

MEMORANDUM

TO: Special Commission

FROM: James Lamenzo, Actuary

RE: Cost Analysis of Proposals

DATE: September 23, 2009

This memo outlines our analysis of the cost proposals submitted in the September 1 Report of the Special Commission (the Report).

At the outset, it is necessary to make several comments. In the absence of a comprehensive analysis of the general concepts to be used in developing an integrated package of reforms, it is not accurate to state, as does the Report, that the Commission was able "...to concentrate on the fundamental structure of the system." The proposals that we have been asked to review are not part of an overall set of coordinated changes which in total reflect agreed upon goals as to what the retirement system should accomplish. This analysis must be reviewed in this context.

For example, some of these plan design issues include how much of a member's income should be replaced in retirement, the age and/or service requirements necessary to receive that replacement level, and how the benefit should vary by job group. These decisions should form the building blocks in developing the key components of the plan (the benefit formula and averaging period, employee contribution rates, COLA provisions, etc.). The cost proposals were not developed based on a review of the overall plan design. Instead these items reflect a patchwork of individually selected items, often based on expected cost implications.

The Report states that following receipt of the cost estimates, "...the Commission will assemble a cost neutral package for new hires." This is the opposite of how a good plan design process should work. The plan design (what the plan is trying to accomplish) should determine the cost. Whether any proposed changes are cost neutral or not should

be reviewed later in the process. Determining up front that any change in plan design should be cost neutral reflects a pre-conceived conclusion that hampers the flexibility of the Commission.

Two other items that are briefly outlined in The Challenge section of the Background Study need to be reiterated as part of any discussion regarding plan benefit changes. First, employees “make substantial contributions to their own benefits”. This is true especially for Group 1 members contributing at the 9% contribution rate plus 2% for pay in excess of \$30,000. These members pay for most, if not all, of their benefit. Long service members hired in their 20s will pay more than the value of their benefit. From the employer’s point of view, there is little if any cost for these members. A reduction in benefits cannot be justified for these members.

Second, “taxpayers are often unaware that their taxes are contributing largely to pay off the system’s large prior unfunded liability and not to pay for the benefits of current workers.” Statewide about 25% of appropriations are for the current (normal) cost of the plan. About 75% goes to pay the unfunded liability. This is because the plan was not actuarial funded for about 50 years. The plan is actually quite efficient in delivering benefits to members. The employer normal cost is about 3.8% of pay for the State Retirement System, 1.9% of pay for the Teachers’ Retirement System, and generally 4% - 6% of pay for local systems.

Our analysis assumes all items are applicable only for new hires. I will not comment on the potential legal challenges if any item is considered for retroactive application. However, I believe there is a fairness issue with retroactive application of any significant reduction in benefit and such changes should be avoided.

Although our analysis is intended for future hires, obviously we do not have any data for future members. Therefore, our analysis uses existing data and assumes the demographic information for current members will be comparable to that of future members. In other words, our analysis assumes that any provision being considered has been in place for the full career of the current members. This allows us to look at the long term impact of any proposal.

Finally, as noted above, without an agreement on the design of the overall benefit structure, I have a number of issues with the process. Consequently, unless specifically stated, this analysis should not be seen as an endorsement of any of these items.

To perform this analysis, we used primarily the State Retirement System (SRS) data and valuation results as of January 1, 2009. For some analysis we used the Massachusetts Teachers' Retirement System (TRS) data and valuation results as of January 1, 2009. In addition, we used two local system valuations for some comparisons. The assumptions for the SRS and TRS are as outlined in the January 1, 2009 Commonwealth actuarial valuation report released September 21, 2009. The local systems were run using an 8.25% investment return assumption and the standard PERAC local valuation assumptions.

For the COLA analysis, we used prior analyses we have performed and updated those estimates accordingly. Unlike the Present Value of Future Benefits analysis we describe in the next paragraph, these results are based on the actuarial liability and normal cost.

