is the "price" attributable to benefits earned in the current year. The Normal Cost as of July 1, 2006 (at the 4.50% discount rate) is \$10,553,931.
- Based on a thirty-year funding schedule (at the 4.50% discount rate), the Fiscal 2008 contribution would be \$20,340,389. This figure is referred to as the ARC. This figure should be contrasted with the ARC using the fully funded 7.75% rate of \$14,360,967. These compare to the pay-as-you-go contribution of the existing costs for current retirees of \$8,697,045. 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 13 and the accompanying table on page 26. The following table shows the breakdown of the Actuarial Accrued Liability between future retirees and current retirees,



*Post-Employment Medical and Life Insurance Benefits Valuation
as of July 1, 2006*

as well as the normal cost, at the Plymouth different discount rates:

Actuarial Results as of July 1, 2006	7.75% Rate	4.50% Rate
• Current Actives	<u>\$70,795,013</u>	<u>\$131,836,517</u>
• Current Retirees, Beneficiaries, Vesteds and Survivors	<u>\$97,856,827</u>	<u>\$133,154,897</u>
Total AAL	\$168,651,840	\$264,991,414
Normal Cost	\$5,134,035	\$10,553,931
ARC	\$14,360,967	\$20,340,389



Valuation Methodology and Assumptions

VALUATION METHOD

The valuation of the post-employment medical and life insurance 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 methods specified in that accounting standard, and is the 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 attribution method produces a lower accrued liability for the future retirees. Spreading the benefit accrual over the full working lifetime in this fashion is appropriate for the public sector since the taxpayer who receives the service “pays” for the benefit instead of concentrating the cost in the first ten years of service. There are other significant differences between the GASB Statement No. 45 and FAS106, most noticeably in the choice of discount rate. The GASB 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 7.75%, and 4.50% as well as mortality, disability, withdrawal and retirement rates. The Plymouth discount rates apply to the scenarios of either a fully funded or unfunded program. GASB Statement No. 45 indicates that the discount rate for an unfunded postemployment 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. Currently, we are using a rate of 4.50% 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 7.75%. For a plan where the town has been setting aside some funds toward the liability, 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.

The discount rate would change if the Town implements any sort of funding policy. Such a



change would lead to a lower discount rate, 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, coverage election rates and plan participation rates.

Current health care costs by age

Because actual claim costs for the Plymouth population were not available, initial health care cost assumptions were derived from premium rates for the various health care plans in-force at July 1, 2006. We analyzed each plan 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). This methodology is what we have employed for all the GASB clients with whom we have worked. 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 lack of credibility that often arises if one attempts to analyze every plan separately

Plymouth offers several different Commercial Managed Care plans. Thus, for this plan category, claim costs were a melding of the various plans based on their individual rates and the number of lives covered under each. A pair of Commercial Indemnity plans is also offered and a similar melding process was followed for these. The Town also offers an Indemnity Medicare Supplement plan and a pair of Managed Care Medicare Supplement plans to Medicare-eligible retirees. A melding process similar to that used for the Commercial plans was used for the Managed Care plans. Since there was one plan in the Indemnity category, we did not need to do any melding of rates to calculate the claim costs.

For all of these groups, weighted-average costs for each plan grouping were calculated based on actual Plymouth active and retiree population 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.

A similar method was followed for the single Dental plan offered by the Town. The only difference is that the aging factors used were developed by Stone Consulting based upon demographic factors common in the pricing of dental plans. The rate of increase in Dental claim costs by age is much less than for Medical plans. Thus, the differences in these costs by age is not as great as what one sees in Medical

Cost trends

The claim rates developed using the methodology described above must be projected over the life of each employee/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 survey of the health care market. We developed different trends for the same four categories for which we developed claim costs: Medical Indemnity, Medical Managed Care, Medicare Managed Care, and Medicare Indemnity. We also developed trend rates applicable to dental benefits. For the medical benefits, actual trend were used for the first two years, since data for those two years was available.

These factors were applied to the premium-based claim rates. 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 Medical Indemnity trends begin at 11% and scale down to 6%. The Managed Care trends begin at 10% and scale down to 5%. For Medicare, the indemnity trend rates begin at 10% and scale down to 6% and the Managed Care Trend rates begin at 9% and scale down to 5%. As stated above, for years one and two, we substituted actual trend rates based on the rates changed. A table showing the



trend rates used appears in the Actuarial Methods and Assumptions section.

