Arizona State Retirement System

Actuarial Valuation

as of June 30, 2003

Human Resources & Investor Solutions

February 6, 2004

Retirement Board
Arizona State Retirement System
3300 North Central Avenue
14th Floor
Phoenix, Arizona 85012

Dear Retirement Board Members:

Actuarial Valuation of the Plan as of June 30, 2003

We certify that the information contained in the attached 2003 actuarial valuation report is accurate and fairly presents the actuarial position of the Arizona State Retirement Plan (the Plan) as of June 30, 2003.

We have made all calculations for this report in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, the report's results comply with the requirements of the Arizona Constitution and statutes and, where applicable, the Internal Revenue Code, the Employee Retirement Income Security Act of 1974 (ERISA), and the Statements of the Governmental Accounting Standards Board. The undersigned actuaries are independent. They are both Enrolled Actuaries and Fellows of the Society of Actuaries. Eva Yum is a Fellow of the Canadian Institute of Actuaries and Charlie Chittenden is a member of the American Academy of Actuaries. Both are experienced in performing valuations for large public retirement systems.

Actuarial Valuations

The primary purpose of the valuation report is to determine the required member and employer contribution rates, to describe the current financial condition of the Plan, and to analyze changes in the Plan's condition. In addition, the report provides information that ASRS requires in connection with Governmental Accounting Standards Board Statement Number 25 (GASB No. 25), and it summarizes census data.

Valuations are performed annually, as of June 30, the last day of both the Plan year and ASRS's fiscal year.

Funding Objectives

The actuarial valuation calculates the contribution rates payable by members and participating employers. These rates, when applied to payroll, yield contribution amounts sufficient to provide for the normal cost and to amortize the Unfunded Actuarial Accrued Liability (UAAL) over the period specified in the statutes. The rates calculated in even- numbered years are in effect for the next two Plan years. For example, the rate calculated in the June 30, 2002 valuation report (5.20% for each member and each employer) will apply in the fiscal years beginning July 1, 2003, and July 1, 2004. The rates calculated in odd-numbered years are purely advisory – they never take effect.

Funding Progress

The actual contribution rate in fiscal 2004 and 2005 is 5.20% for each member and each employer, as the 2002 valuation report calculated. This 2003 valuation calculates a hypothetical rate of 6.96%. These rates do not include contributions to the LTD program. Actual contributions have matched the calculated contributions in recent years and we assume that members and employers will continue to contribute the actuarially determined amounts. Contributing these amounts ensures the realization of funding objectives.

Section 38-737 specifies that the UAAL is to be amortized over a rolling 30-year period once the surplus disappears. As of June 30, 2003, the ASRS Plan no longer has a surplus, so the amortization period for this valuation (and all future valuations) is 30 years.

Benefit Provisions

There has been one benefit enhancement since those of the 2002 legislative session to extend the Rural Health Insurance Premium Benefit for two years to June 30, 2005. Table 18 gives details of benefit provisions.

Assumptions and Methods

We performed an experience study for the five-year period ended June 30, 2002, and recommended assumption changes based on the findings. On November 21, 2003, the Board adopted our recommended actuarial assumptions, to be effective June 30, 2003. On November 15, 2002, the Board adopted a change in the method of valuing actuarial assets – namely, the Board removed the requirement that actuarial assets be within 20% of market value and prospectively changed the period for recognizing investment gains or losses from five to ten years. Table 19 of this report provides details of the assumptions and methods. The assumptions are internally consistent and are reasonably based on the actual experience of the Plan. These assumptions are in full compliance with GASB No. 25.

Data

ASRS staff supplied census data for retired, active, and inactive participants as of June 30, 2003. We have not audited these data, but have examined them for reasonableness and consistency with the prior year's data. ASRS staff also supplied asset information.

Trend Data and Supporting Schedules

ASRS prepared all trend data schedules in the financial section of ASRS's Comprehensive Annual Financial Report (CAFR). ASRS also prepared all supporting schedules in the actuarial section of the CAFR.

We look forward to discussing this report with you at your convenience.

Sincerely,

Charles E. Chittenden, FSA, MAAA, EA
Principal and Consulting Actuary

Eva S. Yum, FSA, FCIA, EA
Associate Principal

Mellon

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Executive Summary

Attached is a table summarizing the key results of the June 30, 2003, actuarial valuation of the Arizona State Retirement Plan (the Plan).

The valuation of the Plan reflects a loss on the investment return on the actuarial value of assets of $1,168 million. This valuation also reflects changes in actuarial assumptions that the Board adopted on November 21, 2003. There was one change in Plan provisions (extension of the temporary rural health insurance premium benefit to June 30, 2005) since the last actuarial valuation. We completed an experience study for the five-year period ended June 30, 2002. On November 21, 2003, the Board adopted the assumption changes as recommended in the experience study to be effective for valuations on and after June 30, 2003.

This is an odd-year valuation and the contribution rate calculated in this valuation will not actually become effective. The investment loss, assumption changes and other gains and losses have caused the Plan's calculated contribution rate to increase from a rate of 5.20% in the 2002 valuation report to a rate of 6.96% in this report. This rate is purely advisory. Later sections of this report give a detailed explanation of the contribution rate change.

The asset losses and assumption changes have caused the funded status to decrease from a surplus of $1.036 billion as of June 30, 2002, to a deficit of $0.787 billion as of June 30, 2003.

Since the actuarial investment return of 2.88% is below 8% for fiscal year 2003, there are no additional “Excess Investment Earnings” to be set aside for Permanent Benefit Increase (PBI). The current excess investment earnings reserve will allow the granting of a PBI for the next two years.

The number of active members has increased from 198,870 to 202,398, a 1.8% increase. Valuation payroll has increased 4.4% from $6.989 billion to $7.297 billion.

The yield rate on plan assets for the 2003 fiscal year (when measured by the actuarial asset valuation method) is 2.88% on the pension assets (401(a)) and 4.66% on the health supplement assets (401(h)), compared to last year's returns of 6.36% and 9.10%, respectively. The actuarially assumed rate of return is 8%.

The calculated contribution rate has increased now to a level higher than the Plan’s normal cost. If the Plan had no deficit, the contribution rate would be the normal cost rate, i.e., 6.52%, instead of 6.96%. Because of deferred recognition of losses already incurred, we anticipate that the contribution rate will continue to increase in future years.

Overall, ASRS is now below the full-funded position, as measured by actuarial assets. The ratio of actuarial value of assets to actuarial liabilities is 96.8% for the combined 401(a) and 401(h) components of the plan. The comparable figure from last year’s valuation is 104.6%.

The key results of this valuation as of June 30, 2003, may be summarized as follows:

	2002	2003
	(1)	(2)
• Assets (401(a) and 401(h) Combined)		
Market value	$18.595 billion	$18.117 billion
Actuarial Value	$23.623 billion	$23.517 billion
• Members		
Actives	198,870	202,398
Inactives	109,942	123,365
Receiving benefits	60,346	64,697
Disabled (LTD)	4,485	4,561
Total	373,643	395,021
• Covered payroll	$6.989 billion	$7.297 billion
• Total normal cost rate	11.90%	13.03%
• Surplus/(Unfunded actuarial accrued liability)	$1,036.1 million	$(786.7 million)
• Actuarial assets as % of actuarial accrued liability	104.6%	96.8%
• Calculated contribution rate	5.20%	6.96%
• Statutory contribution rate	5.20%	5.20%
• Estimated yield on actuarial assets (401(a) only)	6.36%	2.88%
• Employee and employer contributions	$321.8 million	$375.5 million
• Benefit and refunded payments	$1,029.1 million	$1,162.8 million
• PBI		
Additional liability for July 1st PBI	$292.0 million	$341.9 million
Percentage increase	4.0%	4.0%
Per year of service factor	$31.40	$35.43
PBI reserve	$1,070.7 million	$728.8 million

	2002	2003
	(1)	(2)
• Actuarial gains (losses)		
Assets	$(1,623) million	$(1,168) million
Liability experience	(971) million	218 million
Legislative changes	0	(31) million
Assumption changes	0	(417) million
Method change	1,309 million	0
Total	$(1,285) million	$(1,398) million
• GASB 25 disclosure (401(a) pension plan only)		
Actuarial Accrued Liability (AAL)	$21.285 billion	$22.935 billion
Unfunded AAL (Surplus)	$(1.357) billion	$0.363 billion
Actuarial Value of Assets (AVA) as % of AAL	106.4%	98.4%
Unfunded AAL (Surplus) as % of payroll	(19.4%)	5.00%
• Net external cash flow	$(722.7) million	$(808.7) million

• Changes in contribution rate:

Item	Contribution Rate	Change in Rate
(1)	(2)	(2)
1. 2002 valuation	5.20%	–
2. Delay in contribution rate change	5.51%	0.31%
3. 2002 / 2003 liability experience	5.51%	0.00%
4. 2002 / 2003 asset experience	6.34%	0.83%
5. Legislative changes	6.37%	0.03%
6. Statutory increase in funding period to 30 years	6.31%	(0.06%)
7. Assumption changes	6.96%	0.65%

Split of Total Contribution Rate:

Item	401(a) Account	401(h) Account	Total
(1)	(2)	(3)	(4)
1. Employee Contribution Rates	6.96%	0.00%	6.96%
2. Employer Contribution Rates	5.79%	1.17%	6.96%
3. Total Contribution Rates	12.75%	1.17%	13.92%

Introduction

The actuary prepares a valuation of the Arizona State Retirement Plan (the Plan) each year to determine the matching member and employer contribution rate that is required to fund the Plan in accordance with the actuarial funding policy specified in Section 38-737 of the Arizona Revised Statues.

The actuarial valuation of the Plan as of June 30, 2003, determines a hypothetical contribution rate for fiscal 2004. Based on the results of the 2003 Plan valuation, the hypothetical contribution rate for the fiscal year beginning July 1, 2004, will increase from the current rate of 5.20% to 6.96% of compensation.

The Retirement Board adopted the actuarial assumptions used in this valuation on November 21, 2003, to reflect the results of the 1997-2002 experience study, and to be first used for the 2003 valuation. The Retirement Board adopted the actuarial asset method used on November 15, 2002. At that meeting the Board voted to extend the averaging period for actuarial assets to ten years and to eliminate the requirement that actuarial assets be within 20% of the market value of assets. The 1989 legislature changed the actuarial liability valuation method to the Projected Unit Credit (PUC) method from the prior entry-age-normal method. Section M contains full descriptions of these actuarial methods and assumptions, as well as a summary of the Plan's provisions.

The valuation includes the 2003 legislative change on extending the Rural Health Insurance Subsidy to June 30, 2005. Section A contains an executive summary of the key valuation results and is intended to provide in one convenient place those valuation items most often needed.

Sections C and D cover the basic results of the valuation. Sections E through G provide analysis and additional discussion. Section H contains the disclosure items that the Governmental Accounting Standards Board Statement No. 25 requires.

Section I contains a disclosure letter regarding the data used in performing the actuarial valuation.

Section J discusses some of the historical comparisons and statistical summaries for the Plan, and Section K summarizes the valuation results. Sections L through N provide the tables supporting this report.

The 1995 Legislature passed legislation to separate the Health Premium supplement liabilities and assets into a 401(h) account, effective retroactively to the benefit's inception date, June 30, 1989. To reflect this separation, we have split several of the asset tables into 401(a) pension assets and 401(h) health supplement assets.

Actuarial Balance Sheet and Determination of the Permanent Benefit Increase

The results of the actuarial valuation of the Plan as of June 30, 2002 and June 30, 2003, are summarized in the actuarial balance sheet (Table 1 in Section M). The results for 2003 are based on the benefit provisions of the Plan as of June 30, 2003, as summarized in Table 18, and on the actuarial assumptions and methods shown in Table 19.

Section 1 of the actuarial balance sheet (Table 1) shows that the actuarial value of assets as of June 30, 2003, amounts to $23.517 billion (Item 11). This value includes an adjustment of $5.400 billion to the market value of assets as a result of the actuarial asset valuation method. The actuarial liabilities exceed the actuarial assets of $23.517 billion by $0.787 billion. This amount is shown in Item 12 and represents the unfunded actuarial accrued liability (UAAL).

Items 14 and 15 give the actuarial liability for those Plan members who are receiving benefits, while item 16 shows the actuarial liability for System members who are receiving benefits. Item 18 shows the amount of the actuarial liability for all present active members of the Plan based on all past service. Item 19 is the present value of benefits due inactive members of the Plan.

Item 22 is the reserve set aside by SB 1058 to fund the PBIs.

The UAAL becomes the balancing item that makes the actuarial assets and the actuarial liabilities equal.

Since the UAAL is positive, the required contribution rate is greater than the normal cost rate for the Plan and the amortization period for this and future valuations becomes 30 years per Arizona Revised Statutes 38-737.

Items 24 through 33 determine the PBI for 2003. As shown in Item 30, funding the 2003 PBI required $341.9 million in excess earnings. The per-year-of-service factor for the 2003 PBI is $35.43, as shown in Item 32. Items 34 through 36 determine the "Excess Investment Earnings" held in reserve for future PBIs. Item 36c. shows that $729 million in assets are being held for future PBIs.

Funding Status of the Plan

Section L of this report contains the actuarial certification, which provides the results of the actuarial valuation. Items I through VII contain the 2003 valuation results, which Tables 2, 3, 4a and 4b support. The 2002 actuarial valuation determined the required contribution rates for the 2004 and 2005 fiscal years (Item VIII). Table 2 summarizes the various cost items for the 2002 actuarial valuation versus the 2003 valuation. Table 3 breaks down the normal cost into its components, while Tables 4a and 4b develop the actuarial value of assets.

Table 3 indicates that the normal cost as of June 30, 2003, is 13.03% of pay, compared to 11.90% in the 2002 valuation. We compute the normal cost under the prescribed PUC actuarial valuation method. It includes both employer and member components. The normal cost for the health insurance premium supplement is 0.69% of pay. The normal cost for the deferred retirement benefit for disabled employees is 0.40%. The normal cost for the retirement benefits (as shown in Item 1) is 10.41%, while the normal cost for the death benefits is 0.29% of pay. The remaining 1.24% of pay is the cost of termination benefits under the Plan (including the enhanced refund option).