For each proposal for which we determined cost by running an actuarial valuation, we developed the Present Value of Future Benefits (PVB), the Actuarial Accrued Liability (AL), and the Normal Cost (NC). The PVB represents the present value of all benefits expected to be paid from the plan. The AL and NC represent portions, or allocations, of the PVB. The PVB is the building block upon which the AL and NC are determined. The NC for each member is the portion of the PVB for the current year. The AL for each member is the portion of the PVB based on service to date. Said another way, the AL is the sum of the past normal costs.

When we reviewed the costs, we noted that the normal cost is more variable than the PVB or AL. This is due to both the allocation methodology and the fact that the employer normal cost is determined to be the total normal cost less expected employee contributions. Looking only at the normal cost can be misleading. I believe the PVB provides a better measure of the "true" cost of a plan, especially if comparisons are being made. We tended to focus on that measure with the exception of the COLA analysis.

For each item in the Cost Analysis of Proposals document, we first restate the proposal request in italics. This is followed by our cost analysis and related discussion. Under Actuary's Comment, I provide my view of the issue and in some cases provide recommendations. The results for Items 1, 2, 3, 4, and 7 (items requiring a valuation run) are outlined in the attached Excel spreadsheet under the Summary for Actuarial Costs tab.

1. Improve benefits design for short service workers by reducing the vesting period for retirement benefits (but not for retiree health benefits) from 10 years to 5 years of service.

In our analysis we valued this change two ways. We first assumed a member would be vested after 5 years of service but maintained the 10 years of service requirement for early retirement eligibility. We also assumed that a vested member could retire with 5 years of service. In both cases the cost increase is modest. The PVB increased about 1% based on the 1/1/09 SRS valuation.

Actuary's Comment

The 5-year vesting provision should be adopted. This would bring the Massachusetts plan in line with generally applicable vesting rules.

2. Improve benefits for short service workers by providing interest equal to the one-year treasury rate on all withdrawn member contributions.

The current plan provisions determine the annual interest rate be established by PERAC in consultation with the Commissioner of Banks and shall be obtained from the average rates paid on individual savings accounts by a representative sample of no less than 10 financial institutions. The rate for 2009 is .5%.

Members who leave service with less than 5 years of service receive no interest. Members who leave service with more than 5 years but less than 10 years of service receive 50% of the interest credited.

We tried to estimate this cost by using several techniques. We first measured the impact of using different interest rates. We also measured the cost if full interest is repaid. In both cases the increase in cost is negligible.

Currently PERAC uses a 3.5% interest assumption in our valuations for future increases to annuity savings fund (ASF) balances. We changed this assumption to 1.0% (an arbitrary rate used for comparison) to see the impact of an interest rate change. The PVB of this cost decrease was less than 1/10 of 1%.

The One Year Constant Maturity Treasury rate was .49% in December 2008. This is very close to the 2009 interest rate used for ASF balances. However in prior years this figure was higher than the average financial institution rate. Here is a comparison of the rates for the past 5 years:

| 12/31 | PERAC rate | One Year Treasury |
|-------|------------|-------------------|
| 2008 | .5% | .49% |
| 2007 | .6% | 3.26% |
| 2006 | .6% | 4.94% |
| 2005 | .6% | 4.35% |
| 2004 | .6% | 2.67% |
| 2003 | 1.0% | 1.31% |

If the one year Treasury rate were used, our current 3.5% assumption remains reasonable.

We then used the 3.5% rate but assumed full interest were paid to terminating members with less than 10 years of service. This resulted in an increase in PVB of less than 1/10 of 1%.

Actuary's Comment

The plan is designed for long service members. Therefore the treatment of short service members is not a great concern to me. That being said, I believe providing no interest or half interest creates a fairness issue. If a member terminates employment and is vested, he/she can receive a benefit when eligible to retire. If a member leaves and is not vested, only the return of employee contributions with the above mentioned interest is paid. If a new interest rate were set, I believe it should be low (perhaps capped at 3%). If item 1 is adopted (5 year vesting) perhaps no change (other than removing the interest penalty provision) is necessary.