A single set of trend factors was developed for the Dental plan. These factors worked similarly to the Medical factors in that they started at a relatively higher rate and tailed off to a lower ultimate rate. Consistent with the generally less volatile nature of this coverage, the factors were somewhat lower than for medical. The Dental trends began at 8% and tailed off to 5%.

In recent 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.

- [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 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 65 retiree to being a 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 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 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 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-65 retirees in Commercial plans are assumed to stay in their current plan until 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. Actives employees over 65 are assumed to make the same sorts of selections as retirees at age 65.

Plymouth Participant Behavior at Key Ages			
Status	Age	Pre-65 Retirement	65+ Retirement
Active	Under 65	40% Commercial Managed Care 60% Commercial Indemnity	94% Medicare Indemnity 5% Medicare Mangaged Care 1% Commercial Indemnity
Active	65+	NA	94% Medicare Indemnity 5% Medicare Mangaged Care 1% Commercial Indemnity
Retired	Under 65	Current Plan	94% Medicare Indemnity 5% Medicare Mangaged Care 1% Commercial Indemnity or Actual Plan if already in Medicare
Retired	65+	NA	Current Plan

No such modeling was necessary for dental plans since there is only one 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 studied the coverage election patterns of all retirees to determine the historical frequency at which they elect to take medical coverage. Based on these studies, we assumed that 95% of future eligible retirees and spouses will elect health plan coverage. For those employees currently active and not enrolled in Plymouth’s medical plans, we assume that they will opt for a medical plan that reflects the historical pattern of choice by retired employees. Due to Plymouth’s adoption of Section 18 of Chapter 32B of Massachusetts General Laws, we assume that all retirees will enroll in Medicare, if eligible, on the later of age 65 or retirement. Once a retiree is in Medicare, we assume enrollment in a Medicare supplement plan.



A similar assumption was made for the Dental plan. For this plan, we assumed that 80% of retirees would select it. Since there is only one plan, no other assumptions concerning choices at retirement were necessary.

Lastly, it was also necessary to make an assumption about the frequency of spousal election of coverage. For this purpose, we assumed that they would elect coverage at the same rate. And, to complete the set of necessary assumptions for spouses, we assumed that 85% of future retirees will have a covered spouse at the time of retirement.

Other Items Requiring Consideration

- *Sensitivity Analysis*

The effect of increasing health care costs is extremely significant in an actuarial valuation of postretirement health benefits. As experience emerges the trend assumptions we have used are unlikely to be exactly realized. 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 July 1, 2006 valuation. This means that the first year of the valuation is 7/1/2006-6/30/2007. It is permissible, under GASB45, to use these values, without adjustment for interest or any other timing factor for a limited future time period. For a town 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 July 1, 2006 results without adjustment when discussing the 2008 fiscal year.



- Medicare

Medicare eligibility is an important assumption with regard to future costs. We have assumed 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. This assumption is based on the percentage of current retirees, beneficiaries and survivors who are enrolled in Medicare plan options as well as our experience with similar cities and towns in Massachusetts.

- 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.



Data

The participant census data for the valuation study was supplied by the Plymouth Retirement Board, the Town of Plymouth, and the Massachusetts Teachers Retirement Board. 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 post-employment medical, dental, and life insurance 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 2008. The full schedule is shown in Section II.



Development of Funding Schedule

The contribution amount for Fiscal 2008 is \$14,360,967. The July 1, 2006 Unfunded Actuarial Accrued Liability is \$168,651,840. Because there are no funds set aside, it is equal to the total actuarial accrued liability (AAL). The UAAL is amortized over thirty years using an increasing amortization payment at the rate of assumed payroll increase (3.750%). 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 2008 contribution under the GASB parameters. 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, 2008. For the purposes of this schedule, we have not adjusted the July 1, 2006 liability for timing by applying interest to bring it to Plymouth.