Tables 4a and 4b develop the actuarial value of assets under the asset valuation method, as modified by the November 15, 2002, Board action. Table 4a shows the development of the actuarial value of the 401(a) pension assets, and Table 4b shows the development of the actuarial value of the 401(h) health supplement assets. The market value of the Plan assets as shown in Item 3 of Tables 4a (401(a)) and 4b (401(h)) are $17.419 billion and $0.698 billion, respectively. The total amounts of excess (or shortfall) investment income deferred for future recognition, as shown in Item 2e of Tables 4a and 4b are -$5.153 billion and -$0.247 billion, respectively. The resulting actuarial values of 401(a) and 401(h) assets shown in Item 6 of Tables 4a and 4b are $22.572 billion and $0.945 billion, respectively. The actuarial value of combined Plan assets is $23.517 billion.

Table 2 compares a number of the key actuarial items for the 2003 valuation with the corresponding items for the 2002 valuation. The normal cost rate has increased from 11.90% to 13.03%, as noted above. The actuarial accrued liability has increased from $22.6 billion to $24.3 billion, as shown in Item 5h. Item 6 indicates that actuarial assets have decreased by about $0.1 billion during the year, from $23.6 billion to $23.5 billion.

We determine the employer and member contribution rates to be one-half of the percent of pay needed to pay the normal cost of the Plan and to amortize the Unfunded Actuarial Accrued Liability (UAAL). Since the Plan now has UAAL instead of surplus, the percent of pay needed to amortize the UAAL is positive. For the June 30, 2003, valuation, the normal cost of the Plan is 13.03% and the amortization of the UAAL is 0.89%. So the calculated employer and member rates are equal to:

$$\tfrac{1}{2} \times (13.03\% + 0.89\%) = 6.96\%.$$

If the UAAL of the Plan were eliminated, the employer and member rates would be:

$$\tfrac{1}{2} \times (13.03\% - 0.00\%) = 6.52\%.$$

This difference of 0.44% (i.e., 6.96% - 6.52%) is due totally to the amortization of the Plan's UAAL. Thus, the employer and member contribution rates in this valuation are .44% larger due to the amortization of the UAAL.

The Plan's assets are split between the retirement program (401(a)) and the health premium supplement program (401(h)) as follows:

Item	401(a) Account	401(h) Account	Total
(1)	(2)	(3)	(4)
1. Market Value of Assets	$17,418,714,877	$698,106,058	$18,116,820,935
2. Actuarial Value of Assets	$22,572,007,289	$944,891,222	$23,516,898,511

The hypothetical member and employer contribution rates determined by the 2003 valuation are each 6.96% of compensation. Because of the separation of the health premium supplement into the 401(h) account, we must split the contribution rates into 401(a) and 401(h) portions. We have assumed that all member contributions will be contributed to the 401(a) account. The hypothetical contribution rates may be allocated as shown below:

Item	401(a) Account	401(h) Account	Total
(1)	(2)	(3)	(4)
1. Employee Contribution Rates	6.96%	0.00%	6.96%
2. Employer Contribution Rates	5.79%	1.17%	6.96%
3. Total Contribution Rates	12.75%	1.17%	13.92%

Actuarial Gains and Losses

Section C notes that the unfunded actuarial accrued liability (UAAL) is $0.787 billion in 2003. As seen in Table 2, this compares to a surplus of $1.036 billion in 2002. As shown in Table 2, Item 4 is the normal cost rate of the Plan. The normal cost rate is 13.03% for 2003 and compares to 11.90% for 2002. The contribution rate has increased from a calculated rate of 5.20% of pay as determined by the 2002 valuation to 6.96% of pay as determined by the 2003 valuation. The purpose of this section is to determine the source of the actuarial gains and losses during the year that have caused the UAAL to increase.

Tables 5a and 5b in Section M develop the expected value of actuarial assets for this valuation, based on the investment return assumption of 8%. It compares the expected value with the actual value of actuarial assets as of the end of the year to determine the asset gain for the year.

As shown in Item 8 of Tables 5a and 5b, the expected value of the combined 401(a) and 401(h) actuarial assets as of June 30, 2003, is $24.685 billion. As developed in Tables 4a and 4b, the actual value of the combined 401(a) and 401(h) actuarial assets as of the valuation date is $23.517 billion (as repeated in Item 9 of Tables 5a and 5b). Thus the asset loss for the year is the difference between the actual value and the expected value, or $1.168 billion (as shown in Item 10 of Tables 5a and 5b), compared to last year's loss of $314.2 million.

This asset loss for the year is a direct reflection of the yield estimated for the year based on the value of actuarial assets. As shown in Item 6, Column 3 of Tables 10a and 10b, the yields on the actuarial value of 401(a) and 401(h) assets were 2.88% and 4.66%, respectively. The rate of return on the market value of the 401(a) assets was 1.83% for fiscal year 2003, but the rate of return on the actuarial value of the 401(a) assets was 2.88%. This difference is due to the smoothing effect of the asset valuation method on the actuarial value of assets. The effect of the investment loss for fiscal 2003 will be spread over ten years beginning on June 30, 2003.

Table 6 develops the total actuarial gain for the year and separates it into asset and liability components. Tables 2 and 8 derive the items in Table 6 that we use to develop the expected UAAL as of June 30, 2003. Item 7 of Table 6 shows the total actuarial loss for the year to be $1.398 billion. Since the asset loss for the year is $1.168 billion, the total loss, other than the asset loss, is $230.2 million.

The $230.2 million includes a $31.0 million loss due to legislative changes and $417.6 million loss due to assumption changes. The remaining $218.4 million is liability experience gain, compared to a liability experience loss for 2002 of $971.1 million. The liability experience gain of $218.4 million amounts to 0.90% of the actuarial accrued liability of $24.304 billion.

Change in Assets During the Year

This section provides an analysis of the change in the accounting assets during the year, an estimate of the yield on assets for the Plan, and a description of the determination of the actuarial value of assets under the asset valuation method that the Retirement Board adopted on November 15, 2002.

Tables 8a and 8b trace the change in market value for Plan valuation purposes from the beginning of the year to the end of the year. Items 2 of Tables 8a and 8b are the contributions received during the year.

Item 3 is the net investment income, including net realized capital gains for the year and net of management fees. Item 4 is the benefit payments for the year, while Item 5 shows the refunds of contributions during the year. Item 6 represents miscellaneous employer adjustments. Item 7 is administrative expenses other than investment manager fees netted out in Item 3. Item 8 is any other miscellaneous adjustments. Item 9 includes certain other transfers and payments during the year.

The net decrease in market value of the combined Plan assets during the year as shown in Item 11 of Tables 8a and 8b is $0.464 billion. In 2002, there was a net decrease of $0.386 billion in book value.

Tables 10a and 10b use the increases and decreases in Tables 8a and 8b to produce an estimated yield on assets. Column 2 shows an estimated yield on a market value basis, while Column 3 provides the estimated yield on the actuarial value of assets.

To determine the estimated yield for the year under each of the three asset values, the traditional insurance company measurement of yield has been used. This equation is:

$$2I / (A + B - I).$$

In this equation, I is net investment income for the asset valuation method, A is the beginning of the year asset value, and B is the end of the year asset value. This equation essentially assumes that income, revenue, and expenditures are evenly distributed throughout the year.

In Item 6 of Tables 10a and 10b, the estimated yields based on the insurance company yield formula are shown. The most pertinent figure for actuarial purposes is the yield shown under Column 3, the yield for the actuarial value. The Plan has an estimated yield of 2.88% on the 401(a) assets and 4.66% on the 401(h) assets for the year, compared to the actuarial assumed rate of 8%. As previously shown in Tables 5a and 5b, the asset experience loss for the year is $1,167.8 million.

Both the estimated actuarial yield and the resultant actuarial asset gain are lower than they were in the 2002 valuation. The 2.88% actuarial yield rate on the 401(a) assets compares to 6.36% on the 401(a) assets last year, while $1,167.8 million asset experience loss compares to a $314.2 million loss last year.

Tables 4a and 4b and Tables 9a and 9b show the development of the actuarial value of assets under the actuarial asset valuation method.

Tables 4a and 4b develop the actuarial value of assets under the actuarial asset valuation method adopted by the Board on November 15, 2002. This method starts with the market value of assets and is modified by the difference between expected investment return and actual investment return. Effective June 30, 2002, only 10% of this difference is recognized in the valuation immediately following the year in which it occurs. The remaining 90% is deferred until future valuations, with an additional 10% recognized in each subsequent valuation, until 100% of the difference is recognized in the tenth year.

The combined 401(a) and 401(h) deferral amount for the year (shown in Item 2e of Tables 4a and 4b) is -$5.400 billion. That is, $5.4 billion of investment losses will be recognized in future valuations. Tables 9a and 9b show the development of the Excess (Shortfall) of investment income for the past four years.

Sources of Change in Contribution Rates

Previous sections of this report have discussed the actuarial gains and losses for the year and the estimated yield for the year. This section will examine the causes of the increase in the contribution rate.

Table 7 analyzes the impact of various factors on the contribution rate. The starting point in Item 1 is the contribution rate determined by the June 30, 2002, actuarial valuation, namely 5.20% of pay for employers and members.

If there had been no changes to the Plan by the 2003 Legislature, no change in assumptions and if experience had been exactly as anticipated by the actuarial assumptions, Item 2 shows that the total contribution rate would have increased to 5.51%, mainly due to the one-year delay in implementing the 5.2% contribution rate of the 2002 valuation.

When the actual liability experience for the year is factored in, the contribution rate remains at 5.51% (Item 3). This item includes any changes in the normal cost percentage between 2002 and 2003. Increases in the normal cost rate this year exactly matched decreases in amortization due to the liability gain.

Item 4 analyzes the effect of the actual asset performance of the Plan. The contribution rate increases by 0.83% of pay as a result of the unfavorable investment performance (on actuarial assets). The increase in the required contribution rate from this source results from actual return on actuarial assets being less than our assumed 8% rate of return.

Since there is no additional reserve for future PBIs, there is no increase in contribution rate from this source. The Legislative changes increase the contribution rate by 0.03% (Item 5). The UAAL became positive this year and is amortized over 30 years (instead of the scheduled 16 years) according to Section 38-737, causing the contribution rate to decrease by 0.06%.

The newly adopted assumption changes as a result of the experience study for the 5-year period ended June 30, 2002, increased the contribution rate by 0.65%, making the final rate 6.96%.

GASB No. 25 Disclosure

The Governmental Accounting Standards Board (GASB) has issued Statement No. 25 that provides the manner in which the actuarial condition of a public sector retirement system is to be disclosed. This disclosure format is required for plan years beginning after June 15, 1996.

The required schedule of funding progress is shown in Table 16a. Table 16b shows the schedule of annual required contributions required by GASB No. 25. Table 16c provides notes to the required supplemental information.

Under GASB 25, only the 401(a) portion of the Plan is to be disclosed. Therefore, the values in the tables reflect only the pension portion of the Plan. They exclude the assets and actuarial accrued liabilities associated with the health supplements.

January 25, 2007

Retirement Board
Arizona State Retirement System
3300 N. Central Avenue
14th Floor
Phoenix, Arizona 85012

Dear Retirement Board Members:

Actuarial Valuation as of June 30, 2003

In preparing the above referenced actuarial valuation, the actuary has relied on census data and asset information provided by the staff of the Arizona State Retirement System. While not verifying the data at their source, the actuary has performed tests for consistency and reasonableness.

Sincerely,

Charles E. Chittenden, FSA, EA, MAAA
Principal and Consulting Actuary

Historical Comparisons and Statistical Summaries

Section N contains tables showing statistical data for this valuation, compared to the corresponding data for previous valuations. In addition, Tables 11 through 15 of Section M contain actuarial trend information.

Table 11 relates the size of the unfunded actuarial accrued liability (UAAL) to three different measurements. In Columns 3 and 4 the UAAL is related to the covered payroll of the Plan. Columns 5 and 6 relate the UAAL to the actuarial value of present assets, while Columns 7 and 8 relate the UAAL to the total actuarial liabilities of the Plan. Twenty-four years of historical information are shown in the table. The UAAL has been generally decreasing over the last twenty-two years, and the three ratios have also been decreasing over the same period of time. The 2001 benefit enhancements and the 2001 to 2003 losses in investment return caused all four numbers to increase from 2000 to 2003.

Table 12 provides a twenty-four year history of the growth in active membership, covered payroll, and average salary. Table 13 illustrates the growth in the number of retired participants over the last twenty years. Table 14 shows a history of contribution rates for both members and employers. In addition, it shows the contribution rate calculated by this valuation.

Table 15 provides a history of net external cash flow. Net external cash flow is defined as total contributions during the year, less benefit payments, refunds, and administrative expenses. The dramatic increase in benefit payments due to the 2001 benefit enhancements and the decline in the contribution rate have resulted in a negative net external cash flow.

Summary and Closing Comments

The contribution rate for the 2004 and 2005 Plan year will be 5.20% of pay for both members and employers. The 2003 valuation determined that the hypothetical contribution rate needed to pay the normal cost of the Plan and fund the UAAL over the next 30 years would be 6.96% of pay.

There have been actuarial losses due to investment performance and liability increases due to demographic changes and assumption changes. The net result is that the Plan now has unfunded actuarial accrued liabilities, based on actuarial assets, as of June 30, 2003.

The statutory amortization period is now 30 years. Over time, the contribution rates for both members and employers will trend towards ½ the normal cost rate. The current normal cost rate is 13.03%, so ½ of this rate would be 6.52%. In the absence of gains, losses, or benefit changes, the contribution rate will increase from 5.20% toward 6.52% in the future. As a result of investment losses currently deferred, moreover, the contribution rate has now risen above the normal cost rate in this and future valuations.

Actuarial Certification

ARIZONA STATE RETIREMENT PLAN
Actuarial Certification Statement

This is to certify that Mellon Human Resources & Investor Solutions has prepared an actuarial valuation of the Arizona State Retirement Plan as of June 30, 2003.

Actuarial calculations have been made with respect to a total of 395,021 members – 202,398 active employees, 123,365 inactive members, and 64,697 retired members and beneficiaries, and 4,561 members on long term disability. In addition, there are 769 System retirees receiving ad hoc benefits from Plan assets.

The actuarial calculations establish a total benefit cost of 13.92% of the annual compensation of employees. The total normal cost rate is 13.03% of compensation, and the required amortization payment determined in accordance with Section 38-737 is 0.89% of compensation.