3. Encourage later retirement and lower system cost by reducing the age factors by 0.125% rather than the current .10%. Sample factors for Group 1 employees would be 2.5% at age 65 (unchanged), 1.875% at age 60, and 1.25% at age 55. Similar changes would apply to the age factors for group 2 and Group 4 employees.

The age factors are really early retirement reduction factors. For example, the current 2.4% factor at age 64 represents a 4% reduction from the 2.5% factor (2.4/2.5). The proposed factors represent a 5% reduction. Such a change would reduce the differential between the early retirement benefit and the actuarial equivalent benefit. The actuarial equivalent benefit at age 55 is approximately 40% of the age 65 benefit (in other words, at age 55, the present value of a life annuity of \$40 per year beginning at age 55 is equivalent to the present value of a life annuity of \$100 beginning in 10 years or age 65). Under the current plan, the member's benefit at age 55 is 60% of the age 65 benefit. Under the proposal a member's benefit at age 55 would be 50% of the age 65 benefit.

This change reduces the PVB for SRS active members by approximately 2.7%. The amount of the decrease in PVB was \$440 million. For TRS this change reduced the active member PVB by 4.5% (\$882 million). The higher percentage for TRS reflects their lower disability rates (therefore a greater percentage of TRS members retire under superannuation).

Actuary's Comment

As noted in my introductory comments, there was no plan design discussion with respect to this issue. The impetus was strictly cost saving. Without reviewing the overall plan design and other benefit changes it is difficult to recommend such a proposal. Early retirement differentials are common in retirement plans to encourage workers to retire before normal retirement age. A decision to make such a change should be based on decision that the current differential is too great or undermines an agreed upon goal and impedes overall plan design. No such discussions have taken place.

Again, our analysis assumes the proposal to be prospective but uses existing data out of necessity. This allows us to measure the long term impact of the proposal.

4. Increase the average period for averaging earnings for benefit from 3 to 5 years.

We ran the costs for 2 local systems to measure this change. This change reduced the PVB for Lynn and Saugus active members by approximately 3.8%. This amount is consistent with what we were expecting (a 3%-5% decrease).

Actuary's Comment

This proposal represents the most significant change to the structure of the current system. Again, plan design has not been considered. This provision has been proposed strictly as a cost saving measure and not part of an overall revision based on plan design. A 3.8% reduction in PVB equates to a 3.8% reduction in benefit. This change cannot be justified in the context of current Group 1 members hired after July 1, 1996 who are contributing at a rate of 9% of pay plus 2% of pay in excess of \$30,000. These members are already paying for most, if not all, of their benefit.

Again, our analysis assumes the proposal to be prospective but uses existing data out of necessity. This allows us to measure the long term impact of the proposal.

5. Pro-rate benefits according to the number of years in each group

This item would decrease costs for any members who move from Group 1 to Group 4 during (especially late in) their career. Likewise it may make Group 4 members willing to accept Group 1 administrative positions toward the end of their career. However, we have no data that outlines how many members this might affect. We expect this would impact very few members and the cost impact would be negligible.

6. Systematically review the current classification of job titles and clarify the definitions of being in each Group. Reduce the number of groups.

This represents a larger project outside the scope of this study. We have no way to perform any cost analysis without more direction.

7. Tighten the cap on earnings for purposes of contributions and benefits to 75% of the federal limit (\$245,000 in 2009).

We used a compensation cap of \$183,750 for this analysis. This amount was indexed 3% per year.

For the SRS, 113 members are currently above this limit. For TRS there are 15 members.

This change reduced the PVB for SRS active members by approximately 2/10 of 1% (\$29 million). For TRS this change reduced the active member PVB by less than 1/20 of 1% (\$6.5 million).