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

Cash Flow Consideration

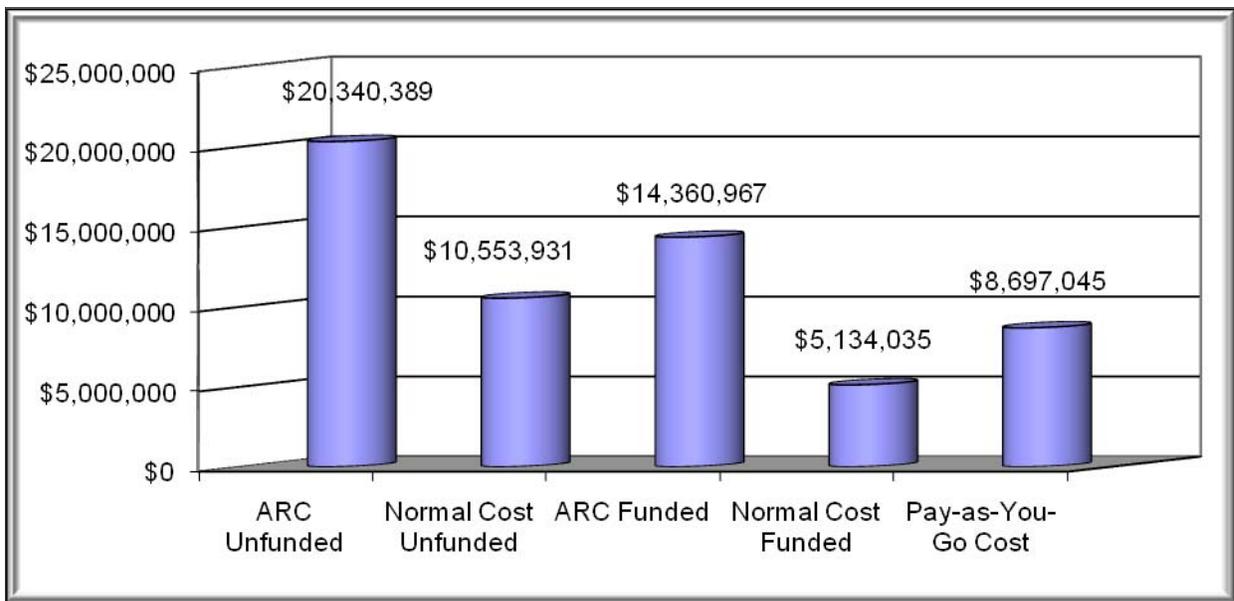
We have analyzed the cash flow of a funded post-employment medical trust by comparing the expected payouts of claims over the thirty-year period to expected contribution levels. If the actuarial assumptions are met, the funded amounts will be sufficient to cover annual benefit payments each year. Prior 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 cities and towns 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 towns must report figures for GASB45 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 interest 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.

COSTS ON AN UNFUNDED BASIS

If Plymouth continues its current policy and works on a pay-as-you-go basis, without any prefunding, the liability used in the calculation would be \$264,991,414. 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 the next 5 years under the unfunded scenario.

Fiscal Year	ARC	Pay-As-You-Go	Annual OPEB Cost	Net OPEB Obligation
2008	\$20,340,389	\$8,697,045	\$20,340,389	\$11,643,344
2009	\$21,182,308	\$11,974,550	\$21,101,646	\$20,770,440
2010	\$22,059,361	\$12,433,955	\$21,940,867	\$30,277,352
2011	\$22,973,026	\$13,278,656	\$22,840,070	\$39,838,766
2012	\$23,924,843	\$13,983,905	\$23,806,275	\$49,661,136



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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.



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 2008, Plymouth would need to record a liability on its balance sheet to the extent that its contributions (including benefit payments) for post-retirement medical and life insurance benefits were less than the Annual Required Contribution (“ARC”) determined in accordance with the GASB standard. The ARC, simply stated, is the sum of the normal cost for a given year plus the amortization of the unfunded actuarial liability. 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.

Plymouth has already sponsored a home rule petition to allow it to pre-fund their post-retirement medical and life insurance benefits. It seems likely that the Legislature will need to address this issue in the future in a more general manner.



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 GASB45 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. Thus, we recommend that the Town maintain a formal, 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.
- 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. The current rates at which Plymouth retirees and their spouses pay for their medical insurance is 20%. However, there are people already retired paying as little as 1% of the cost of the plans. These are all favorable percentages for the retirees. Such 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. The second point is well illustrated by our valuation participation input, which assumes that 95% of Plymouth retirees will eventually enroll in a retiree medical plan and 80% of the retirees will eventually enroll in a retiree dental plan. Thus, 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 funded plan will be elected by retirees, since no coverage or only very expensive coverage may be available from their spouse's employer. There has been a very definite move toward reducing the subsidies paid by cities and towns.

