Conceptually, there are two components of actuarial cost - an "accrual cost" and amortization of something called a "past service liability." Both accounting standards and actuarial standards usually address these two components separately (though alternative terminology is sometimes used).

The accrual cost (also called the "normal cost") can be thought of as the cost of the benefit earned each year if benefits are accrued during the working lifetime of employees. This report will not discuss differences between actuarial cost methods or their application. Instead, following is a description of a commonly used, generally accepted actuarial cost method that will be permitted under the upcoming GASB accounting standard. This actuarial cost method is called the "entry age normal" method.

Under the entry age normal cost method, an average age at hire and average retirement age are determined for eligible employees. Then, the actuary determines what amount needs to be set aside each year from hire until retirement to fully prefund the expected cost of retiree health benefits. This amount is the accrual cost (or normal cost). The accrual cost is typically expressed either as a level dollar amount or as a level percentage of salary.

The accrual cost is determined using several key assumptions:

- The current ***cost of retiree health benefits*** (often varying by age, Medicare status and/or dependent coverage). The higher the current cost of retiree benefits, the higher the accrual cost.

- The ***"trend" rate*** at which retiree health benefits are expected to increase over time. A higher trend rate increases the accrual cost. A "cap" on College contributions can reduce trend to zero once the cap is reached thereby dramatically reducing accrual costs.

- ***Mortality rates*** that vary by age and sex. (Unisex mortality rates are not usually used because an individual's retiree benefits do not depend on the mortality table used.) If employees die prior to retirement, contributions attributable to deceased employees are available to fund benefits for employees who live to retirement. After retirement, death results in benefit termination. Although higher mortality rates reduce accrual costs, the mortality assumption is not likely to vary from employer to employer.

- ***Employment termination rates*** have the same effect as mortality inasmuch as higher termination rates reduce accrual costs. Employment termination rates do not vary much between community college districts.

- ***Vesting rates*** reflect years of service required to earn full or partial retiree benefits. While longer vesting periods reduce costs, cost reductions are not meaningful unless full vesting requires <u>more than</u> 20 years of service. For most community college districts, this is not a viable option.

- ***Retirement rates*** determine what proportion of employees retire at each age (assuming employees reach the requisite length of service). Retirement rates often vary by employee classification and implicitly reflect the minimum retirement age required for eligibility. Higher retirement rates increase accrual costs but, except for differences in minimum retirement age, retirement rates tend to be consistent between community college districts for each employee type.

- ***Participation rates*** indicate what proportion of retirees are expected to elect retiree health benefits if a significant retiree contribution is required. Higher participation rates increase costs.

- The ***interest discount rate*** estimates investment earnings for assets earmarked to cover retiree health benefit liabilities. The interest discount rate is dependent on the nature of underlying assets. For example, earmarked funds earning money market rates in the county treasury are likely to earn far less than a diversified portfolio including stocks, bonds, etc. A higher interest discount rate can dramatically lower accrual costs. The GASB accounting standard will require the interest assumption to reflect likely *long term* investment return.

The assumptions listed above are not exhaustive, but are the most common assumptions used in actuarial cost calculations. The actuary selects the assumptions which - taken together - will yield reasonable results. It's not necessary (or even possible) to predict individual assumptions with complete accuracy.

If all actuarial assumptions were exactly met and an employer had put aside the accrual cost every year for all past and current employees and retirees, the funds would have accumulated to a sizeable amount (after adding interest and subtracting retiree benefit costs from the accumulated funds). The fund that would have accumulated can be thought of as the "past service liability." The excess of the past service liability over funds earmarked for retiree health benefits is called the *unfunded* past service liability.

The past service liability (PSL) can arise in two ways. First, at the inception of actuarial funding, there is usually a substantial unfunded past service liability. Under accounting standards, this amount is often referred to as the "transition obligation." Under the upcoming GASB accounting standard, this transition obligation can be recognized over a period of up to 30 years. A past service liability can also emerge as the result of operation of a retiree health plan - e.g., as a result of plan changes or changes in actuarial assumptions. The PSL arising from plan operation is usually amortized over ten years. Under the upcoming GASB accounting standard, either a level dollar or level percentage of payroll amortization method can be used.

Past service liability amortization payments can be higher than the accrual cost. The magnitude of the PSL depends not only on all the assumptions discussed earlier, but also on the average age of employees. The higher employees' average age, the greater the past service liability.