Actuary's Comment

It is important to note that if a limit were put in place, the compensation limit is the appropriate limit to consider. In the past few years there have been several bills to impose limits on the amount of benefit payable. The benefit limit approach is not appropriate because under that scenario, a member could still be making deductions on all pay, but the benefit would be arbitrarily limited. At least with a compensation limit, a member would no longer contribute when pay reaches the limit (above \$183,750 in this example). The onus would be on the employer to encourage employees limited in this fashion to use the employee contributions above the limit no longer being deducted as part of their savings for retirement.

Although I feel a compensation cap, if done correctly, is a reasonable consideration, there are a few items that should enter into this discussion. First, there is a Federal cap on both compensation and benefits already in place. The natural question is why is an additional cap necessary. Second, despite higher earnings, employees earning these higher levels are paying for a significant portion of their retirement benefit. A member earning \$200,000 in 2009 and contributing at the 9% plus 2% in excess of \$30,000 level is contributing \$21,400 (10.7% of pay) in 2009 toward this benefit. This fact is lost in the perception of benefits that are too generous. A member in this salary bracket working a full career in Massachusetts' public service would again be paying for most, if not all, of his/her benefit.

Again, our analysis assumes the proposal to be prospective but uses existing data out of necessity. This allows us to measure the long term impact of the proposal.

8. Introduce an anti-spiking rule, limiting the increase in pensionable earnings in any year to no more than 7% plus inflation of the average of pensionable earnings over the previous 2 years. This provision would not apply for bona-fide promotions and job changes.

There is no basis to perform a cost calculation. Any spiking that may occur at retirement for a member would generate a loss (increase in cost) to the system at the time the next actuarial valuation was performed.

Actuary's Comment

Spiking is not a regular occurrence. We did an analysis of approximately 250 members retired over the past few years and found no evidence of spiking. Certainly it has

occurred in a few cases and I would support a measure to prevent such abuse. My inclination would be to simplify the proposal to be a flat percentage (10%, for example).

9. Replace the current termination benefits with a benefit structure that better meets the system's goals. Options include awarding 2 or 3 more years of service when determining benefits, or awarding 2 or 3 more years of age. Limit eligibility for termination benefits to those terminated after at least 5 years of service in the same agency or type of position.

Termination benefits under Section 10 are rarely taken. Statewide, less than 100 members have retired under this section in the past year. So the cost is minimal compared to the overall plan liabilities and any decrease in cost due to any change will be negligible.

Actuary's Comment

There has not been any agreement as to the system's goals in this regard. So, it is difficult to comment here.

I would not recommend an approach that adds age or years of service when determining such a benefit. I do not agree with such an approach.

If a change were made to the current plan, the simplest considerations were not discussed in the Rationale section of the Report. Even if the benefit of 1/3 of average earnings structure remained the same, deferring benefits until a certain age (for example, 50 or 55), and limiting eligibility based on pay seem straightforward considerations.

10. Construct a representative sample of earnings histories to enhance analyses of the actual workings of the current system and potential changes. Undertake a study of switching from a final averaging period for benefits to an indexed career average.

Actuary's Comment

Although computers might allow us to shift to an indexed career average plan for new hires, this does not mean such an approach is a good idea. Retirement plans should be easily understood and transparent to employees, employers, the media, and the general public. In my review for this Commission, I examined the mechanics and calculation of benefits of a career indexed plan. Such a plan would not be easily understood by the necessary constituencies. In my opinion, undertaking a study of such a program would

be a complete waste of time and effort. This idea should not merit any serious consideration.

11. Improve the post-retirement cost of living adjustment (COLA) so that it is automatic, applies to a reasonable base that is indexed for inflation, and is applied consistently across jurisdictions.

The existing COLA provisions provide up to a 3% annual COLA on a base of \$12,000 (maximum \$360). The rationale discussion requests we examine the cost of increasing the COLA base to \$18,000, adjusted annually for inflation.