- 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 effect the eligibility for benefits.

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 cities and towns with respect to GASB45. Specifically, we would urge the Town to:

- 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 by retired employees who opted out.
- 2) Be sure that data on MTRS membership for active members is contained within the consolidated database. For Plymouth, like many Massachusetts cities and towns, this data is kept by a different agency than is the data for everyone else.
- 3) 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.



SECTION II

ACTUARIAL VALUATION DETAILS

Plan Participation

*A. DISTRIBUTION BY AGE: INACTIVES, RETIREES, BENEFICIARIES
AND SURVIVORS*

Age	Number
0-19	0
20-24	0
25-29	0
30-34	1
35-39	0
40-44	2
45-49	9
50-54	40
55-59	191
60-64	246
65-69	262
70-74	168
75-79	108
80-84	69
85+	81
TOTAL	1177



B. FUTURE RETIREES – ACTIVE PARTICIPANTS

OF PARTICIPANTS*

Current Plan	Medicare Eligible	Pre-Medicare Eligible	Total
No Medical/ Unknown	113	16	129
Indemnity	86	70	156
Managed Care	753	146	899
TOTAL	952	232	1184

* “Pre-Medicare eligible” means hired prior to March 31, 1986 and “Medicare eligible” means hired March 31, 1986 or after.

PLAN DEFINITION TABLE

Plan	Type	Delivery Method
Network Blue	Commercial	Managed Care
New Network Blue	Commercial	Managed Care
Blue Choice	Commercial	Managed Care
Master Health Plus	Commercial	Indemnity
Major Medical	Commercial	Indemnity
MEDEX	Medicare Supplement	Indemnity
Medicare HMO Blue	Medicare Supplement	Managed Care
Tufts Medicare	Medicare Supplement	Managed Care



C. DISTRIBUTION BY AGE AND SERVICE: ACTIVE PARTICIPANTS

		Age												Total	
		Under 20	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45-49	50 - 54	55 - 59	60 - 64	65 - 69	70 - 74		75+
Credited Service	Less than 5 years	0	8	59	47	52	36	33	34	19	10	0	1	1	303
	5 but less than 10 years	0	0	8	46	46	52	48	50	19	9	4	2	0	281
	10 but less than 15 years	0	0	0	3	26	34	30	43	30	6	3	0	0	175
	15 but less than 20 years	0	0	0	0	5	33	26	64	46	14	4	0	0	189
	20 but less than 25 years	0	0	0	0	0	7	22	31	26	8	3	0	0	95
	25 but less than 30 years	0	0	0	0	0	0	2	54	24	4	0	0	0	84
	30 or more years	0	0	0	0	0	0	0	29	24	3	0	0	0	57
Total:	0	8	67	96	129	162	161	305	186	54	12	3	1	1184	



SUMMARY OF RESULTS

• Actives			
– Pre-Medicare Coverage		232	
– Post-Medicare Coverage		952	
– Total		1184	
• Retired, Disabled, Vested, Beneficiaries Plymouth			
		<u>At 7.75% Discount</u>	<u>At 4.50% Discount</u>
– Active Employees		\$70,795,013	\$131,836,517
– Current Retirees		\$97,856,827	\$133,154,897
– Total		\$168,651,840	\$264,991,414
 Unfunded Accrued Liability			
• July 1, 2006		\$168,651,840	\$264,991,414
 Normal (Service) Cost as of July 1, 2006			
		\$5,134,035	\$10,553,931



SUMMARY OF RESULTS

(continued)

	<u>At 7.75% discount</u>	<u>At 4.50% discount</u>
• Thirty year amortization of UAAL	\$9,226,932	\$9,786,458
• Normal Cost	\$5,134,035	\$10,553,931
• Total	\$14,360,967	\$20,340,389

Expected Claims

- Fiscal 2008 \$8,697,045



*Post-Employment Medical and Life Insurance Benefits Valuation
as of July 1, 2006*