The actuarial cost factors as of June 30, 2003 are as follows:

I. Actuarial accrued liabilities				
A. Liabilities due to member's benefits				
1. Active members				
a. Retirement benefits	$10,435,386,360			
b. Health insurance premium supplement	851,386,523			
c. Disability deferred retirement benefits	207,034,730			
d. Pre-retirement death benefits	236,526,342			
e. Withdrawal benefits	324,951,254			
f. Total active members		$12,055,285,209		
2. Inactive members		819,702,224		
3. Retired members and beneficiaries		10,017,088,581		
4. Disabled members (deferred retirement)		328,285,163		
5. Benefit increases for other-than-plan participants		12,589,518		
6. Total present value of benefits			$23,232,950,695	
B. Other miscellaneous liabilities and reserves			0	
C. Reserve for future PBIs			1,070,688,752	
D. Total actuarial accrued liability				$24,303,639,447
II. Actuarial value of assets				23,516,898,511
III. Unfunded actuarial accrued liability (Item I -- Item II)				786,740,936
IV. Amortization of unfunded actuarial accrued liability (per Section 38-737)			64,941,767	
V. Normal cost for the year			951,116,145	
VI. Total contribution for the year (Item IV + Item V)				1,016,057,912
VII. Total covered payroll (projected to 2003 / 2004 plan year)				7,296,827,756
VIII. Total contribution for fiscal years 2004 and 2005 as a percentage of covered payroll		401(a) Account	401(h) Account	Total
A. Employee Portion		5.20%	0.00%	5.20%
B. Employer Portion		4.10%	1.10%	5.20%
C. Total		9.30%	1.10%	10.40%

The Board adopted a new asset valuation method on November 15, 2002, to be effective for valuations on and after June 30, 2002.

On November 21, 2003, the Board adopted assumptions to be effective for valuations on and after June 30, 2003. These assumptions are as follows:

1. Investment yield - 8% per annum.

2. Salary increases

Years of Service	Merit Component	Total Salary Increase
1	5.00%	9.50%
2	4.00	8.50
3	2.50	7.00
4	1.80	6.30
5	1.40	5.90
6	1.25	5.75
7	1.00	5.50
8	0.80	5.30
9	0.75	5.25
10	0.50	5.00
11 to 19	0.25	4.75
20 or more	0.00	4.50

3. Rates of disability

Age	Males	Females
20	0.06%	0.07%
30	0.07%	0.10%
40	0.21%	0.21%
50	0.51%	0.49%
60	1.20%	1.09%

4. Rates of withdrawal - Sample ages and years of service

	Years of Service				
	Male Members				
Age	1	2	5	8	10+
20	36.42%	28.95%	13.64%	7.11%	12.77%
30	20.55	16.12	9.43	5.14	5.65
40	16.98	10.11	6.65	4.00	2.27
50	16.92	9.04	5.02	3.45	1.55
60	18.24	9.63	3.71	2.61	1.08

	Years of Service				
	Female Members				
Age	1	2	5	8	10+
20	30.53%	26.40%	20.77%	13.80%	21.48%
30	19.37	16.52	10.89	8.11	8.21
40	16.93	11.74	6.61	4.61	2.39
50	14.57	9.27	5.22	2.87	1.67
60	14.32	9.39	4.66	2.37	0.88

5. Rates of retirement - Sample ages and years of service

	Years of Service				
Age	10-14	20-24	25	30	31+
50	3.00%	4.00%	7.00%	17.50%	12.50%
55	3.00	6.00	16.25	17.50	12.50
60	7.00	23.75	26.75	35.00	30.00
62	30.00	40.00	43.00	55.00	50.00
65	30.00	30.00	33.00	35.00	30.00
66 and above	30.00	30.00	33.00	35.00	30.00

6. Mortality rates – 1994 GAM – Static, Projected to 2005 with Projection Scale AA, with no setback.

7. Mortality rates after disability – Post disablement mortality rates are based on experience of other large public sector system and ASRS' own experience.

8. Valuation assets – Market value less ten year phase-in of Excess (Shortfall) Investment income.

9. Funding method – Projected unit-credit.

Qualified actuaries have performed the actuarial calculations in accordance with accepted actuarial procedures, based on the current provisions of the Plan and on the actuarial assumptions adopted by the Board.

ASRS prepared all trend data schedules in the financial section and the supporting schedules in the actuarial section of its Comprehensive Annual Financial Report.

Charles E. Chittenden, FSA, EA, MAAA
Principal and Consulting Actuary

Actuarial Tables

Actuarial Balance Sheet Showing Present and Prospective Assets and Liabilities After Actuarial Adjustment (401(a) + 401(h))

ACTUARIAL ASSETS

	June 30, 2002 (1)	June 30, 2003 (2)
I Present Assets At Actuarial Value:		
1. Reserve for retired members and beneficiaries	$ 8,969,341,077	$ 10,017,088,581
2. Reserve for disabled members	252,993,500	328,285,163
3. Reserve for other-than-plan retirees	12,328,000	12,589,518
4. Reserve for PBI COLAs		
(a) Reserve for July 1st COLA	292,013,060	341,858,732
(b) Reserve for future COLAs	1,070,688,752	728,830,020
5. Employee contributions		
(a) Plan members	3,046,008,125	3,110,690,039
(b) System members	N/A	N/A
6. Employer contributions		
(a) Plan	2,905,441,989	2,930,889,933
(b) System	N/A	N/A
7. Other miscellaneous		
(a) ASRS building and land	0	0
(b) Other	0	0
8. Additional assets	2,958,759,433	646,588,950
9. Total present assets	$ 19,507,573,936	$ 18,116,820,936
10. Adjustment to book value due to actuarial asset valuation method	4,115,442,033	5,400,077,575
11. Total actuarial value of present assets	$ 23,623,015,969	$ 23,516,898,511
II Prospective Assets:		
12. Unfunded actuarial accrued liability	(1,036,095,218)	786,740,936
13. TOTAL ACTUARIAL ASSETS	$ 22,586,920,751	$ 24,303,639,447

ACTUARIAL LIABILITIES

	June 30, 2002 (1)	June 30, 2003 (2)
III Present Value of Benefits Presently Being Paid:		
14. (a) Benefits for retired members and beneficiaries	$ 8,546,468,277	$ 9,543,520,373
(b) Health insurance premium supplement	422,872,800	473,568,208
15. (a) Benefits for disabled members	228,103,900	292,804,436
(b) Health insurance premium supplement	24,889,600	35,480,727
16. (a) Benefits for other-than-plan participants	4,493,800	4,127,973
(b) Health insurance premium supplement	7,834,200	8,461,545
17. Total present value of benefits presently being paid	$ 9,234,662,577	$ 10,357,963,262
IV Present Value of Benefits Payable In the Future To Present Members:		
18. Active members		
(a) Service retirement benefits	$ 9,634,818,900	$ 10,435,386,360
(b) Health insurance premium supplement	846,152,200	851,386,523
(c) Disability retirement benefits	172,300,500	207,034,730
(d) Pre-retirement death benefits	243,976,100	236,526,342
(e) Withdrawal benefits	347,788,600	324,951,254
(f) Total active members	$ 11,245,036,300	$ 12,055,285,209
19. Inactive members	744,520,062	819,702,224
20. Total	$ 21,224,218,939	$ 23,232,950,695
V Other Liabilities And Reserves:		
21. Reserve for other miscellaneous liabilities and reserves	0	0
22. Reserve for PBI COLAs	$ 1,362,701,812	$ 1,070,688,752
23. TOTAL ACTUARIAL LIABILITIES	$ 22,586,920,751	$ 24,303,639,447

DETERMINATION OF PERMANENT BENEFIT INCREASE COLA

VI.	Determination of July 1, 2003 PBI COLA:	
	24. Actuarial Present Value (APV) of all Retirees' and Beneficiaries' benefits as of June 30, 2002	$8,546,468,300
	25. Rate of Return on Actuarial Value of Assets for Fiscal Year Ending June 30, 2002	6.36%
	26. Excess Earnings Available for COLA	
	a. Carry Over From Prior Year	1,070,688,752
	b. Current Year (Item 24 x [Item 25 - 8%, but not less than 0])	0
	c. Total Excess Earnings Available for COLA (Item 26.a + Item 26.b.)	1,070,688,752
	27. One Percent of APV of all Retirees' and Beneficiaries' benefits as of June 30, 2002	85,464,683
	28. Preliminary COLA % (Item 26.c / Item 27 x 0.01)	12.5%
	29. Actual COLA % (Item 28, but not greater than 4% and equal to 0% if less than 1%)	4.0%
	30. Target Cost of 2003 COLA (Item 27 x Item 29)	341,858,732
	31. APV of $1 Per Year of Service for Eligible Group	9,647,669
	32. Per Year of Service Factor for 2003 COLA	35.43
	33. Excess Investment Earnings to be Carried Forward to Next Year	728,830,020
VII.	Determination of Reserves for Future PBI COLAs:	
	34. APV of all Retirees' and Beneficiaries' benefits as of June 30, 2003	9,543,520,373
	35. Rate of Return on Actuarial Value of Assets for Fiscal Year Ending June 30, 2003	2.88%
	36. Excess Earnings Reserves for Future COLAs	
	a. Carry Over From Prior Year (Item 33)	728,830,020
	b. Current Year (Item 34 x [Item 35 - 8%, but not less than 0])	0
	c. Total Excess Earnings Reserves for Future COLAs	728,830,020

Summary of Cost Items

	Valuation as of June 30, 2002		Valuation as of June 30, 2003	
	Cost Item	Cost as % of Pay	Cost Item	Cost as % of Pay
	(1)	(2)	(3)	(4)
1. Participants				
a. Active members	198,870		202,398	
b. Inactive members	109,942		123,365	
c. Retired members and beneficiaries	60,346		64,697	
d. Disabled retirees	4,485		4,561	
e. Total	373,643		395,021	
f. Other-than-plan retirees receiving benefit increases from the Plan	828		769	
2. Covered Payroll	$ 6,989,339,000		$ 7,296,827,756	
3. Averages for active members				
a. Average age	44.3		44.6	
b. Average years of service	8.4		8.5	
c. Average pay	35,145		33,998	
4. Normal cost rate	11.90%		13.03%	
5. Actuarial accrued liability				
a. Retired members and beneficiaries	$ 8,969,341,077		$ 10,017,088,581	
b. Disabled members	252,993,500		328,285,163	
c. Benefits for other-than-plan retirees	12,328,000		12,589,518	
d. Active members	11,245,036,300		12,055,285,209	
e. Inactive members	744,520,062		819,702,224	
f. Other miscellaneous	0		0	
g. Reserve for PBI COLAs	1,362,701,812		1,070,688,752	
h. Total	$ 22,586,920,751	323.2%	$ 24,303,639,447	333.1%
6. Present actuarial assets	$ 23,623,015,969	338.0%	$ 23,516,898,511	322.3%
7. Unfunded actuarial accrued liability	$ (1,036,095,218)	(14.8%)	$ 786,740,936	10.8%

Summary of Cost Items

	Valuation as of June 30, 2002		Valuation as of June 30, 2003	
	Cost Item	Cost as % of Pay	Cost Item	Cost as % of Pay
	(1)	(2)	(3)	(4)
8. Section 38-737 funding period	17 years		30 years	
9. Section 38-737 contribution rate				
A. 401(a) Account				
a. Employee	5.20%		6.96%	
b. Employer	4.10%		5.79%	
c. Total	9.30%		12.75%	
B. 401(h) Account				
a. Employee	0.00%		0.00%	
b. Employer	1.10%		1.17%	
c. Total	1.10%		1.17%	
C. Total of Combined Accounts				
a. Employee	5.20%		6.96%	
b. Employer	5.20%		6.96%	
c. Total	10.40%		13.92%	
10. Estimated yield on 401(a) actuarial assets	6.36%		2.88%	
11. Relative size of unfunded actuarial accrued liability				
a. As percentage of actuarial assets	(4.4%)		3.3%	
b. As percentage of covered payroll	(14.8%)		10.8%	
c. As percentage of total actuarial accrued liability	(4.6%)		3.2%	

Analysis of Normal Cost by Component

Benefit Component	Normal Cost as % of Pay	
	2002	2003
(1)	(3)	(3)
1. Retirement benefits	9.73%	10.41%
2. Health insurance premium supplement	0.72%	0.69%
3. Disability benefits (Deferred Retirement)	0.33%	0.40%
4. Death benefits	0.29%	0.29%
5. Termination benefits		
a. Refunds	0.19%	0.29%
b. Vested deferred benefits	0.64%	0.95%
c. Total	0.83%	1.24%
6. Total	11.90%	13.03%

Development of Actuarial Value of Assets (401(a) Only)

Item	Valuation as of June 30, 2002	Valuation as of June 30, 2003
(1)	(2)	(3)
1. Excess (shortfall) of investment income for current year and previous three years (see Table 9a):		
a. Current year	$ (3,994,318,422)	$ (1,074,084,926)
b. Current year - 1	(2,581,468,783)	(3,994,318,422)
c. Current year - 2	207,131,363	(2,581,468,783)
d. Current year - 3	1,206,024,662	207,131,363
2. Deferral of excess (shortfall) of investment income for:		
a. Current year (90% deferral)	$ (3,594,886,580)	$ (966,676,434)
b. Current year - 1 [1]	(1,548,881,270)	(3,195,494,738)
c. Current year - 2 (40% deferral)	82,852,545	(1,032,587,513)
d. Current year - 3 (20% deferral)	241,204,932	41,426,273
e. Total deferred for year	$ (4,819,710,372)	$ (5,153,292,412)
3. Market value of plan assets, end of year	$ 17,821,982,950	$ 17,418,714,877
4. Actuarial value of plan assets, end of year (Item 3 - Item 2.e.)	$ 22,641,693,322	$ 22,572,007,289

[1] 60% deferral for 6/30/2002, 80% deferral for 6/30/2003.

Development of Actuarial Value of Assets (401(h) Only)

Item		Valuation as of June 30, 2002	Valuation as of June 30, 2003
(1)		(2)	(3)
1. Excess (shortfall) of investment income for current year and previous three years (see Table 9b):			
a. Current year		$ (288,175,769)	$ (48,478,489)
b. Current year - 1		61,315,688	(288,175,769)
c. Current year - 2		14,299,080	61,315,688
d. Current year - 3		41,999,439	14,299,080
2. Deferral of excess (shortfall) of investment income for:			
a. Current year	(90% deferral)	$ (259,358,192)	$ (43,630,640)
b. Current year - 1 [1]		36,789,413	(230,540,615)
c. Current year - 2	(40% deferral)	5,719,632	24,526,275
d. Current year - 3	(20% deferral)	8,399,888	2,859,816
e. Total deferred for year		$ (208,449,260)	$ (246,785,164)
3. Market value of plan assets, end of year		$ 772,873,387	$ 698,106,058
4. Actuarial value of plan assets, end of year (Item 3 - Item 2.e.)		$ 981,322,647	$ 944,891,222

[1] 60% deferral for 6/30/2002, 80% deferral for 6/30/2003.