In our September, 2005 report, we completed a study of increasing the base from \$12,000 to \$22,000 in increments of \$1,000. We have had subsequent requests in 2006-2008 to perform further analysis with higher bases and/or an indexing feature. This work was performed using SRS and TRS data. We used this prior work to estimate the cost of this proposal.

The 2005 report (page 4) shows the increase in actuarial liability of moving from the \$12,000 base to an \$18,000 base (without indexing) to be about 3.0%. In 2007 we did several analyses looking at higher caps and estimating an indexed COLA. We estimate the increase in actuarial liability assuming an \$18,000 cap indexed 3% per year to be 10%-13%. For the Commonwealth valuation as of January 1, 2009, the actuarial liability is approximately \$59.1 billion. This would mean an increase in liability of \$5.1 to \$7.7 billion. Amortized on a 4.5% annual increasing basis to 2030 generates a FY10 amortization payment of \$425-\$552 million. The employer normal cost would increase \$135- \$175 million. Therefore, the total increase for FY10 would be \$560-\$727 million. (Note – because we are updating a previous estimate that focused on the increase in appropriation requirement, unlike other estimates, the impact on PVB was not determined.)

Actuary's Comment

The Commission (PERAC) has supported a “reasonable increase in the COLA base”. It is appropriate to increase the current COLA base because the base has not kept up with inflation and it is not competitive with most other large public systems. Our 2005 report recognized “costs may increase significantly to provide additional COLA benefits and there may be current fiscal constraints. For this reason, a modest increase or phased increases might be more acceptable.” These words remain true today.

With respect to being “applied consistently across jurisdictions”, I believe, unless the increases remain a local option, cost increases would need to be borne by the State.

12. Introduce an option whereby current employees could choose a lower initial benefit in exchange for a more generous COLA on a cost neutral basis.

Since the benefit is cost neutral, such a provision would not change plan costs.

Actuary’s Comment

When a member retires, he/she has the option to take a life annuity (option A) or an actuarial equivalent form of benefit (option B or option C). This provision would allow this same kind of choice but with respect to receiving COLA benefits. But in the first case the decision is whether to receive a benefit with survivor protection. If a member retires under option A, I believe the benefit should be definitively calculated and without choice. In addition, I believe members would be ill-equipped to make such a decision. This provision complicates the plan.

13. Introduce a new actuarially equivalent retirement benefit option that pays a constant pension stream for the member and his or her spouse.

Since the benefit is actuarially equivalent there is no cost to the system.

Actuary’s Comment

The benefit referred to is known as a 100% joint and survivor benefit. The initial benefit under such a plan would be less than the current option C benefit and remains level for the member’s lifetime and would continue at that same level to the survivor for their lifetime. In addition, there is no “pop-up” under this provision. My preference is that retirement benefits exclude any “pop-up” provisions. This is a reasonable consideration but I would only consider making such a change after a proper review of options B and C and other alternative forms of benefit.

14. Improve notification of member’s spouse with regard to the annuity option selected by the member.

There is no actuarial cost for this item. The private sector requires that the spouse sign off on any benefit unless the benefit is a joint and survivor benefit.

15. Clarify pension forfeiture language so that employees do not lose pension for minor misdemeanors, but primarily for felony convictions related to one's employment.

This is a legal issue. The cost impact is negligible.

16. Employees made ineligible for a pension due to forfeiture, but who continue to work in public service, should not be required to contribute to the system.

The cost impact is negligible.

17. Allow boards to recoup pensions after conviction retroactive to the date of retirement.

The cost impact is negligible.

18. Members who are elected or appointed for a term of years under MGL C.32 Section 5(1)(g) should be required to repay any benefits they received with interest in order to rejoin the system, and work 5 years in order for their benefit to be recalculated, consistent with the provisions of MGL C. 32 section 105.

The cost decrease is negligible.

19. Remove the Teachers' provision waiving the hours and compensation limit for those who work after retirement.

The cost impact here is difficult to estimate. We expect the cost is minimal in the grand scheme of things. Without doing an analysis of the members actually affected, we cannot provide an estimate.