PART III: LIABILITIES AND COSTS FOR RETIREE BENEFITS

A. Introduction.

We calculated the liability for retiree benefits separately for each employee. We determined eligibility for retiree benefits based on information supplied by College of Marin. We then selected assumptions for the factors discussed in the above Section that, based on our training and experience, represent our best prediction of future plan experience. For each employee, we applied the appropriate factors based on the employee's age, sex and length of service.

We summarized actuarial assumptions used for this study in Appendix C.

B. Medicare

The extent of Medicare coverage can affect projections of retiree health costs. The method of coordinating Medicare benefits with the retiree health plan's benefits can have a substantial impact on retiree health costs. We will be happy to provide more information about Medicare integration methods if requested.

C. Liability for Retiree Benefits.

For each employee, we projected future premium costs using an assumed trend rate (see Appendix C). A constant trend rate was used for all years. This rate may understate trend in some years but might overstate it in others. As long as trend averages the assumed rate over a long period, it is not critical the rate be correct in any one year. To the extent College of Marin uses contribution caps, the influence of the trend factor is further reduced.

We multiplied each year's projected cost by the probability that premium will be paid; i.e. based on the probability that the employee is living, has not terminated employment and has retired. The probability that premium will be paid is zero if the employee is not eligible. The employee is not eligible if s/he has not met minimum service, minimum age or, if applicable, maximum age requirements.

The product of each year's premium cost and the probability that premium will be paid equals the expected cost for that year. We discounted the expected cost for each year to the valuation date May 1, 2005 at 5% interest.

Finally, we multiplied the above discounted expected cost figures by the probability that the retiree would elect coverage. A retiree may not elect to be covered if retiree health coverage is available less expensively from another source (e.g. Medicare risk contract) or the retiree is covered under a spouse's plan. We then added all these discounted expected cost figures for each employee to get the total "gross" retiree liability estimate.

For current retirees, the approach used was similar. The major difference is that the probability of payment for current retirees depends only on mortality and age restrictions (i.e. for retired employees the probability of being retired and of not being terminated are always both 1.0000).

We added the gross liability estimates for all employees to get the *total* gross liability. The total gross liability (sometimes called the expected postemployment benefit obligation, or EPBO) is the estimated present value of all future retiree health benefits for all **current** employees and retirees. The total gross liability is the amount of money to put aside on May 1, 2005 so that, if all actuarial assumptions are exactly right, it would be sufficient to pay all promised benefits until the last current employee or retiree dies.

Total Gross Liability as of

May 1, 2005	**Total**	**Faculty**	**Classified**	**Management**
Active: Pre-65	$2,225,133	$898,468	$1,010,966	$315,699
Post-65	$2,800,950	$1,287,635	$1,155,924	$357,391
Subtotal	$5,026,083	$2,186,103	$2,166,890	$673,090
Retiree: Pre-65	$1,215,661	$342,734	$767,594	$105,333
Post-65	$2,409,049	$1,267,579	$848,973	$292,497
Subtotal	$3,624,710	$1,610,313	$1,616,567	$397,830
Grand Total	$8,650,793	$3,796,416	$3,783,457	$1,070,920
Subtotal Pre-65	$3,440,793	$1,241,202	$1,778,560	$421,031
Subtotal Post-65	$5,209,999	$2,555,214	$2,004,897	$649,888

The gross liability should be funded over the working lifetime of employees. At any time much of it has not been "earned" by employees. The gross liability is used to develop expense and liability figures. To do so, the gross liability is divided into two parts: the portions attributable to service rendered prior to the valuation date (the past service liability) and to service after the valuation date but prior to retirement (the future service liability).

The past service and future service liabilities are usually each funded in a different way. We will start with the future service liability which is funded by payments called the normal cost (or accrual cost).

D. Cost to Prefund Retiree Benefits

1. Normal Cost

The average hire age for eligible employees is 31. To accrue the liability by retirement, the College would accrue the retiree liability over a period of about 29 years (assuming an average retirement age of 60). We applied an "entry age normal" actuarial cost method to determine funding rates for active employees. The table below summarizes the calculated accrual cost.