Actual Versus Expected Actuarial Assets (401(a) Only)

Item	Valuation as of June 30, 2002	Valuation as of June 30, 2003
(1)	(2)	(3)
1. Actuarial assets, beginning of year	$ 21,888,183,666	$ 22,641,693,322
2. Total contributions during year	317,734,923	371,265,972
3. Benefits paid during year	(910,299,052)	(1,042,295,182)
4. Refunds paid during year	(42,765,105)	(35,948,463)
5. Expenses (other than investment) for the year	0	0
6. Other changes and net transfers	(7,149,384)	(5,472,629)
7. Assumed net investment income at 8%		
a. Beginning of year assets	1,751,054,693	1,811,335,466
b. Contributions	12,709,397	14,850,639
c. Benefits	(39,446,292)	(45,166,125)
d. Refunds	(1,710,604)	(1,437,939)
e. Expenses	0	0
f. Other	(285,975)	(218,905)
g. Total	$ 1,722,321,219	$ 1,779,363,136
8. Expected actuarial assets, end of year (Sum of Items 1 through 7)	$ 22,968,026,267	$ 23,708,606,156
9. Actual actuarial assets, end of year	$ 22,641,693,322	$ 22,572,007,289
10. Asset gain/(loss) for year (Item 9 - Item 8)	$ (326,332,945)	$ (1,136,598,867)

Actual Versus Expected Actuarial Assets (401(h) Only)

Item	Valuation as of June 30, 2002	Valuation as of June 30, 2003
(1)	(2)	(3)
1. Actuarial assets, beginning of year	$ 966,959,873	$ 981,322,647
2. Total contributions during year	4,040,650	4,256,357
3. Benefits paid during year	(75,989,584)	(84,533,693)
4. Refunds paid during year	0	0
5. Expenses (other than investment) for the year	0	0
6. Other changes and net transfers	0	0
7. Assumed net investment income at 8%		
a. Beginning of year assets	77,356,790	78,505,812
b. Contributions	161,626	170,254
c. Benefits	(3,292,882)	(3,663,127)
d. Refunds	0	0
e. Expenses	0	0
f. Other	0	0
g. Total	$ 74,225,534	$ 75,012,939
8. Expected actuarial assets, end of year (Sum of Items 1 through 7)	$ 969,236,473	$ 976,058,250
9. Actual actuarial assets, end of year	$ 981,322,647	$ 944,891,222
10. Asset gain/(loss) for year (Item 9 - Item 8)	$ 12,086,174	$ (31,167,028)

Actuarial Gain or Loss for the Year

Item	Valuation as of June 30, 2002	Valuation as of June 30, 2003
(1)	(2)	(3)
A. Calculation of Total Actuarial Gain or Loss		
1. Unfunded actuarial accrued liability (UAAL), previous year	$ (2,586,629,095)	$ (1,036,095,218)
2. Normal cost for the year	$ 746,912,109	$ 831,731,341
3. Contributions for the year	$ (321,775,573)	$ (375,522,329)
4. Interest at 8%		
a. On UAAL	(206,930,328)	(82,887,617)
b. On normal cost	59,752,969	66,538,507
c. On contributions	(12,871,023)	(15,020,893)
d. Total	$ (160,048,382)	$ (31,370,003)
5. Expected UAAL (Sum of Items 1 - 4)	$ (2,321,540,941)	$ (611,256,209)
6. Actual UAAL	$ (1,036,095,218)	$ 786,740,936
7. Gain/(loss) for the year (Item 5 - Item 6)	$ (1,285,445,723)	$ (1,397,997,145)
B. Source of Gains and Losses		
8. Asset gain/(loss) for the year (Tables 5a and 5b, Item 10)		
a. Experience asset gain/(loss)	$ (1,623,435,136)	$ (1,167,765,895)
b. Asset valuation method change	$ 1,309,188,365	$ 0
c. Total asset gain/(loss) for the year	$ (314,246,771)	$ (1,167,765,895)
9. Asset gain/(loss) as a percentage of actuarial assets	(1.3%)	(5.0%)
10. PBI Cola		
a. Excess Earnings Reserve for Fiscal Year 2002	$ 0	$ 0
b. Excess Earnings Reserve for Fiscal Year 2003	N/A	$ 0
11. Total actuarial accrued liability gain/(loss) for the year (Item 7 - Item 8c - Item 10)	$ (971,198,952)	$ (230,231,250)
12. Analysis of actuarial accrued liability gain/(loss)		
a. Legislative changes	$ 0	$ (31,033,200)
b. Assumption changes	N/A	$ (417,590,319)
c. Experience liability gain/(loss) for the year	$ (971,198,952)	$ 218,392,269
d. Total actuarial accrued liability gain/(loss)	$ (971,198,952)	$ (230,231,250)
13. Experience liability gain/(loss) as percentage of total actuarial liability (Item 12c as % of Item 5h of Table 2)	(4.30%)	0.90%

Analysis of Change in Contribution Rate

Basis	Unfunded Actuarial Accrued Liability ($ Millions)	Statutory Employer/Employee Contribution Rate	Statutory Funding Period	Attributable Change to Contribution Rate	Rolling 30-Year Employer/ Employee Rate[1]
(1)	(2)	(3)	(4)	(5)	(6)
1. Valuation as of June 30, 2002	(1,036)	5.20%	17	—	5.34%
2. Valuation as of June 30, 2003, using expected assets and liabilities	(611)	5.51%	16	0.31%	5.61%
3. Valuation as of June 30, 2003, using expected assets but actual liabilities	(829)	5.51%	16	0.00%	5.63%
4. Valuation as of June 30, 2003, using actual assets and liabilities	339	6.34%	16	0.83%	6.29%
5. Valuation as of June 30, 2003, including legislative changes (extension of rural subsidy)	370	6.37%	16	0.03%	6.31%
6. Valuation as of June 30, 2003, including legislative increase in funding period	370	6.31%	30	(0.06%)	6.31%
7. Valuation as of June 30, 2003, including assumption change	787	6.96%	30	0.65%	6.96%

[1] Contribution rate if 30-year rolling funding period was being used now instead of being phased-in.

Change in Assets During the Year (401(a) Only)

	Year Ending June 30, 2002	Year Ending June 30, 2003
	(1)	(2)
1. Market value, beginning of year (book value in 2002)	$ 18,905,027,382	$ 17,812,242,996
2. Contributions and receipts during the year		
a. Employee contributions	134,688,319	141,878,562
b. Employer contributions	130,647,669	137,622,205
c. Member reimbursements of employee contributions	48,247,702	91,567,731
d. Member reimbursements of employer contributions	1,117,785	0
e. Other miscellaneous receipts	3,033,448	197,474
f. Total	317,734,923	371,265,972
3. Investment income for the year (net of investment expenses)	325,570,564	344,259,669
4. Benefit payments		
a. Retirement and disability benefits	(898,148,032)	(1,026,433,839)
b. Death benefits	(12,151,020)	(15,861,343)
c. Total	(910,299,052)	(1,042,295,182)
5. Refunds of contributions	(42,765,105)	(35,948,463)
6. Employer adjustments	0	0
7. Administrative expenses	(15,375,486)	(20,538,703)
8. Miscellaneous	111,628	(4,798,782)
9. Other		
a. Transfers from Plan	0	1,984,281
b. Reimbursements and lump sums	0	0
c. Transfers to PSPRS	(7,149,384)	(7,456,910)
d. Increase System retired reserves	0	0
e. Employer contributions released	0	0
f. Supplemental credits	N/A	N/A
g. Transfers from System	0	0
h. Total	(7,149,384)	(5,472,629)
10. Change in audited assets, beginning of year	781,450	0
11. Total change in market value (book value in 2002)	(331,390,462)	(393,528,118)
12. Market value, end of year (book value in 2002)	$ 18,573,636,920	$ 17,418,714,877

Change in Assets During the Year (401(h) Only)

	Year Ending June 30, 2002 (1)	Year Ending June 30, 2003 (2)
1. Market value, beginning of year (book value in 2002)	$ 988,941,457	$ 768,846,996
2. Contributions and receipts during the year		
a. Employee contributions	0	0
b. Employer contributions	4,040,650	4,256,357
c. Member reimbursements of employee contributions	0	0
d. Member reimbursements of employer contributions	0	0
e. Other miscellaneous receipts	0	0
f. Total	4,040,650	4,256,357
3. Investment income for the year (net of investment expenses)	16,944,493	10,393,667
4. Benefit payments	(75,989,584)	(84,533,693)
5. Refunds of contributions	0	0
6. Employer adjustments	0	0
7. Administrative expenses	0	(857,269)
8. Miscellaneous	0	0
9. Other	0	0
10. Change in audited assets, beginning of year	0	0
11. Total change in market value (book value in 2002)	(55,004,441)	(70,740,938)
12. Market value, end of year (book value in 2002)	$ 933,937,016	$ 698,106,058

Calculation of Excess Investment Income for Actuarial Value of Assets (401(a) Only)

Item	Plan Year Ending June 30, 2003	2002	2001	2000
(1)	(2)	(3)	(4)	(5)
1. Calculation of unrealized gain/(loss) for year, based on market value				
a. Market value over book value (end of year)	N/A	$ (751,653,970)	$ 1,915,917,421	$ 4,240,641,488
b. Market value over book value (beginning of year)	N/A	1,915,917,421)	4,240,641,488	4,133,055,767
c. Unrealized gain/(loss) during the year	N/A	(2,667,571,391)	(2,324,724,067)	107,585,721
2. Net investment income for year (based on market value since 2003, book value in other years)	$ 339,460,887	325,570,564	1,507,819,089	1,765,664,249
3. Expenses and fees for year	20,538,703	15,375,486	9,843,046	10,775,218
4. Actual net investment income based on market value of assets (Item 1.c. + Item 2 - Item 3)	318,922,184	(2,357,376,313)	(826,748,024)	1,862,474,752
5. Market value of assets, beginning of year	17,812,242,996	20,820,944,803	22,285,375,387	21,028,622,703
6. Contributions during year	371,265,972	317,734,923	310,882,741	231,098,681
7. Benefits paid during year	(1,042,295,182)	(910,299,052)	(788,045,300)	(685,960,467)
8. Refunds paid during year	(34,948,463)	(42,765,105)	(91,824,591)	(64,976,507)
9. Expenses for year	0	0	0	(10,775,218)
10. LTD management fees for year	0	0	0	0
11. Other changes and net transfers	(5,472,629)	(7,149,384)	(68,074,200)	(85,883,775)
12. Expected net investment income at 8%				
a. Market value of assets, beginning of year	1,424,979,440	1,665,675,584	1,782,830,031	1,682,289,816
b. Contributions	14,850,639	12,709,397	12,435,310	9,243,947
c. Benefits	(45,166,125)	(39,446,292)	(34,148,630)	(29,724,954)
d. Refunds	(1,437,939)	(1,710,604)	(3,672,984)	(2,599,060)
e. Expenses	0	0	0	(431,009)
f. LTD management fees	0	0	0	0
g. Other	(218,905)	(285,975)	(2,722,968)	(3,435,351)
h. Total	1,393,007,110	1,636,942,109	1,754,720,759	1,655,343,389
13. Excess investment income for year (Item 4 - Item 12.h.)	$ (1,074,084,926)	$ (3,994,318,422)	$ (2,581,468,783)	$ 207,131,363

Calculation of Excess Investment Income for Actuarial Value of Assets (401(h) Only)

Item	Plan Year Ending June 30, 2003	2002	2001	2000
(1)	(2)	(3)	(4)	(5)
1. Calculation of unrealized gain/(loss) for year, based on market value				
a. Market value over book value (end of year)	N/A	$ (161,063,629)	$ 63,030,160	$ 136,961,959
b. Market value over book value (beginning of year)	N/A	63,030,160	136,961,959	130,647,511
c. Unrealized gain/(loss) during the year	N/A	(224,093,789)	(73,931,799)	6,314,448
2. Net investment income for year (based on market value since 2003, book value in other years)	$ 10,393,667	16,944,493	207,918,926	73,080,742
3. Expenses and fees for year	857,269	0	0	0
4. Actual net investment income based on market value of assets (Item 1.c. + Item 2 - Item 3)	9,536,398	(209,149,296)	133,987,127	79,395,190
5. Market value of assets, beginning of year	768,846,996	1,051,971,617	902,176,526	807,759,019
6. Contributions during year	4,256,357	4,040,650	56,308,301	52,673,815
7. Benefits paid during year	(84,533,693)	(75,989,584)	(40,500,337)	(37,651,498)
8. Refunds paid during year	0	0	0	0
9. Expenses for year	0	0	0	0
10. LTD management fees for year	0	0	0	0
11. Other changes and net transfers	0	0	0	0
12. Expected net investment income at 8%				
a. Market value of assets, beginning of year	61,507,760	84,157,729	72,174,122	64,620,722
b. Contributions	170,254	161,626	2,252,332	2,106,953
c. Benefits	(3,663,127)	(3,292,882)	(1,755,015)	(1,631,565)
d. Refunds	0	0	0	0
e. Expenses	0	0	0	0
f. LTD management fees	0	0	0	0
g. Other	0	0	0	0
h. Total	58,014,887	81,026,473	72,671,439	65,096,110
13. Excess investment income for year (Item 4 - Item 12.h.)	$ (48,478,489)	$ (288,175,769)	$ 61,315,688	$ 14,299,080

Estimate of Yields for the Year (401(a) Only)

Item	Basis of Assets	
	Market Value	Actuarial Value
(1)	(2)	(3)
1. Net investment income for the year (including net realized gains and net of investment expenses)	$ 339,460,887	$ 663,302,973
2. Administrative expenses for the year	$ 20,538,703	$ 20,538,703
3. Net investment income for the asset valuation method (Item 1 - Item 2 = I)	$ 318,922,184	$ 642,764,270
4. Beginning of year asset value (A)	$ 17,812,242,996	$ 22,641,693,322
5. End of year asset value (B)	$ 17,418,714,877	$ 22,572,007,289
6. Estimated yield based on 2I / (A + B - I)	1.83%	2.88%

Estimate of Yields for the Year (401(h) Only)