Funding Schedule					
Fiscal Year	Normal Cost ¹	Amortization ²	Contribution ³	Year-End AAL ⁴	Projected Annual Benefit Cost ⁵
2008	5,134,035	9,226,932	14,360,967	171,780,338	8,697,045
2009	5,531,923	9,572,942	15,104,865	174,778,469	11,974,550
2010	5,960,647	9,931,927	15,892,574	177,622,149	12,433,955
2011	6,422,597	10,304,375	16,726,972	180,284,902	13,278,656
2012	6,920,348	10,690,789	17,611,137	182,737,657	13,983,905
2013	7,456,675	11,091,693	18,548,368	184,948,526	14,446,999
2014	8,034,567	11,507,632	19,542,199	186,882,563	14,652,262
2015	8,657,246	11,939,168	20,596,414	188,501,508	15,329,653
2016	9,328,183	12,386,887	21,715,070	189,763,504	15,813,493
2017	10,051,117	12,851,395	22,902,512	190,622,798	15,798,889
2018	10,830,079	13,333,322	24,163,401	191,029,410	16,138,746
2019	11,669,410	13,833,322	25,502,732	190,928,785	15,630,420
2020	12,573,789	14,352,072	26,925,861	190,261,408	15,654,406
2021	13,548,258	14,890,274	28,438,532	188,962,397	15,759,288
2022	14,598,248	15,448,660	30,046,907	186,961,052	15,762,892
2023	15,729,612	16,027,984	31,757,596	184,180,381	15,823,253
2024	16,948,657	16,629,034	33,577,690	180,536,577	16,012,935
2025	18,262,178	17,252,622	35,514,800	175,938,461	16,268,991
2026	19,677,497	17,899,596	37,577,092	170,286,877	16,393,315
2027	21,202,502	18,570,831	39,773,333	163,474,040	16,631,893
2028	22,845,696	19,267,237	42,112,933	155,382,830	16,939,820
2029	24,616,238	19,989,758	44,605,996	145,886,035	16,903,496
2030	26,523,996	20,739,374	47,263,370	134,845,527	16,908,197
2031	28,579,606	21,517,101	50,096,707	122,111,380	17,007,627
2032	30,794,526	22,323,992	53,118,517	107,520,911	17,050,547
2033	33,181,101	23,161,142	56,342,243	90,897,651	16,710,320
2034	35,752,637	24,029,684	59,782,321	72,050,234	16,621,900
2035	38,523,466	24,930,798	63,454,263	50,771,193	16,497,000
2036	41,509,035	25,865,702	67,374,737	26,835,666	16,223,494
2037	44,725,985	26,835,666	71,561,651	0	15,946,554

¹Assumes 7.75% annual increase in normal cost and a static group of actives

²Assumes 3.750% annual increase in amortization payment

³The 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 July 1, 2006	Health Care Cost Trend Rates		
	As Reported (4.50%)	+1% Each Year	-1% Each Year
Liability for:			
• Future Retirees	\$131,836,517	\$159,320,545	\$103,345,010
• Current Retirees, Beneficiaries, and Survivors	<u>\$133,154,897</u>	<u>\$145,234,976</u>	<u>\$117,075,606</u>
Total AAL	\$264,991,414	\$304,555,521	\$220,420,616
Normal Cost	\$10,553,931	\$13,236,572	\$8,025,687
Annual Required Contribution for Fiscal Year 2008:	\$20,340,389	\$13,626,789	\$8,292,801

The cumulative effect of a 1% increase in health care cost trend increases the AAL by approximately 18%, the normal cost by 29%, and the required contribution by 24%. A 1% decrease in trend would decrease the AAL by 14%, the normal cost by 21%, and the required contribution by 18%.



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 4.00% and 5.00%. The following table shows the results we obtained:

As of July 1, 2006	Discount Rates		
	As Reported (4.50%)	Plus 0.50% (5.00%)	Minus 0.50% (4.00%)
Liability for:			
• Future Retirees	\$131,836,517	\$118,555,751	\$147,231,070
• Current Retirees, Beneficiaries, and Survivors	<u>\$133,154,897</u>	<u>\$126,293,998</u>	<u>\$140,708,138</u>
Total AAL	\$264,991,414	\$244,849,749	\$287,939,208
Normal Cost	\$10,553,931	\$9,334,124	\$11,990,904
Annual Required Contribution for Fiscal Year 2008:	\$20,340,389	\$18,991,629	\$21,927,582

Thus, the cumulative effect of a 0.50% decrease in the discount rate is to increase the AAL by approximately 9%, the normal cost by 14%, and the required contribution by 8%. A 0.50% increase in the discount rate would decrease the AAL by 8%, the normal cost by 12%, and the required contribution by 7%.