Accrual Cost Year Beginning

May 1, 2005	**Total**	**Faculty**	**Classified**	**Management**
# of Employees	108	56	40	12
Per Capita Accrual Cost				
Pre-65 Benefit	N/A	$1,026	$1,144	$1,100
Post-65 Benefit	N/A	$865	$842	$815
First Year Accrual Cost				
Pre-65 Benefit	$116,416	$57,456	$45,760	$13,200
Post-65 Benefit	$91,900	$48,440	$33,680	$9,780
Total	$208,316	$105,896	$79,440	$22,980

Funding retiree health benefits using accrual costs would level out the cost of retiree health benefits over time and more fairly reflect the value of benefits "earned" each year by employees.

2. Amortization of Past Service Liability

If actuarial assumptions are borne out by experience, the College could fully fund retiree benefits by contributing an amount each year that equals the accrual cost. If no funding had taken place in the past, there would be a shortfall of many years' contributions, accumulated interest and forfeitures for terminated employees. This shortfall is called the past service liability. We calculated the past service liability as the total gross liability minus the present value of future accrual costs.

The College can amortize the past service liability over many years. The table below also shows the annual amount necessary to amortize the past service liability over a period of 18 years at 5% interest. (Thirty years is the longest amortization period allowable under the upcoming GASB accounting standard.) We selected 18 years as this is the longest period that can be used to prevent the accrued liability from being exhausted before all benefit obligations are fulfilled. The upcoming GASB standard will allow amortizing the PSL using either payments that stay the same as a dollar amount, or payments that are a flat percentage of covered payroll over time. The figures below reflect the level percentage of payroll method.

Past Service Liability as of May 1, 2005	**Total**	**Faculty**	**Classified**	**Management**
Active: Pre-65	$1,787,811	$777,018	$757,087	$253,706
Post-65	$2,465,769	$1,185,243	$969,066	$311,460
Subtotal	$4,253,580	$1,962,261	$1,726,153	$565,166
Retiree: Pre-65	$1,215,661	$342,734	$767,594	$105,333
Post-65	$2,409,049	$1,267,579	$848,973	$292,497
Subtotal	$3,624,710	$1,610,313	$1,616,567	$397,830
Subtot Pre-65	$3,003,472	$1,119,752	$1,524,681	$359,039
Subtot Post-65	$4,874,819	$2,452,822	$1,818,039	$603,958
Grand Total	$7,878,291	$3,572,575	$3,342,720	$962,996
Funded at May 1, 2005	$0	$0	$0	$0
Unfunded PSL	$7,878,291	$3,572,575	$3,342,720	$962,996
1st Year PSL Amortization at 5.0% over 18 Years	$522,810	$237,079	$221,826	$63,905

3. Other Components of Cost

Once the upcoming GASB accounting standard is implemented, future year calculations may include more components of cost than the normal cost plus amortization of past service liability. The other possible components are:

- The difference between interest earned on funds earmarked for retiree benefits and assumed interest.
- Amortization of changes in liability due to actual experience that differs from assumptions.
- Amortization of changes in liability that arise because of changes in the retiree health plan that weren't anticipated in the prior retiree health valuation.

4. Total First Year Prefunding Cost

If the College funds the retiree health plan based on estimated accrual rates, and amortizes the past service liability over a period of 18 years, first year costs will include both accrual and amortization costs. The sum of accrual and amortization costs are shown below.

Total Prefunding Cost Year Beginning

May 1, 2005	**Total**	**Faculty**	**Classified**	**Management**
Accrual Cost	$208,316	$105,896	$79,440	$22,980
PSL Amortization	$522,810	$237,079	$221,826	$63,905
Total Prefunding Cost	$731,126	$342,975	$301,266	$86,885
Pay-As-You-Go Cost	$613,411	$358,544	$199,367	$55,500
Added Cost to Prefund	$117,715	-$15,569	$101,899	$31,385

After 18 years contributions to amortize the past service liability for active employees would end and, as a result, the prefunding cost would drop significantly. The accrual cost remains as long as there are active employees who may some day qualify for College-paid retiree health benefits. PSL amortization payments and the accrual cost would increase each year based on covered payroll.

If College of Marin does not prefund these liabilities by the full prefunding amount, future years' costs to prefund would be even higher. This is because the past service liability would grow by required interest plus each year's accrual (offset by retiree benefits paid).