Item	Basis of Assets	
	Market Value	Actuarial Value
(1)	(2)	(3)
1. Net investment income for the year (including net realized gains and net of investment expenses)	$ 10,393,668	$ 44,703,180
2. Administrative expenses for the year	$ 857,269	$ 857,269
3. Net investment income for the asset valuation method (Item 1 - Item 2 = I)	$ 9,536,399	$ 43,845,911
4. Beginning of year asset value (A)	$ 768,846,996	$ 981,322,647
5. End of year asset value (B)	$ 698,106,058	$ 944,891,222
6. Estimated yield based on 2I / (A + B - I)	1.31%	4.66%

Relative Size of Unfunded Actuarial Accrued Liability

		Relative to Actuarial Covered Payroll		Relative to Actuarial Value of Present Assets		Relative to Total Actuarial Liabilities	
Year Ending June 30,	Unfunded Actuarial Accrued Liability in Millions	Covered Payroll in Millions	Percent of Covered Payroll	Present Assets in Millions	Percent of Present Assets	Actuarial Liabilities in Millions	Percent of Actuarial Liabilities
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1980	$ 436	$ 1,373	31.8%	$ 1,631	26.7%	$ 3,400	12.8%
1981	364	1,567	23.2%	1,982	18.4%	3,946	9.2%
1982	472	1,734	27.2%	2,255	20.9%	4,547	10.4%
1983	301	1,841	16.3%	2,777	10.8%	5,009	6.0%
1984	248	1,906	13.0%	3,174	7.8%	5,351	4.6%
1985	301	2,120	14.2%	3,654	8.2%	5,874	5.1%
1986	95	2,361	4.0%	4,538	2.1%	6,718	1.4%
1987	(129)	2,478	(5.2%)	5,531	(2.3%)	7,636	(1.7%)
1988	(292)	2,818	(10.3%)	6,000	(4.9%)	8,251	(3.5%)
1989	(510)	2,994	(17.0%)	6,686	(7.6%)	6,176	(8.3%)
1990	(552)	3,212	(17.2%)	7,297	(7.6%)	6,745	(8.2%)
1991	(654)	3,453	(18.9%)	7,822	(8.4%)	7,168	(9.1%)
1992	(632)	3,616	(17.5%)	8,842	(7.1%)	8,210	(7.7%)
1993	(849)	3,748	(22.7%)	9,770	(8.7%)	8,921	(9.5%)
1994	(872)	4,126	(21.1%)	10,540	(8.3%)	9,668	(9.0%)
1995	(1,217)	4,432	(27.5%)	11,521	(10.6%)	10,304	(11.8%)
1996	(1,468)	4,632	(31.7%)	12,579	(11.7%)	11,111	(13.2%)
1997	(1,784)	4,836	(36.9%)	14,169	(12.6%)	12,385	(14.4%)
1998	(2,530)	5,164	(49.0%)	16,168	(15.6%)	13,638	(18.6%)
1999	(2,639)	5,488	(48.1%)	18,761	(14.1%)	16,122	(16.4%)
2000	(3,578)	5,894	(60.7%)	21,127	(16.9%)	17,549	(20.4%)
2001	(2,587)	6,357	(40.7%)	22,855	(11.3%)	20,269	(12.8%)
2002	(1,036)	6,989	(14.8%)	23,623	(4.4%)	22,587	(4.6%)
2003	787	7,297	10.8%	23,517	3.3%	24,304	3.2%

Growth of Covered Payroll and Active Participants

Year Ending June 30,	Active Members Number	Active Members Percent Increase	Covered Payroll Amount in $ Millions	Covered Payroll Percent Increase	Average Salary Amount	Average Salary Percent Increase
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1980	101,666	1.6%	$ 1,373	9.7%	$ 13,503	7.9%
1981	103,222	1.5%	1,567	14.1%	15,189	12.5%
1982	103,841	0.6%	1,734	10.7%	16,701	10.0%
1983	103,174	(0.6%)	1,841	6.2%	17,846	6.9%
1984	103,889	0.7%	1,906	3.5%	18,345	2.8%
1985	107,695	3.7%	2,120	11.2%	19,684	7.3%
1986	114,456	6.3%	2,361	11.4%	20,632	4.8%
1987	117,426	2.6%	2,478	5.0%	21,100	2.3%
1988	119,073	1.4%	2,818	13.7%	23,664	12.2%
1989	124,436	4.5%	2,994	6.2%	24,057	1.7%
1990	129,701	4.2%	3,212	7.3%	24,762	2.9%
1991	134,751	3.9%	3,453	7.5%	25,625	3.5%
1992	139,633	3.6%	3,616	4.7%	25,896	1.1%
1993	144,477	3.5%	3,748	3.7%	25,943	0.2%
1994	154,901	7.2%	4,126 [1]	3.2% [2]	26,635	2.7%
1995	155,444	0.4%	4,432	7.4%	28,513	7.1%
1996	159,572	2.7%	4,632	4.5%	29,029	1.8%
1997	164,390	3.0%	4,836	4.4%	29,420	1.3%
1998	170,864	3.9%	5,164	6.8%	30,224	2.7%
1999	176,368	3.2%	5,488	6.3%	31,116	3.0%
2000	183,924	4.3%	5,894	7.4%	32,045	3.0%
2001	191,252	4.0%	6,357	7.9%	33,237	3.7%
2002	198,870	4.0%	6,989	9.9%	35,145	5.7%
2003	202,398	1.8%	7,297	4.4%	36,052	2.6%

[1] Covered payroll amount has been changed to show anticipated payroll for the fiscal year following the valuation date.
[2] Compared to previous year's amount described in [1]

Growth of Retired Participants

	New Retirees		New Disabled Members on LTD Program		All Retirees		All Disabled Members on LTD Program	
Year Ending June 30,	Number	Average Monthly Benefit	Number	Average Monthly Benefit	Number	Average Monthly Benefit	Number	Average Monthly Benefit
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1984	4,743	$ 684	—	—	23,166	$ 410	—	—
1985	802	304	—	—	23,686	447	—	—
1986	1,952	541	—	—	25,213	469	—	—
1987	1,677	707	—	—	26,577	505	—	—
1988	1,938	792	—	—	28,575	535	—	—
1989	3,405	1,105	—	—	31,396	603	—	—
1990	2,117	859	346	$ 986	33,385	659	346	$ 986
1991	2,209	825	215	941	34,907	687	699	957
1992	2,303	861	517	958	36,490	703	1,104	973
1993	3,954	1,173	519	865	39,684	812	1,455	919
1994	2,280	934	503	860	41,044	852	1,780	892
1995	3,223	1,008	617	951	43,378	878	2,130	878
1996	3,845	1,121	704	928	45,975	920	2,507	929
1997	3,578	1,097	599	1,036	49,743	945	2,746	954
1998	3,353	1,062	669	1,150	51,917	982	3,063	983
1999	4,380	1,326	819	1,141	55,104	1,024	3,680	1,023
2000	4,822	1,490	547	1,425	58,038	1,125	3,595	1,070
2001	4,224	1,465	632	1,455	58,920	1,211	3,904	1,151
2002	3,954	1,677	626	1,281	60,346	1,371	4,485	1,077
2003	5,955	1,578	1,001	1,106	64,697	1,401	4,561	1,027

History of Contribution Rates

	Calculated Rates		Actual Rates		Total Rate	
Fiscal Year Beginning July 1	Employee	Employer	Employee	Employer	Calculated	Actual
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1980	7.00	6.28	7.00	7.00	13.28	14.00
1981	7.00	6.29	7.00	7.00	13.29	14.00
1982	7.00	5.79	7.00	7.00	12.79	14.00
1983	7.00	6.04	7.00	7.00	13.04	14.00
1984	6.27	6.27	6.27	6.27	12.54	12.54
1985	5.67	5.67	5.67	5.67	11.34	11.34
1986	5.53	5.53	5.53	5.53	11.06	11.06
1987	5.16	5.16	4.00	4.00	10.32	8.00
1988	5.09	5.09	5.09	5.09	10.18	10.18
1989	4.69	4.69	2.00	2.00	9.38	4.00
1990	3.82	3.82	3.82	3.82	7.64	7.64
1991	3.60	3.60	3.60	3.60	7.20	7.20
1992	3.59	3.59	3.59	3.59	7.18	7.18
1993	4.09	4.09	3.14	3.14	8.18	6.28
1994	3.75	3.75	3.75	3.75	7.50	7.50
1995	3.95	3.95	3.36	3.36	7.90	6.72
1996	3.20	3.20	3.20	3.20	6.40	6.40
1997	3.05	3.05	3.05	3.05	6.10	6.10
1998	2.85	2.85	2.85	2.85	5.70	5.70
1999	2.17	2.17	2.17	2.17	4.34	4.34
2000	2.73[1]	2.73[1]	2.17	2.17	5.46[1]	4.34
2001	1.92	1.92	2.00	2.00	3.84	4.00
2002	3.86[1]	3.86[1]	2.00	2.00	7.72[1]	4.00
2003	5.20	5.20	5.20	5.20	10.40	10.40
2004	6.96[1]	6.96[1]	5.20	5.20	13.92[1]	10.40

[1] Hypothetical rate. The actual contribution rate was set by the prior year valuation.

History of Cash Flow

		Expenditures During the Year						
Year Ending June 30,	Contributions for the Year	Benefit Payments	Refunds of Contributions	Administrative Expenses[1]	Total	External Cash Flow for the Year	End of Year Market Value of Assets	External Cash Flow as Percentage of Market
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1988	$ 226,391,986	$ (184,014,825)	$ (32,440,739)	$ (1,858,980)	$ (218,314,544)	$ 8,077,442	$ 6,354,326,735	0.1%
1989	309,456,756	(211,706,362)	(32,763,953)	(2,796,196)	(247,266,511)	62,190,245	7,314,715,626	0.9%
1990	129,780,928	(291,865,604)	(31,871,455)	(3,016,679)	(326,753,738)	(196,972,810)	7,784,051,423	(2.5%)
1991	267,194,502	(313,739,121)	(27,329,212)	(4,889,991)	(345,958,324)	(78,763,822)	8,298,777,637	(0.9%)
1992	265,305,634	(351,219,516)	(24,689,694)	(6,282,138)	(382,191,348)	(116,885,714)	9,375,565,917	(1.2%)
1993	278,158,497	(414,519,290)	(21,419,534)	(5,774,866)	(441,713,690)	(163,555,193)	10,712,781,278	(1.5%)
1994	256,841,228	(445,763,795)	(22,516,743)	(5,222,224)	(473,502,762)	(216,661,534)	10,680,073,807	(2.0%)
1995	326,663,838	(484,729,970)	(24,364,930)	(5,826,425)	(514,921,325)	(188,257,487)	12,356,078,492	(1.5%)
1996[2]	299,724,778	(510,236,051)	(26,307,534)	(5,345,583)	(541,889,168)	(242,164,390)	13,917,637,400	(1.7%)
1997[2]	309,394,448	(550,078,719)	(30,838,244)	(6,740,459)	(587,657,422)	(278,262,974)	16,397,938,329	(1.7%)
1998[2]	321,349,998	(598,804,992)	(29,749,907)	(8,386,901)	(636,941,800)	(315,591,802)	19,389,956,806	(1.6%)
1999[2]	347,970,526	(652,854,456)	(26,089,213)	(9,932,871)	(688,876,540)	(340,906,014)	21,836,381,722	(1.6%)
2000[2]	283,772,496	(723,611,965)	(64,976,507)	(10,775,218)	(799,363,690)	(515,591,194)	23,187,551,913	(2.2%)
2001[2]	367,191,042	(828,545,637)	(91,824,591)	(9,843,046)	(930,213,274)	(563,022,232)	21,872,916,420	(2.6%)
2002[2]	321,775,573	(986,288,636)	(42,765,105)	(15,375,486)	(1,044,429,227)	(722,653,654)	18,594,856,337	(3.9%)
2003[2]	375,522,329	(1,126,828,875)	(35,948,463)	(21,395,972)	(1,184,173,310)	(808,650,981)	18,116,820,935	(4.5%)

[1] Including LTD management fees prior to 1996.
[2] 401(a) assets and 401(b) assets combined

Schedule of Funding Process
(as required by GASB #25)

Valuation Date	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability (AAL)	Unfunded Actuarial Accrued Liability (UAAL) (3) - (2)	Funded Ratio (2) / (3)	Annual Covered Payroll	UAAL as % of Payroll (4) / (6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
06/30/1993	$ 9,770	$ 8,921	$ (849)	109.5%	$ 3,748	(22.7%)
06/30/1994	10,549	9,668	(872)	109.0%	4,126	(21.1%)
06/30/1995	11,521	10,304	(1,217)	111.8%	4,432	(27.5%)
06/30/1996	12,579	11,111	(1,468)	113.2%	4,632	(31.7%)
06/30/1997	13,692	11,694	(1,998)	117.1%	4,836	(41.3%)
06/30/1998	15,577	12,910	(2,667)	120.7%	5,164	(51.7%)
06/30/1999	18,043	15,476	(2,567)	116.6%	5,488	(46.8%)
06/30/2000	20,292	16,854	(3,438)	120.4%	5,894	(58.3%)
06/30/2001	21,888	19,012	(2,876)	115.1%	6,357	(45.2%)
06/30/2002	22,642	21,285	(1,357)	106.4%	6,989	(19.4%)
06/30/2003	22,572	22,935	363	98.4%	7,297	5.0%

Note: Dollar amounts in millions.
Values shown for valuation dates on or after June 30, 1996 are for the 401(a) plans only.

Schedule of Employer Contributions
(as required by GASB #25)

Fiscal Year	Annual Required Contribution	Percentage Contributed
(1)	(2)	(3)
1993	$ 135,644,868	100.0%
1994	162,452,872	76.8%
1995	158,559,931	100.0%
1996	78,608,439	100.0%
1997	89,756,995	100.0%
1998	78,004,461	100.0%
1999	85,964,481	100.0%
2000	195,810,628	100.0%
2001	209,320,281	100.0%
2002	130,647,669	100.0%
2003	137,622,205	100.0%

Note: Contribution amounts shown for fiscal year 1996 and after are the contribution amounts for the 401(a) pension plan only.