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.

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.



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	7.75% per year net of investment expenses for funded program. 4.50% per year net of investment expenses for an unfunded program.																														
3.	Mortality	<p>Actives: The RP-2000 Mortality Tables (Sex-distinct) for Employees</p> <p>Retirees: The RP-2000 Mortality Tables (Sex-distinct) for Healthy Annuitants</p> <p>Disabled: The RP-2000 Mortality Tables (Sex-distinct) for Healthy Annuitants set forward 2 years</p>																														
4.	Withdrawal Prior to Retirement (all except teachers)	<p>The rates shown at the following sample ages illustrate the withdrawal assumption:</p> <table border="0" style="margin-left: 40px;"> <thead> <tr> <th colspan="3" style="text-align: left;">Rate of Withdrawal</th> </tr> <tr> <th style="text-align: left;"><i>Age</i></th> <th style="text-align: left;"><i>Groups 1 and 2</i></th> <th style="text-align: left;"><i>Group 4</i></th> </tr> </thead> <tbody> <tr> <td>25</td> <td>28.23%</td> <td>2.85%</td> </tr> <tr> <td>30</td> <td>17.35%</td> <td>2.48%</td> </tr> <tr> <td>35</td> <td>10.07%</td> <td>1.88%</td> </tr> <tr> <td>40</td> <td>7.21%</td> <td>0.84%</td> </tr> <tr> <td>45</td> <td>5.68%</td> <td>0.06%</td> </tr> <tr> <td>50</td> <td>4.57%</td> <td>0.00%</td> </tr> <tr> <td>55</td> <td>0.00%</td> <td>0.00%</td> </tr> <tr> <td>60</td> <td>0.00%</td> <td>0.00%</td> </tr> </tbody> </table>	Rate of Withdrawal			<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%
Rate of Withdrawal																																
<i>Age</i>	<i>Groups 1 and 2</i>	<i>Group 4</i>																														
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50	4.57%	0.00%																														
55	0.00%	0.00%																														
60	0.00%	0.00%																														



Actuarial Methods and Assumptions (Continued)

Withdrawal Prior to Retirement for Teachers

Male Teachers	Service:	0	5	10
	Age			
	25	4.00%	4.00%	1.50%
	35	11.10	4.80	3.70
	45	7.60	4.60	2.50
	55	5.00	3.70	1.50
Female Teachers	25	7.00%	9.00%	4.00%
	35	13.60	8.30	3.70
	45	9.10	5.80	2.50
	55	5.00	3.20	1.50

5. 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

6. 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 65% ordinary and 35% accidental for Group 1 and 2 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
20	0.03%	.10%
25	0.04	.12
30	0.06	.18
35	0.08	.13
40	0.12	.19
45	0.18	.29
50	0.31	.49
55	0.50	.80
60	0.61	.99



Actuarial Methods and Assumptions (Continued)

7. Rates of Retirement

The rates shown at the following ages illustrate the assumption regarding the incidence of retirement, once the member has achieved 10 years of service:

Age	Rates of Retirement		
	Group 1 and 2	Group 1 and 2	Group 4
	Male	Female	
50	1.00%	1.50%	2.00%
51	1.00%	1.50%	2.00%
52	1.00%	2.00%	2.00%
53	1.00%	2.50%	5.00%
54	2.00%	2.50%	7.50%
55	12.00%	15.50%	15.00%
56	12.50%	16.50%	10.00%
57	12.50%	16.50%	10.00%
58	15.00%	16.50%	10.00%
59	6.50%	16.50%	15.00%
60	22.00%	15.00%	20.00%
61	20.00%	13.00%	20.00%
62	30.00%	15.00%	25.00%
63	25.00%	12.50%	25.00%
64	22.00%	18.00%	30.00%
65	40.00%	15.00%	100.00%
66	25.00%	20.00%	NA
67	25.00%	20.00%	NA
68	30.00%	25.00%	NA
69	30.00%	20.00%	NA
70	100.00%	100.00%	NA