Should College of Marin decide to prefund retiree health benefits as shown above, the cost of current retiree benefits would be deducted from earmarked funds. This means the true cost is the difference between the prefunding costs and "pay-as-you-go" costs. The above table shows the additional cost necessary to prefund retiree health benefits.

PART IV: "PAY AS YOU GO" FUNDING OF RETIREE BENEFITS

We used the actuarial assumptions shown in Appendix C to project ten year cash flow under the retiree health program. Because these cash flow estimates reflect average assumptions applied to a relatively small number of employees, estimates for individual years are **certain** to be ***in***accurate. However, these estimates show the size of needed cash flow and also the rate of increase in annual costs. Because we have used trend rates that are constant over time, it is likely that medical costs will be understated in some years and overstated in others.

We have estimated that over the next ten years, pay-as-you-go retiree health costs will increase at an average rate of about 0.9% per year.

The following table shows a projection of annual amounts needed to pay the College share of retiree health premiums.

Year Beginning May 1	Total	Faculty	Classified	Management
2005	$613,411	$358,544	$199,367	$55,500
2006	$698,292	$382,981	$242,907	$72,404
2007	$793,818	$411,095	$288,352	$94,371
2008	$873,474	$442,575	$330,525	$100,374
2009	$888,620	$475,505	$329,031	$84,084
2010	$835,160	$417,276	$336,227	$81,657
2011	$824,842	$400,342	$332,045	$92,455
2012	$817,835	$369,524	$338,231	$110,080
2013	$770,059	$341,409	$329,942	$98,708
2014	$665,867	$289,567	$301,037	$75,263

PART V: FUNDING ALTERNATIVES

Until GASB accounting standards become effective, public employers have considerable latitude in deciding how to fund retiree benefits. Following is a summary of several broad options.

"Pay-As-You-Go" Funding: Under pay-as-you-go funding, retiree benefit costs are paid from general funds as they arise. (Retiree benefit costs are premiums under insured and HMO plans, or claims under self-funded plans.)

Advantages:

1) Lowest current cost.

2) Simplest method.

Disadvantages:

1) Doesn't provide benefit security for current and future retirees.

2) Doesn't provide fiscal stability.

3) Doesn't comply with current accounting principles or future accounting standards.

4) Will require higher cost when future GASB accounting standard becomes effective.

5) Does not allow any retiree health costs to be charged to categorical programs.

"Ad Hoc" Funding: Under Ad Hoc funding, retiree benefit costs continue to be paid from general funds, but the College adds money to an earmarked retiree benefit fund when funds are available. Interest on the earmarked funds may or may not be left in the fund.

Advantages:

1) Simple.

2) Does not add additional cost item to budget.

3) Makes progress toward full, actuarial pre-funding. Progress depends on amount and frequency of ad hoc deposits as well as whether interest is accrued.

Disadvantages:

1) Uncertain amount and frequency of future ad hoc deposits limits benefit security.

2) Doesn't comply with current accounting principles or future accounting standards.

3) Will require addition of a budget item when future GASB accounting standard becomes effective.

4) Does not allow any retiree health costs to be charged to categorical programs.

Systematic Actuarial Funding: Under systematic actuarial funding, contributions are made that, over a specified period of time will fully pre-fund retiree health benefits. Interest on earmarked funds is left in the fund.

Advantages:

1) Maximizes benefit security for current and future retirees.

2) Provides predictable, budgetable retiree health costs.

3) Complies with accounting guidelines.

4) Judicious selection of an actuarial cost method can minimize the fiscal disruption of adapting to the future GASB accounting standard.

5) Allows retiree health pre-funding costs to be charged to categorical programs.

Disadvantages:

1) Highest cost funding approach. The magnitude of the cost depends on the length of time for amortizing any unfunded past service liability.

2) Reduced fiscal flexibility.

Combination Funding Approaches: Under combination approaches, two or even all three of the above approaches can be used. Following are examples of combination approaches we have seen public employers use.

Example 1: Fund current and future retiree benefit costs on a pay-as-you-go basis, fund the accrual cost on a systematic actuarial basis, and fund the PSL on an ad hoc basis.

Example 2: Fund early retiree benefits on a pay-as-you-go basis, and fund retiree benefits for retirees 65 and older on a systematic actuarial basis.

Example 3: Fund benefits for current retirees and for employees who retiree over the next five years on a pay-as-you-go basis, and fund benefits for employees retiring in more than five years on a systematic actuarial basis.