Notes to Required Supplementary Information

The information presented in the required supplementary schedules was determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest actuarial valuation follows:

Valuation Date	June 30, 2003
Actuarial cost method	Projected Unit Credit
Amortization method	Level dollar, 30 years
Payroll growth rate for amortization	N/A
Asset valuation method	10-year smoothed market
Actuarial assumptions:	
Investment rate of return*	8.00%
Projected salary increases	4.50% to 9.50%
*Includes inflation at	4.25%
Cost-of-living adjustments	Permanent Benefit Increase COLA reserve of $ 1,071 million as of June 30, 2003

Summary of the Benefit Provisions of the Retirement Plan as of June 30, 2003

The Arizona State Retirement Plan makes provision for the retirement, disability, and death and survivor benefits to all employees of the State, instrumentalities of the State and certain political subdivisions. The major provisions of the Plan may be summarized as follows:

A. RETIREMENT BENEFITS

1. Normal Retirement Date (the earliest of the following):

   (a) an employee's sixty-fifth birthday,

   (b) an employee's sixty-second birthday and completion of at least ten years of credited service, or

   (c) the first day immediately following the day that the sum of the employee's age and his years of total credited service equals eighty.

2. Monthly Life Annuity

   The product of a benefit multiplier (as determined below) and the participant's best 36-month average compensation (in last 120 months) multiplied by his or her years of total credited service.

Years of Credited Service	Benefit Multiplier
Less than 20	2.10%
20.0 to 24.99	2.15%
25.0 to 29.99	2.20%
30 or more	2.30%

   Note: Members hired after the effective date of the adoption of the graded multiplier have a maximum benefit equal to 80% of their 36-month final average earnings.

3. Normal Retirement Benefits

   The sum of the monthly life annuity and any prior service benefits to which the employee was entitled under the System.

4. Early Retirement

   Age 50 with 5 or more years of credited service.

5. Early Retirement Benefits

If not eligible for normal retirement and at least age 50 with 5 years of total credited service, normal retirement benefit earned to the date of retirement, reduced according to the following table:

AGE AT DATE OF RETIREMENT

Years of Service	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
5-10	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%	85%	88%	91%	94%	97%	100%
10-19	44%	49%	54%	59%	64%	69%	74%	79%	84%	89%	94%	97%	100%	100%	100%	100%
20+	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%	100%	100%	100%	100%	100%	100%

Provided, however, that if the employee meets the Rule of 77 (but not the Rule of 80), the reduction will be 3% for each unit below 80.

6. Normal Form of Benefit

Straight life annuity payable monthly with benefits commencing on the day following the date of termination of employment.

7. Optional Forms:

(a) joint and contingent annuity (with Pop-up) with either 100%, 66-2/3% or 50% of the reduced retirement income payable for the life of the contingent annuitant upon the death of the retiring participant,

(b) period certain and life annuity with either five or ten years of payments guaranteed, or

(c) a social security leveling option combined with any of the other forms of payment.

8. Minimum Benefit

The minimum monthly benefit payable to a retired member who is at least age 75 and who has 20 or more years of service is $600.

B. DISABILITY BENEFITS (for disability after June 30, 1988)

1. Long Term Disability

Monthly benefit equal to two-thirds of monthly compensation, reduced by any social security disability or workers' compensation benefits, payable commencing six months after date of disability until the earlier of:

(a) date of cessation of total disability, or

(b) normal retirement date.

This benefit is paid by a separate LTD plan.

2. Disability Payments if Participant Remains Disabled Through Normal Retirement Date

   Monthly benefit participant would have received if service had continued to normal retirement date assuming the participant's salary remained at the level it was at his or her date of disability, also provided that the amount of total credited service is limited to 30 years unless he or she had more than 30 years at date of disability.

3. The minimum monthly benefit payable to a disabled participant is $50.00.

C. DISABILITY BENEFITS (for disability before July 1, 1988)

1. Eligibility

   Age 50 with 5 years of service.

2. Benefit Amount

   A life annuity that can be provided by the employee's contribution account. Disability payments after normal or early retirement eligibility are reduced by the actuarial value of the disability payments made up to the date of normal or early retirement eligibility.

D. PRE-RETIREMENT DEATH BENEFITS

1. Eligibility

   Applicable if death occurs prior to retirement.

2. Benefit

   Any one of the following, at the option of the beneficiary:

   (a) a lump sum equal to the sum of (i) and (ii):

      (i) two times participant's contributions to the plan, with interest, and

      (ii) the amount of the participant's employee and employer accounts, along with supplemental credits, if any, transferred from the System to the Plan, with interest

   (b) if (a) is greater than $5,000, the beneficiary may elect to receive a monthly income for five or ten years certain and life thereafter which is actuarially equivalent to the amount in (a).

3. Death of an Active Participant After 15 Years of Credited Service or After Eligibility for Early Retirement

   Beneficiary receives a benefit in the form of a survivor annuity equal to the benefit that would have been payable to the beneficiary if the participant had retired on the date of his or her death and elected to receive an annuity payable in the form of joint and 100% survivor with the beneficiary named as the joint pensioner.

E. VESTING OF BENEFITS

1. Vesting

   A participant is fully vested in his or her accrued benefit.

2. Benefits Upon Vesting

   A fully vested participant is entitled to either:

   (a) the enhanced refund option, or

   (b) the retirement benefit payable at normal retirement earned to the date of participant's termination.

   The enhanced refund option allows employees who terminate prior to eligibility for retirement to receive a refund of their employee contributions with interest. In addition, if an employee has at least five years of service, he or she is also entitled to a share of the employer contributions with interest. The share is 25% for employees with five years of service and increases 15% for each additional year of service up to a maximum of 100% for ten or more years of service.

F. RETIREE HEALTH INSURANCE PREMIUM SUPPLEMENT

1. Eligibility

   Retirement or disability after 5 years of credited service and covered by an employer-sponsored group insurance program for which the retired or disabled member must pay part of the cost. Employees who elect the enhanced refund option are not eligible for this benefit.

2. Benefit

   The benefit is payable only with respect to allowable health insurance premiums for which the participant is responsible. The maximum benefits for participants with 10 or more years of service are:

   (a) with respect to premiums paid for retirees with member only coverage:

   - $150 per month if the retiree is under age 65
   - $100 per month if the retiree is 65 or over

(b) with respect to premiums paid for retirees with family coverage:

- $260 per month if the member's dependents are under age 65
- $170 per month if the member dependent is 65 or over
- $215 per month if the member is over age 65 and the dependent is under age 65
- $215 per month if the member is under age 65 and the dependent is over age 65

For employees with five to nine years of service the benefits are the same dollar amounts as above multiplied by a vesting fraction equal to 10% for each completed year of service (i.e., 50% to 90%).

See Section W for a discussion of the temporary benefit payable to retirees in "Rural" coverage areas.

G. AUTOMATIC COST OF LIVING ADJUSTMENT BASED ON EXCESS INVESTMENT EARNINGS

Permanent Benefit Increase (PBI)

Retirees who have been retired one year and LTD members are eligible for a COLA up to a maximum of a 4% increase. The COLA is paid from a reserve of "Excess Investment Earnings." If there are no "Excess Investment Earnings" in reserve then no COLA is paid.

Permanent Benefit Increase Enhancement

Provides retired members with at least ten years of service who have been retired five or more years an additional benefit. For each complete 5-year period the member has been retired an incremental benefit is paid if monies to pay the benefit are available. This benefit is funded by an interest credit of 8.0% of the reserve for future PBIs.

H. EMPLOYEE AND EMPLOYER CONTRIBUTIONS

The contribution rate for the biennium beginning on July 1st of the odd numbered year is based on the results of the most recent actuarial valuation as of the last day of the even numbered plan year preceding the biennium. Participants' contribution rate is equal to the required employer contribution rate. For the biennium July 1, 1999 to June 30, 2001, the required contribution rate is 2.17%. For the biennium July 1, 2001 to June 30, 2003, the required contribution rate is 2.00%. For the biennium July 1, 2003 to June 30, 2005, the required contribution rate is 5.20%.

I. LEGISLATED PLAN CHANGES ENACTED BY THE 1989 LEGISLATURE OF THE STATE OF ARIZONA

1. PUC Funding Method

   Beginning with the June 30, 1989 actuarial valuation, the total employee and employer contributions payable beginning July 1, 1990 shall be determined using the Projected Unit-Credit (PUC) funding method.

2. $12,000 Minimum Average Compensation for Current Retirees

   Recalculation of the retirement benefit for all plan members retired before June 30, 1989 who had 10 years of credited service using a minimum average compensation of one thousand dollars per month.

3. 2.0% Ad Hoc COLAs

   - Effective July 1, 1989, all members retired on or before June 30, 1988 shall receive a 2.0% permanent benefit increase to their December 31, 1988 base benefit.

   - Effective July 1, 1990, all members retired on ore before June 30, 1989 shall receive a 2.0% permanent benefit increase to their June 30, 1990 base benefit.

4. Early Retirement Window

   During the period of May 15, 1989 through November 14, 1989 a member who is eligible for either Normal Retirement or Early Retirement with age plus credited service at least equal to 80, may retire and receive a benefit calculated using a 2.2% multiplier instead of the 2.0% multiplier in effect at that time.

5. 3.0% Tax Equity Allowance

   Retroactive to the later of January 1, 1989 or the date payments commence, each member retiring on or before September 14, 1989 shall receive a tax equity benefit allowance consisting of a permanent increase of 3.0% in his or her January 1, 1989 base benefit.

J. LEGISLATED PLAN CHANGES ENACTED BY THE 1990 LEGISLATURE OF THE STATE OF ARIZONA

1. Rule of 82

   Effective May 1, 1990, the number of points (sum of member's age and years of service) required to be eligible for normal retirement shall be reduced from 85 to 82. Also, the early retirement reduction factor for employees with 77 or more points but less than 82 points shall be 3% for each point or fraction thereof less than 82.

2. 3.0% Tax Equity Allowance

   Each member who retires between September 15, 1989 and September 14, 1990 shall receive a tax equity benefit allowance consisting of a permanent increase of 3.0% in his or her base benefit, retroactive to the date of retirement.

3. Graded Vesting for Health Insurance Premium Supplement

   The Health Insurance Premium Supplement is extended to those qualifying members with between five and nine years of service. The member will be eligible to receive 10% of the benefit for each completed year of service (i.e., 50% to 90%).

K. LEGISLATED PLAN CHANGES ENACTED BY THE 1991 LEGISLATURE OF THE STATE OF ARIZONA

1. 3.0% Tax Equity Allowance

   Each member who retires between September 15, 1990 and September 14, 1991 shall receive a tax equity benefit allowance consisting of a permanent increase of 3.0% in his or her base benefit, retroactive to the date of retirement.

2. Recalculation of Retiree Benefits Using 2.0% Benefit Multiplier

   Each retired member with at least 10 years of service who retired prior to June 30, 1985 shall have his or her benefit recomputed. The recomputed benefit shall be equal to 2% times final average earnings times credited service plus an additional $2 for each year of service. The retired member will receive the larger of the recalculated benefit or his/her current benefit. This increase is effective October 1, 1991.

3. 2.3% Ad Hoc Increase

   Effective July 1, 1991 all members retired on or before June 30, 1990 shall receive a 2.3% permanent benefit increase in their June 30, 1991 base benefit.

4. Rule of 80

   Effective July 1, 1992, the number of points (sum of member's age and years of service) required to be eligible for normal retirement shall be reduced from 82 to 80. (For continuation purposes this legislation is not reflected until the 1993/94 fiscal year).

5. Pop-up Option

   A pop-up option is added for retiring members who first participate in the Plan on or after December 31, 1991.

L. LEGISLATED PLAN CHANGES ENACTED BY THE 1992 LEGISLATURE OF THE STATE OF ARIZONA

1. 3.0% Tax Equity Allowance

   Each member who retires between September 15, 1991 and September 14, 1992 shall receive a tax equity benefit allowance consisting of a permanent increase of 3.0% in his or her base benefit, retroactive to the date of retirement.

2. Minimum Retiree Benefit

   Each retiree of the Arizona State Retirement Plan who is at least age 75 on December 31, 1992 and who had at least ten years of service upon retirement from the plan ten years of service upon retirement from the plan shall be eligible for a minimum benefit. If the eligible retiree had at least ten years of service but less than fifteen years, his minimum benefit is $350 a month. If the eligible retiree had at least fifteen years of service but less than twenty, his minimum benefit is $500. If the eligible retiree had at least twenty years of service his minimum benefit is $600. The minimum benefit shall be compared to the retiree's current benefit (including all ad hoc increases).

3. 5% Ad Hoc Increase

   Effective November 1, 1992 all members retired on or before October 31, 1992 shall receive a 5% permanent benefit increase in their October 31, 1992 benefit.

4. Forfeited Service Repurchase

   Any present active member who has previously forfeited service has until December 31, 1994 to repurchase the forfeited service by paying the Plan the employee and employer contributions (accumulated with interest) which would have been contributed during the member's period of forfeited service.

5. Repurchase of Service Due to Reduction in Force

   Any present active member who was terminated prior to December 31, 1992 as a result of a required reduction in force may purchase the credited service for the following period of unemployment if the member had five or more years of service at the time of termination and resumed employment with a participating employer within two years of termination. The cost of the repurchase is the total of the employee and employer contribution (accumulated with interest) which would have been contributed during the member's period of unemployment.

6. Change in Section 38-781.05 Funding Method

   Section 38-781.05 of the plan was amended so that the funding period for the Plan would continue to be the period between valuation and June 30, 2003 as long as the Plan has a negative Unfunded Actuarial Accrued Liability. If the Plan were to have a positive UAAL, then the old funding mechanism would apply.

M. LEGISLATED PLAN CHANGES ENACTED BY THE 1993 LEGISLATURE OF THE STATE OF ARIZONA

1. No benefit changes were passed by the 1993 Legislature. However, the Legislature passed legislation to reduce the required contribution rate of 4.09% down to 3.14%.

N. LEGISLATED PLAN CHANGES ENACTED BY THE 1994 LEGISLATURE OF THE STATE OF ARIZONA

1. <u>Minimum LTD Benefit</u>

   Each member on long term disability will receive a minimum monthly benefit of $50.

2. <u>Minimum Retiree Benefit</u>

   Each retiree of the Arizona State Retirement Plan who is at least age 75 and who had 20 or more years of service at retirement will receive a minimum monthly benefit of $600.

3. <u>Pop-up Benefit</u>

   Members who retired prior to January 1, 1992 and who elected a Joint and Survivor option shall receive a "Pop-up" in their retirement income if their beneficiary pre-deceases them.

4. <u>Excess Investment Earnings COLA</u>

   Retirees at least age 55 who have been retired at least one year and members on long-term disability are eligible to receive a cost-of-living adjustment equal to one-half the increase in CPI for the prior calendar year. The COLA will be paid from a reserve of Excess Investment Earnings. If there are no Excess Investment Earnings in reserve, no COLA will be granted.