*Post-Employment Medical and Life Insurance Benefits Valuation
as of July 1, 2006*

7. Rates of Retirement
(continued)

The rates shown at the following ages illustrate the assumption for members of the Massachusetts Teachers Retirement System regarding the incidence of retirement, once the member has achieved 10 years of service:

	Males		Females		Males and Females
	<20 years	20 + years	<20 years	20 + years	30+ years
50	N/A	1.0%	N/A	1.0%	
51	N/A	1.0%	N/A	1.0%	
52	N/A	1.0%	N/A	1.0%	
53	N/A	1.0%	N/A	1.0%	
54	N/A	2.0%	N/A	2.0%	3.5%
55	2.0%	3.0%	2.0%	4.0%	6.0%
56	4.0%	3.0%	4.0%	4.0%	18.0%
57	7.0%	5.0%	7.0%	5.0%	30.0%
58	8.0%	7.0%	8.0%	7.0%	40.0%
59	9.0%	10.0%	9.0%	11.0%	40.0%
60	12.0%	20.0%	12.0%	16.0%	35.0%
61	15.0%	30.0%	15.0%	20.0%	35.0%
62	18.0%	35.0%	18.0%	25.0%	40.0%
63	15.0%	35.0%	15.0%	25.0%	40.0%
64	25.0%	30.0%	25.0%	30.0%	40.0%
65	40.0%	50.0%	40.0%	40.0%	40.0%
66	40.0%	30.0%	40.0%	30.0%	40.0%
67	40.0%	30.0%	40.0%	25.0%	40.0%
68	40.0%	30.0%	40.0%	35.0%	40.0%
69	40.0%	40.0%	40.0%	35.0%	40.0%
70	100.0%	100.0%	100.0%	100.0%	100.0%

8a. Initial Health Care Claim Costs (Individual only)

Age	Managed Care Commercial	Indemnity Commercial	Managed Care Medicare	Indemnity Medicare
55	\$6,405.54	\$6,599.62	\$2,757.43	\$3,033.64
60	\$8,966.37	\$7,876.22	\$3,290.81	\$3,620.45
65	\$11,014.87	\$9,675.12	\$4,042.42	\$4,447.35
70	\$12,769.26	\$11,216.12	\$4,686.27	\$5,155.70
75	\$14,447.24	\$12,690.01	\$5,302.09	\$5,833.20
80	\$15,950.92	\$14,010.79	\$5,853.93	\$6,440.32
85	\$16,764.58	\$14,725.48	\$6,152.54	\$6,786.84



9. Trend Rates By Plan:

Year	Dental	Commercial Indemnity	Commercial Managed Care	Medicare Indemnity	Medicare Managed Care
2008	8.00%	10.00%	10.00%	-20.79%	9.96%
2009	7.00%	5.00%	5.00%	5.12%	-3.16%
2010	6.00 %	9.50 %	8.50%	8.00%	7.00%
2011	5.50%	9.00%	8.00%	7.00%	6.50%
2012	5.00%	8.50%	7.50%	7.00%	6.50%
2013	5.00%	8.00%	7.00%	6.00%	6.00%
2014	5.00%	7.50%	6.60%	6.00%	6.00%
2015	5.00%	7.00%	6.00%	6.00%	5.50%
2016	5.00%	6.50%	5.50%	6.00%	5.50%
2017	5.00%	6.00%	5.00%	6.00%	5.00%

10. Medicare Eligibility

Employees: 100% if hired March 31, 1986 or after;
85% if hired pre-March 31, 1986
Spouses: 100%

11. Participation Rates

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.

95% of the active employees eligible for post-employment medical benefits are assumed to elect coverage immediately upon retirement.

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.

12. Expenses

Administrative expenses are included in the per capita medical cost assumption.

13. Projections

The July 1, 2006 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



*Post-Employment Medical and Life Insurance Benefits Valuation
as of July 1, 2006*

Actuarial Valuation results have not been modified for interest or any other timing factor in our presentation.

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 \$\$2,000 life insurance benefit.
4.	Retiree Contributions	Based on data provided by Plymouth and the Massachusetts GIC.

Acknowledgement of Qualifications



*Post-Employment Medical and Life Insurance Benefits Valuation
as of July 1, 2006*

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.

Lawrence B. Stone
Member, American Academy of Actuaries

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