There are an infinite number of combination funding approaches, so a combination approach can be tailored to an individual employer's unique situation.

For public employers that make benefits available to future retirees, we recommend that those employers set up a regular schedule of contributions on an actuarial basis (but not necessarily full pre-funding contributions). By setting up a regular schedule of contributions an employer can reap the following benefits.

- The employer will recognize the real cost of benefits that are "earned" by current employees.

- The employer will get information that allows it to make sound benefit decisions based on a more accurate picture of the cost of benefits "earned" by employees each year.
- The employer will prepare itself for the imminent GASB accounting standard.
- Pre-funding provides additional security to retirees for promised benefits.

Some community college districts do not routinely provide retiree health benefits but occasionally offer College paid coverage as part of an early retirement incentive program. We recommend that public employers considering early retirement incentive programs that include employer paid health coverage consider the additional liabilities created as a cost of the program **before finalizing program details**.

PART VI: RECOMMENDATIONS FOR FUTURE VALUATIONS

To effectively manage benefit costs, an employer must periodically examine the existing liability for retiree benefits as well as future annual expected premium costs. However, without accounting standards in place, a public employer has considerable latitude in deciding how to measure liabilities and costs, how to account for them, whether funds should be earmarked for future premiums and how often to calculate liabilities.

Until applicable accounting standards apply, community college districts should conduct retiree benefit valuations in the following situations.

- For existing retiree health plans, a public employer should perform a valuation no less frequently than every three years to update liability and cost estimates for planning and budgeting.
- An employer should perform a valuation whenever the employer considers or puts in place an early retirement incentive program.
- An employer should perform a valuation whenever the employer adopts a retiree benefit plan for some or all employees.
- An employer should perform a valuation whenever the employer considers or implements changes to retiree benefit provisions or eligibility requirements.
- An employer should perform a valuation whenever retiree benefit plan provisions or plan costs are the subject of collective bargaining.
- An employer should perform a valuation whenever the employer introduces or changes retiree contributions.

We recommend College of Marin take the following actions to ease future valuations.

- We have used our training, experience and information available to us to establish the actuarial assumptions used in this valuation. We have no information to indicate that any of the assumptions do not reasonably reflect future plan experience. However, the College should review the actuarial assumptions in Appendix C carefully. If the College has any reason to believe that any of these assumptions do not reasonably represent the expected future experience of the retiree health plan, the College should engage in discussions or perform analyses to determine the best estimate of the assumption in question.

PART VII: BENEFIT DESIGN ISSUES

As stated in the Executive Summary, it is outside the scope of this report to recommend what retiree health program changes (if any) may be appropriate. Because College of Marin terminated retiree health benefits for employees hired after 1986 to 1988 (depending on employee classification), there is little more the District can do to with respect to plan design to mitigate expenses and liabilities.

PART VIII: APPENDICES

APPENDIX A: MATERIALS USED FOR THIS STUDY

We used the following materials to complete this study.

- We used paper reports and digital files containing employee demographic data from the College personnel records.
- We used relevant sections of collective bargaining agreements provided by the College.

APPENDIX B: EFFECT OF ASSUMPTIONS USED TO CALCULATE LIABILITIES AND CASH FLOW

While we believe the estimates in this study are reasonable overall, it was necessary for us to use assumptions which inevitably introduce errors. We believe that the errors caused by our assumptions will not materially affect study results. If the College wants more refined estimates for decision-making, we recommend additional investigation. Following is a brief summary of the impact of some of the more critical assumptions.

1. Where actuarial assumptions differ from expected experience, our estimates could be overstated or understated. One of the most critical assumptions is the medical trend rate. The College may want to commission further study to assess the sensitivity of liability estimates to our medical trend assumptions. For example, it may be helpful to know how liabilities would be affected by using a trend factor 1% higher than what was used in this study.

2. We did not project mortality rates to decrease over time although they have been and are likely to continue declining. Not projecting mortality rates understates liabilities. The impact on the liability estimates is not likely to be significant.

3. We used an "entry age normal" actuarial cost method to estimate the past service liability and normal cost. GASB will allow this as one of several permissible methods under its upcoming accounting standard. Using a different cost method could result in a somewhat different recognition pattern of costs and liabilities.