5. <u>Change in Section 38-737 Funding Period</u>

   Section 38-737 was amended to change the funding period of the Plan to a rolling 30-year period. The change is to be phased-in over the next nineteen years. If the Plan ceases to have a surplus, the funding period would immediately go to 30-years.

O. LEGISLATED PLAN CHANGES ENACTED BY THE 1995 LEGISLATURE OF THE STATE OF ARIZONA

1. <u>Change in Maximum Increase Provided by Excess Investment Earnings COLA</u>

   The maximum COLA payable from Excess Investment Earnings was increased from 50% to 100% of the increase in the CPI.

2. Removal of LTD Benefit from the Plan

   The Legislature established a new LTD program and removed the LTD benefit from the Plan. Liabilities for current LTD recipients will be transferred to the new LTD program effective October 1, 1995.

3. Creation of Separate Account for the Health Premium Supplement

   The Health Premium Supplement benefit is to be separated into a 401(h) account. The assets and liabilities associated with the Health Premium Supplement will be accounted for separately.

P. LEGISLATED PLAN CHANGES ENACTED BY THE 1996 LEGISLATURE OF THE STATE OF ARIZONA

1. No material changes.

Q. LEGISLATED PLAN CHANGES ENACTED BY THE 1997 LEGISLATURE OF THE STATE OF ARIZONA

1. Creation of family Health Supplement. Allows unused portion of the Health Supplement of a member or dependent to be used to pay the other recipient's health insurance premium.

2. The calculation methodology for the Excess Investment Earnings COLA was modified.

3. The contribution rate will be determined on a biennial cycle beginning with the 2000 fiscal year.

R. LEGISLATED PLAN CHANGES ENACTED BY THE 1998 LEGISLATURE OF THE STATE OF ARIZONA

1. No material changes.

S. LEGISLATED PLAN CHANGES ENACTED BY THE 1999 LEGISLATURE OF THE STATE OF ARIZONA

1. Enhanced Refund Option

   Employees who terminate prior to eligibility for retirement may elect to receive a refund of their employee contributions with interest. If the employee has at least five years of service, the employee is also entitled to a share of the employer contributions with interest. The share is 50% with five years of service and increases 10% for each additional year of service to a maximum of 100% for ten or more years of service.

2. Benefit Multiplier Increased to 2.1%

   The benefit multiplier increased from 2.0% to 2.1% effective July 1, 2000.

3. 5% Ad Hoc Increase

   A 5% retiree ad hoc increase for retirees and beneficiaries effective July 1, 2000.

4. <u>Increase in Maximum Service While on LTD</u>

   Increase in the maximum amount of service that may be accrued while on LTD from 25 to 30.

5. <u>Changes in Permanent Benefit Increase COLA</u>

   a. The maximum aggregate COLA was increased from 3% to 4%.

   b. The threshold for determining "Excess Earnings" was lowered from 9% to 8%.

   c. The limitation of the COLA to the increase in the CPI was removed.

T. LEGISLATED PLAN CHANGES ENACTED BY THE 2000 LEGISLATURE OF THE STATE OF ARIZONA

1. The age restriction on the Permanent Benefit Increase was eliminated.

U. LEGISLATED PLAN CHANGES ENACTED BY THE 2001 LEGISLATURE OF THE STATE OF ARIZONA

1. <u>Health Insurance Premium Benefit Increase</u>

   Increases the health insurance premium benefit for eligible members as follows:

   - Benefit for Medicare eligible member with member only coverage increased from $65 to $100
   - Benefit for non-Medicare eligible member with member only coverage increased from $95 to $150
   - Benefit for family coverage where member and dependent are non-Medicare eligible increased from $175 to $260
   - Benefit for family coverage where member and dependent are Medicare eligible increased from $115 to $170
   - Benefit for family coverage where member is Medicare eligible and dependent is non-Medicare eligible increased from $145 to $215
   - Benefit for family coverage where member is non-Medicare eligible and dependent is Medicare eligible increased from $145 to $215

2. <u>Graded Multiplier</u>

   Provides a graded multiplier in the retirement benefit formula, increasing with years of service according to the following:

   - 0.00 to 19.99 Years of Service 2.10%
   - 20.00 to 24.99 Years of Service 2.15%
   - 25.00 to 29.99 Years of Service 2.20%
   - 30.00 or More Years of Service 2.30%

3. Employer Option Service Purchase Incentive

   Permits an employer to offer a member who is eligible to retire under the Rule of 80 a contract to work and additional three years of employment. No contributions are made to ASRS during the contract. If the employee completes the contract, then they receive an additional three years of service with the option to purchase three more years of service.

4. Permanent Benefit Increase Enhancement

   Provides that interest at a rate of 8% be credited on the funds held in reserve for the permanent benefit increase (PBI). This interest will then be used to fund an additional increase for retirees who have at least 10 years of service and who have been retired at least five years. The increase is incremental for each five years of retirement.

5. Temporary Rural Health Insurance Premium Benefit

   In addition to the premium benefit paid to ASRS retired and disabled members, the Legislature granted a temporary benefit for retired and disabled members who live in areas of the state not served by a managed care program (HMO) and who have 10 years of credited service in the following amounts:

   - Benefit for Medicare eligible member with member only coverage of $170 per month
   - Benefit for non-Medicare eligible member with member only coverage of $300 per month
   - Benefit for Medicare eligible members with Medicare eligible dependent with family coverage of $350 per month
   - Benefit for non-Medicare eligible members with non-Medicare eligible dependent with family coverage of $600 per month
   - Benefit for Medicare eligible members with non-Medicare eligible dependent with family coverage of $470 per month
   - Benefit for non-Medicare eligible members with Medicare eligible dependent with family coverage of $470 per month

6. Partial Lump Sum Option

   Allows a retiring member to receive a portion of his benefit in a lump sum payment. The lump sum is limited to a maximum of 36 monthly payments. The member's monthly annuity is actuarially reduced to reflect the lump sum payment.

7. Maximum Benefit

   Members who are hired after the date the graded multiplier became law have a maximum benefit equal to 80% of the member's 36-month final average earnings.

V. LEGISLATED PLAN CHANGES ENACTED BY THE 2002 LEGISLATURE OF THE STATE OF ARIZONA

1. No material changes.

W. LEGISLATED PLAN CHANGES ENACTED BY THE 2003 LEGISLATURE OF THE STATE OF ARIZONA

1. Temporary Rural Health Insurance Premium Benefit

   The Legislature extended the temporary Rural Health Insurance Subsidy for the next two years, from July 1, 2003 to June 30, 2005. The benefit is provided to retired and disabled members who live in areas of the state not served by a Health Maintenance Organization (HMO) and who have 10 years of credited service. The Rural Health Insurance Subsidy now requires "minimum out-of-pocket" payments ranging from $100 to $425 per month, depending on the plan and coverage selected.

Rural Health Insurance Subsidy July 1, 2003 – June 30, 2005	**Insurance Coverage Without Medicare Parts A & B**		**Insurance Coverage With Medicare Parts A & B***	
	Single	**Family**	**Single**	**Family**
Required Minimum Out-of-Pocket Payment	$125	$425	$100	$200
Rural Health Insurance Subsidy (Maximums)	Up to $300	Up to $600	Up to $170	Up to $350

* Combination plans that include Medicare eligible and non-Medicare eligible retiree and dependent coverage require a $400 monthly out-of-pocket payment.

Statement of Actuarial Methods and Assumptions Used in Determining Cost (Adopted by Board Action on November 21, 2003) (Effective as of June 30, 2003)

A. Actuarial Assumptions*

1. Investment Yield Rate — 8% per annum, compounded annually.

2. Mortality*

a. Pre-retirement — 1994 GAM – Static Table, Projected to 2005 with Projection Scale AA, with no age setback. Rates at representative ages are shown below.

	Rates of Mortality (Active)	
Age	Male Participants	Female Participants
20	0.000411	0.000238
25	0.000592	0.000249
30	0.000758	0.000314
35	0.000805	0.000423
40	0.000981	0.000600
45	0.001366	0.000815
50	0.002112	0.001183
55	0.003583	0.002100
60	0.006679	0.004201
65	0.012447	0.008173
70	0.020095	0.012993

b. Post-retirement — Non-Disabled rates are based on the 1994 GAM – Static Table, Projected to 2005 with Projection Scale AA with no age setback. Disabled rates are based on the experience of other large public sector retirement systems and ASRS' own experience. Rates at representative ages are shown below.

* Actuarial assumptions marked with an asterisk are changed from the 2002 valuation.

	Rates of Mortality			
	Non-Disabled	Disabled	Non-Disabled	Disabled
Age	Male Participants		Female Participants	
20	0.000411	0.034940	0.000238	0.026939
25	0.000592	0.038887	0.000249	0.027444
30	0.000758	0.051102	0.000314	0.038302
35	0.000805	0.063544	0.000423	0.053927
40	0.000981	0.058807	0.000600	0.056984
45	0.001366	0.040921	0.000815	0.037586
50	0.002112	0.034742	0.001183	0.025696
55	0.003583	0.031356	0.002100	0.022836
60	0.006679	0.031109	0.004201	0.018029
65	0.012447	0.030861	0.008173	0.013934
70	0.020095	0.033730	0.012993	0.012993

3. Disability Rates* Sample rates are shown below.

	Rates of Decrement due to Disability	
Age	Male Participants	Female Participants
20	.000575	.000734
25	.000638	.000804
30	.000730	.001014
35	.001096	.001563
40	.002111	.002111
45	.003358	.003171
50	.005128	.004865
55	.007715	.007022
60	.011992	.010913

4. Withdrawal Rates
(for causes other than death, disability, or retirement)

Select and ultimate withdrawal rates are used. Rates at representative ages are shown below.

Rates of Decrement due to Withdrawal

	Years of Service										
Age	0	1	2	3	4	5	6	7	8	9	10+
					Male Employees						
20	.3731	.3642	.2895	.2545	.1508	.1364	.091	.084	.071	.076	.1277
30	.2267	.2055	.1612	.1547	.0917	.0943	.071	.068	.051	.051	.0565
40	.1931	.1698	.1011	.1015	.0601	.0665	.055	.054	.040	.038	.0227
50	.1892	.1692	.0904	.0820	.0458	.0502	.046	.035	.034	.031	.0155
60	.2219	.1824	.0963	.0848	.0445	.0371	.033	.033	.026	.024	.0108
70	.2604	.2282	.1320	.1229	.0616	.0549	.036	.031	.022	.020	.0180
					Female Employees						
20	.3116	.3053	.2640	.2596	.2101	.2077	.1680	.1405	.1380	.1285	.2148
30	.2015	.1937	.1652	.1456	.1094	.1089	.0930	.0813	.0811	.0760	.0821
40	.1720	.1693	.1174	.0930	.0666	.0661	.0563	.0482	.0461	.0417	.0239
50	.1698	.1457	.0927	.0722	.0528	.0522	.0426	.0335	.0287	.0227	.0167
60	.1805	.1432	.0939	.0731	.0508	.0466	.0357	.0275	.0237	.0190	.0088
70	.1916	.1666	.1199	.0955	.0622	.0508	.0363	.0293	.0311	.0358	.0144

5. Salary Scales

A select and ultimate salary scale made up of a merit component and general salary increase component as follows:

Years of Service	Merit Component	Total Salary Increase*
(1)	(2)	(3)
1	5.00%	9.50%
2	4.00%	8.50%
3	2.50%	7.00%
4	1.80%	6.30%
5	1.40%	5.90%
6	1.25%	5.75%
7	1.00%	5.50%
8	0.80%	5.30%
9	0.75%	5.25%
10	0.50%	5.00%
11 to 19	0.25%	4.75%
20 or more	0.00%	4.50%

* Total salary increase rate = inflation (or growth) rate (4.25%)
+ productivity increase rate (0.25%)
+ merit component

6. Retirement Age*:

   Select and ultimate retirement rates are used. Rates at representative ages and years of service are shown below:

Rates of Decrement Due to Retirement

	Years of Service								
Age	0-4	5-9	10-14	15-19	20-24	25	26-29	30	31+
50	0.000	0.020	0.030	0.035	0.0400	0.0700	0.0625	0.175	0.125
55	0.000	0.020	0.030	0.035	0.0600	0.1625	0.1300	0.175	0.125
60	0.000	0.040	0.070	0.090	0.2375	0.2675	0.2000	0.350	0.300
62	0.000	0.050	0.300	0.340	0.4000	0.4300	0.4000	0.550	0.500
65	0.030	0.100	0.300	0.300	0.3000	0.3300	0.3000	0.350	0.300
66+	0.030	0.100	0.300	0.300	0.3000	0.3300	0.3000	0.350	0.300

7. Future Retirees Eligible for the Health Insurance Premium Supplement

   We assume that 75% of future retirees will be eligible to receive the post-retirement health insurance premium supplement and that 60% of those retirees will be eligible for the dependent premium supplement.

8. Proportion of Vested Termination Members Who Will Not Withdraw Their Contributions

   We assume that members who terminate with 5 or more years of service (but prior to eligibility for retirement) will choose to receive the enhanced refund option if the value of the enhanced refund option is greater than the present value of the deferred benefit; otherwise we assume that the members will elect to receive the deferred benefit. If we assume that the member will elect the enhanced refund option, we also assume that he will forfeit the supplement.

   We assume that members who terminate with less than five years of service withdraw their member contributions with interest.

   We assume that members who terminate while eligible for early retirement commence payments immediately.

9. Service Purchase*

   Members can buy service at average normal cost rate, although members who buy service are above average in age. We assume a load of 2.15% on years of credit service earned per year to account for the value of future service purchases in excess of the members' cost.

B. Actuarial Value of Assets

The actuarial value of assets is equal to the market value of assets less a ten-year phase-in (five-year phase-in prior to June 30, 2002) of the Excess (Shortfall) between expected investment return and actual income.

C. Actuarial Funding Method

Costs are determined under the projected unit-credit method. The unfunded actuarial accrued liability is funded on a level dollar basis over the period of time described in Section 38-737. For the June 30, 2003 actuarial valuation, and for future valuations, the period is 30 years.

D. Data for Valuation

In preparing the June 30, 2003, actuarial valuation, the actuary has relied on data and assets provided by the staff of the Arizona State Retirement System. While not verifying the data at their source, the actuary has performed tests for consistency and reasonableness.