20. Calculate the effective contribution rate for employees contributing 9% plus 2% on earnings over \$30,000 and consider indexing the \$30,000 threshold.

The contribution rate for 9% members varies by pay level. For example, a member earning \$30,000 or less contributes 9% of pay, a member earning \$50,000 contributes \$4,900 ($\$50,000 \times .09 + \$20,000 \times .02$) or 9.8% of pay, and a member earning \$100,000

contributes \$10,400 ($\$100,000 \times .09 + \$70,000 \times .02$) or 10.4% of pay. The current average rate for 9% members of the SRS is 9.7%.

Actuary's Comment

I believe the purpose of the proposal was to remove the 2% rate entirely from the plan provisions. Whether the 9% rate should remain or change is subject to discussion.

21. Define the Commonwealth's contribution in terms of a percent of normal cost so that both the Commonwealth and current employees pay more when normal cost increases, thereby reducing the shifting of the burden to new employees. Perhaps the percentages should differ for different groups.

We recently provided an updated analysis for the SRS as of January 1, 2009 by contribution rate and job group. This allows decision makers to assess cost implications in a variety of ways. Our understanding is ANF is performing further analysis on this issue.

Actuary's Comment

The cost figures provided look at these various allocations in total. The fact is that normal cost rates can vary dramatically based on age at hire, service and pay. If normal cost were assigned based on the average rate, many members would underpay or overpay their individual normal cost. The idea of changing an employee's normal cost periodically as circumstances change is unusual based on my experience. I am not sure how the mechanics of such an arrangement would work. I presume there would only be a change if a plan amendment were adopted that increased benefits. Generally, I think any frequent change in the employee contribution would not be in the best interest of the plan or the members.

22. Require members re-entering the system purchasing prior creditable service, and those entering the system who are eligible to purchase creditable service based on work elsewhere, to make that purchase soon after eligibility or to contribute more to compensate the system for not having access to their funds for the full period.

Such a change would decrease plan costs. Based on a study of the TRS several years ago, we increase the TRS active actuarial liability by 1% to estimate the cost impact of these buybacks. This is approximately \$146 million in 2009.

Actuary's Comment

I would endorse such a change. When members buy back time just before retirement, there is an unexpected increase in cost which creates a loss to the system if we did not include the estimated impact. This change would allow for more accurate actuarial valuations.

23. Alternatively, require members re-entering the system purchasing prior creditable service, and those entering the system who are eligible to purchase creditable service based on work elsewhere, to contribute the full actuarial interest rate.

Overall the cost decrease is negligible but there could be significant increase in the buyback cost to individuals.

24. Make eligibility to purchase creditable service based on work elsewhere more consistent by either reducing the current ability to purchase or extending it to similar classes of workers who are equally difficult to recruit.

It is impossible to estimate the cost decrease without more detail. Again, overall the cost decrease would be negligible.

25. Require all judges to contribute to the system.

Overall, the cost decrease is negligible.

26. Extend the current funding schedule and limit the ability for systems to reduce future appropriations unless well funded.

The recommended approach was outlined in a letter from PERAC's Actuarial Advisory Committee, consisting of actuaries Steve Ricci, Kathy Riley, Dan Sherman, and Larry Stone, in a letter to PERAC dated July 23, 2009. In it they detail a set of 5 recommendations and the reasoning behind each. These recommendations were determined over 3 months in a number of conference calls, e-mails, and letter drafts. The entire set of Recommendations is restated on page 8 of their letter.

Actuary's Comment

The discussion in the Rationale of the Report essentially captures the spirit of Item 1 (extending the funding schedule) although it does not include Items 1c (future unprecedented gains or losses) and 1d (treatment of plan changes). We recommend these be included.

I endorse the letter from the actuaries. The methodology allows some short term funding relief but requires responsible funding.

27. Increase resources for system administration.

This is not an actuarial cost issue.

Items 28-31 pertain to retiree health insurance. We have not examined these items.