Statistical Tables

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Distribution of Active Employees by Employee Group and By Average Age, Average Years of Service, and Average Annual Salary

ACTIVE PLAN MEMBERS

	Number of Active Plan Members		Average Age		Average Years of Service		Average Annual Salary	
Employee Group	As of June 30, 2003	As of June 30, 2002	As of June 30, 2003	As of June 30, 2002	As of June 30, 2003	As of June 30, 2002	As of June 30, 2003	As of June 30, 2002
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
State Employees:								
Men	16,799	16,915	46.5	46.2	9.5	9.3	$ 40,235	$ 39,060
Women	27,693	27,871	44.6	44.0	8.5	8.0	32,245	30,521
Total	44,492	44,786	45.3	44.8	8.9	8.5	$ 35,262	$ 33,746
Teachers:								
Men	16,081	16,117	44.8	44.6	10.7	10.9	$ 43,803	$ 43,107
Women	48,325	47,621	43.9	43.7	10.2	10.2	38,893	38,014
Total	64,406	63,738	44.1	44.0	10.3	10.4	$ 40,119	$ 39,302
Political Subdivision Employees:								
Men	34,969	33,663	45.5	45.2	7.7	7.6	$ 35,577	$ 35,112
Women	58,531	56,683	44.1	43.8	6.6	6.4	25,360	24,525
Total	93,500	90,346	44.6	44.3	7.0	6.8	$ 29,181	$ 28,470
All Active Plan Members:								
Men	67,849	66,695	45.6	45.3	8.8	8.8	$ 38,680	$ 38,045
Women	134,549	132,175	44.1	43.8	8.3	8.1	31,637	30,649
Total	202,398	198,870	44.6	44.3	8.5	8.4	$ 33,998	$ 33,130

Employees in Active Service as of June 30, 2003
by Age and by Years of Service

MEN

Age	Total	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35+
Under 20	176	176							
20 - 24	1,911	1,874	37						
25 - 29	4,729	4,058	664	7					
30 - 34	6,444	3,958	2,148	333	5				
35 - 39	7,290	3,388	2,245	1,295	344	18			
40 - 44	9,134	3,623	2,138	1,699	1,281	371	22		
45 - 49	10,672	3,640	2,087	1,693	1,669	1,147	409	27	
50 - 54	11,613	3,444	2,085	1,699	1,674	1,235	1,228	244	4
55 - 59	9,097	2,776	1,672	1,338	1,284	794	699	473	61
60 - 64	4,672	1,516	931	761	623	331	222	182	106
65 and older	2,111	842	550	315	170	83	41	52	58
Total	**67,849**	**29,295**	**14,557**	**9,140**	**7,050**	**3,979**	**2,621**	**978**	**229**

Employees in Active Service as of June 30, 2003
by Age and by Years of Service

WOMEN

Age	Total	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35+
Under 20	243	229	14						
20 - 24	4,681	4,533	145	3					
25 - 29	11,523	9,829	1,671	22	1				
30 - 34	14,220	8,362	4,984	849	25				
35 - 39	14,838	7,378	4,248	2,503	698	11			
40 - 44	19,450	8,353	4,999	3,081	2,390	599	28		
45 - 49	22,164	7,600	5,308	3,843	2,784	1,908	694	27	
50 - 54	22,246	6,246	4,352	4,142	3,387	2,004	1,751	363	1
55 - 59	15,744	4,280	2,785	2,911	2,736	1,685	863	427	57
60 - 64	7,089	1,996	1,355	1,264	1,152	690	400	170	62
65 and older	2,351	853	488	408	278	147	102	54	21
Total	**134,549**	**59,659**	**30,349**	**19,026**	**13,451**	**7,044**	**3,838**	**1,041**	**141**

Employees in Active Service as of June 30, 2003
by Age and by Years of Service

ALL EMPLOYEES

Age	Total	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35+
Under 20	419	405	14						
20 - 24	6,592	6,407	182	3					
25 - 29	16,252	13,887	2,335	29	1				
30 - 34	20,664	12,320	7,132	1,182	30				
35 - 39	22,128	10,766	6,493	3,798	1,042	29			
40 - 44	28,584	11,976	7,137	4,780	3,671	970	50		
45 - 49	32,836	11,240	7,395	5,536	4,453	3,055	1,103	54	
50 - 54	33,859	9,690	6,437	5,841	5,061	3,239	2,979	607	5
55 - 59	24,841	7,056	4,457	4,249	4,020	2,479	1,562	900	118
60 - 64	11,761	3,512	2,286	2,025	1,775	1,021	622	352	168
65 and older	4,462	1,695	1,038	723	448	230	143	106	79
Total	**202,398**	**88,954**	**44,906**	**28,166**	**20,501**	**11,023**	**6,459**	**2,019**	**370**

Employees in Active Service as of June 30, 2003
by Annual Salary and by Sex

Annual Salary	Number of Employees	Percent of All Employees	Men	Women
Total	202,398	100.0%	67,849	134,549
Less than $6,000	3,760	1.8%	985	2,775
$6,000-$7,999	4,065	2.0%	870	3,195
$8,000-$9,999	5,501	2.7%	1,034	4,467
$10,000-$11,999	6,686	3.3%	1,192	5,494
$12,000-$13,999	6,577	3.2%	1,324	5,253
$14,000-$15,999	6,053	3.0%	1,291	4,762
$16,000-$17,999	6,233	3.1%	1,631	4,602
$18,000-$19,999	7,205	3.6%	2,040	5,165
$20,000-$21,999	8,075	4.0%	2,520	5,555
$22,000-$24,999	12,576	6.2%	3,884	8,692
$25,000-$29,999	23,401	11.6%	7,505	15,896
$30,000-$34,999	26,025	12.9%	8,289	17,736
$35,000-$39,999	22,899	11.3%	7,959	14,940
$40,000-$44,999	17,333	8.6%	6,653	10,680
$45,000-$49,999	13,001	6.4%	5,041	7,960
$50,000 and over	33,008	16.3%	15,631	17,377

Employees in Active Service as of June 30, 2003
by Age and by Average Annual Salary

MEN

Age	Number of Employees	Average Annual Salary
Total	67,849	$38,680
Under 20	176	$11,072
20 - 24	1,911	$19,608
25 - 29	4,729	$29,131
30 - 34	6,444	$34,511
35 - 39	7,290	$37,112
40 - 44	9,134	$39,116
45 - 49	10,672	$41,289
50 - 54	11,613	$43,369
55 - 59	9,097	$43,678
60 - 64	4,672	$40,072
65 and older	2,111	$32,253

Employees in Active Service as of June 30, 2003
by Age and by Average Annual Salary

WOMEN

Age	Number of Employees	Average Annual Salary
Total	134,549	$31,637
Under 20	243	$10,732
20 - 24	4,681	$19,837
25 - 29	11,523	$27,590
30 - 34	14,220	$29,617
35 - 39	14,838	$29,718
40 - 44	19,450	$30,490
45 - 49	22,164	$33,039
50 - 54	22,246	$36,045
55 - 59	15,744	$35,602
60 - 64	7,089	$32,887
65 and older	2,351	$25,687

Employees in Active Service as of June 30, 2003
by Age and by Average Annual Salary

ALL EMPLOYEES

Age	Number of Employees	Average Annual Salary
Total	202,398	$33,998
Under 20	419	$10,875
20 - 24	6,592	$19,770
25 - 29	16,252	$28,038
30 - 34	20,664	$31,144
35 - 39	22,128	$32,153
40 - 44	28,584	$33,245
45 - 49	32,836	$35,722
50 - 54	33,859	$38,556
55 - 59	24,841	$38,561
60 - 64	11,761	$35,742
65 and older	4,462	$28,792

Retirement Benefits Awarded Under Plan
During Year Ended June 30, 2003

BY AGE, AVERAGE MONTHLY AMOUNT, AND SEX

Age	Number of Retirees	Average Monthly Amount	Men	Women
Total	5,955	$1,578	2,391	3,564
Under 55	897	$2,128	336	561
55 - 59	1,615	$2,073	629	986
60 - 64	1,973	$1,398	770	1,203
65 - 69	1,014	$1,003	420	594
70 - 74	296	$793	154	142
75 - 79	92	$869	53	39
80 - 84	43	$753	16	27
85 - 89	20	$843	13	7
90 - 94	3	$350	0	3
95 and older	2	$1,050	0	2

Retirement Benefits in Force on June 30, 2003

BY AGE, AVERAGE MONTHLY AMOUNT, AND SEX

Age	Number of Retirees	Average Monthly Amount	Men	Women
Total	64,697	$1,401	25,390	39,307
Under 55	2,136	$1,804	753	1,383
55 - 59	6,454	$2,023	2,581	3,873
60 - 64	10,646	$1,632	4,038	6,608
65 - 69	13,271	$1,370	5,257	8,014
70 - 74	11,896	$1,293	5,024	6,872
75 - 79	9,226	$1,215	3,804	5,422
80 - 84	6,472	$1,102	2,399	4,073
85 - 89	3,207	$993	1,123	2,084
90 - 94	1,093	$909	324	769
95 and older	296	$947	87	209

Retirement Benefits in Force on June 30, 2003

BY YEARS OF SERVICE, AVERAGE MONTHLY AMOUNT, AND SEX

Years of Service	Number of Retirees	Average Monthly Amount	Men	Women
Total	64,697	$1,401	25,390	39,307
Under 5	1,555	$149	767	788
5 - 9	9,744	$328	3,889	5,855
10 - 14	12,811	$695	4,487	8,324
15 - 19	10,568	$1,068	3,382	7,186
20 - 24	11,103	$1,571	3,506	7,597
25 - 29	10,838	$2,312	4,938	5,900
30 - 34	6,477	$2,957	3,518	2,959
35 - 39	1,373	$3,314	790	583
40 - 44	203	$3,535	102	101
45 and over	25	$4,335	11	14

Retirement Benefits in Force on June 30, 2003

BY MONTHLY AMOUNT AND SEX

Monthly Amount	Number of Retirees	Percent of All Retirees	Men	Women
Total	64,697	100.0%	25,390	39,307
Under $100	859	1.3%	360	499
$100 - $199	2,408	3.7%	833	1,575
$200 - $299	3,681	5.7%	1,344	2,337
$300 - $399	3,579	5.5%	1,228	2,351
$400 - $499	3,192	4.9%	1,053	2,139
$500 - $599	3,119	4.8%	1,011	2,108
$600 - $699	3,332	5.2%	1,051	2,281
$700 - $799	3,624	5.6%	1,120	2,504
$800 - $899	3,031	4.7%	971	2,060
$900 - $999	2,919	4.5%	961	1,958
$1,000 - $1,099	2,762	4.3%	896	1,866
$1,100 - $1,199	2,576	4.0%	839	1,737
$1,200 - $1,299	2,292	3.6%	779	1,513
$1,300 - $1,399	1,941	3.0%	718	1,223
$1,400 - $1,499	1,894	2.9%	738	1,156
$1,500 and over	23,488	36.3%	11,488	12,000

Retirement Benefits in Force on June 30, 2003

BY EMPLOYEE GROUP, AGE AND SEX

	State			Teachers			Political Subdivision		
Age	Total	Men	Women	Total	Men	Women	Total	Men	Women
Total	16,714	7,661	9,053	19,852	6,904	12,948	28,131	10,825	17,306
Under 55	475	181	294	913	301	612	748	271	477
55 - 59	1,285	623	662	2,981	1,083	1,898	2,188	875	1,313
60 - 64	2,467	1,141	1,326	3,692	1,296	2,396	4,487	1,601	2,886
65 - 69	3,389	1,593	1,796	3,714	1,275	2,439	6,168	2,389	3,779
70 - 74	3,235	1,574	1,661	3,261	1,219	2,042	5,400	2,231	3,169
75 - 79	2,583	1,176	1,407	2,383	916	1,467	4,260	1,712	2,548
80 - 84	2,001	829	1,172	1,583	522	1,061	2,888	1,048	1,840
85 - 89	951	411	540	838	211	627	1,418	501	917
90 - 94	280	109	171	354	65	289	459	150	309
95 and over	48	24	24	133	16	117	115	47	68

Retirement Benefits in Force on June 30, 2003

BY EMPLOYEE GROUP, YEARS OF SERVICE AND SEX

Years of Service	State			Teachers			Political Subdivision		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
Total	16,714	7,661	9,053	19,852	6,904	12,948	28,131	10,825	17,306
Under 5	467	240	227	203	83	120	885	444	441
5 - 9	3,144	1,290	1,854	1,177	357	820	5,423	2,242	3,181
10 - 14	3,925	1,470	2,455	2,044	500	1,544	6,842	2,517	4,325
15 - 19	2,916	1,164	1,752	2,456	575	1,881	5,196	1,643	3,553
20 - 24	2,405	1,080	1,325	3,902	960	2,942	4,796	1,466	3,330
25 - 29	2,102	1,260	842	5,610	2,298	3,312	3,126	1,380	1,746
30 - 34	1,338	876	462	3,638	1,753	1,885	1,501	889	612
35 - 39	353	242	111	707	334	373	313	214	99
40 - 44	60	37	23	102	40	62	41	25	16
45 and over	4	2	2	13	4	9	8	5	3

Retirement Benefits in Force on June 30, 2003

BY EMPLOYEE GROUP, MONTHLY AMOUNT AND SEX

	State			Teachers			Political Subdivision		
Monthly Amount	Total	Men	Women	Total	Men	Women	Total	Men	Women
Total	16,714	7,661	9,053	19,852	6,904	12,948	28,131	10,825	17,306
Under $100	201	86	115	96	38	58	562	236	326
$100-$199	561	210	351	209	76	133	1,638	547	1,091
$200-$299	1,137	423	714	382	108	274	2,162	813	1,349
$300-$399	1,154	422	732	387	101	286	2,038	705	1,333
$400-$499	1,046	366	680	416	118	298	1,730	569	1,161
$500-$599	937	342	595	377	98	279	1,805	571	1,234
$600-$699	1,000	337	663	420	100	320	1,912	614	1,298
$700-$799	1,067	352	715	516	129	387	2,041	639	1,402
$800-$899	905	336	569	542	142	400	1,584	493	1,091
$900-$999	825	301	524	603	153	450	1,491	507	984
$1,000-$1,099	740	291	449	626	147	479	1,396	458	938
$1,100-$1,199	706	283	423	619	146	473	1,251	410	841
$1,200-$1,299	599	267	332	634	139	495	1,059	373	686
$1,300-$1,399	555	256	299	565	145	420	821	317	504
$1,400-$1,499	517	253	264	573	155	418	804	330	474
$1,500 and over	4,764	3,136	1,628	12,887	5,109	7,778	5,837	3,243	2,594