Arizona State Retirement System

ACTUARIAL VALUATION

June 30, 2001

GABRIEL, ROEDER, SMITH & COMPANY
Consultants & Actuaries

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January 4, 2002

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

Dear Retirement Board Members:

Subject: Actuarial Valuation as of June 30, 2001

We certify that the information contained in the 2001 actuarial valuation report is accurate and fairly presents the actuarial position of the Arizona State Retirement Plan (the Plan) as of June 30, 2001.

All calculations have been made 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 results presented comply with the requirements of the Arizona statutes and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board. The undersigned actuary is an independent actuary. He is an Enrolled Actuary and a Member of the American Academy of Actuaries, and is experienced in performing valuations for large public retirement systems.

Actuarial valuations

The primary purpose of the valuation report is to determine the required employee 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 required by ASRS in connection with Governmental Accounting Standards Board Statement No. 25 (GASB No. 25), and it provides various summaries of the data.

Valuations are prepared annually, as of June 30th of each year, the last day of the Plan's plan year and ASRS's fiscal year.

Financing objectives

The member contribution rate and the employer contribution rate are calculated by the actuarial valuation. The calculated rates are applicable for the two plan years beginning July 1 of the calendar year that begins after the valuation date of even numbered years. The state and employer contributions, when combined with the contributions made by members, are intended to provide for the normal cost and to amortize the Unfunded Actuarial Accrued Liability (UAAL). The rate that will be contributed for the fiscal year beginning July 1, 2002 was determined by the 2000 valuation and is 2.00% of pay.

Progress toward realization of financing objectives

The actual contribution rate for the fiscal years 2001/2002 and 2002/2003 is 2.00% of compensation as determined by the 2000 valuation. Based on this actuarial valuation as of June 30, 2001, the hypothetical matching employee and employer contribution rates would be 3.86% for the fiscal year 2002/2003. This rate does not include the contribution to the LTD program. This hypothetical rate would have provided for the normal cost and would have amortized the UAAL over the required 16 years from June 30, 2001. Employees and employers contributed the recommended rate for the 2000/2001 fiscal year and are contributing the recommended rate for the 2001/2002 fiscal year. It is expected that they will continue to contribute the recommended rates as determined by the actuarial valuations. Therefore, all financing objectives are being realized.

Section 38-737 specifies that the unfunded actuarial accrued liability is amortized over a rolling 30-year period. This change is being phased-in by increasing the funding period for every even year valuation by 2 years. The amortization period for the 2001 valuation is 16 years and the amortization period for 2002 valuation will be 17 years. Beginning with the 2014 valuation the amortization period will be 30 years and will remain at that level.

Benefit provisions

The 2001 legislature enacted several benefit enhancements to the ASRS statutes. These enhancements included the following items:

- Health Insurance Premium Benefit Increase: Increases the health insurance premium benefit for eligible members as follows:
  - Medicare eligible member with member only coverage from $65 to $100
  - Non-Medicare eligible member with member only coverage from $95 to $150
  - Member and dependent are both non-Medicare eligible with family coverage from $175 to $260
  - Member and dependent are both Medicare eligible with family coverage from $115 to $170
  - Member is Medicare eligible and beneficiary is non-Medicare eligible with family coverage from $145 to $215

- Member is non-Medicare eligible and dependent is Medicare eligible with family coverage from $145 to $215

- Graded Multiplier: The benefit multiplier was changed from a flat 2.1% to a graded multiplier which increases with service as follows:

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%

- Employer Option Service Purchase Incentive: Permits an employer to offer a member who is eligible to retire under the Rule of 80 a three year contract that if completed would provide the member an additional three years of service and an option to purchase an additional three years of service. ASRS receives no contributions during this contract.

- 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 be used to fund an additional benefit. A member who has at least 10 years of service and who has been retired for at least five years would be eligible for an incremental increase for each five years of retirement.

- Rural Health Insurance Premium Benefit: In addition to the premium benefit paid to ASRS retired and disabled members, ASRS provides a temporary benefit in the following amounts 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:

Medicare eligible member:	$170 per month
Non-Medicare eligible member:	$300 per month
Non-Medicare family coverage:	$600 per month
Medicare eligible family coverage:	$350 per month
Combination Medicare and non-Medicare eligible:	$470 per month

This benefit will cease in 2003.

- Partial Lump Sum Option: Allows a retiring member to receive a portion of his benefit in a lump sum.

See Table 18 of this report for more details on the benefit provisions.

Assumptions and methods

The actuarial assumptions were adopted on November 15, 1996 by the Board, to be effective as of June 30, 1996, as recommended by the actuary. Further detail on the assumptions and methods may be found in Table 19 of this report and in the Experience Study report dated November 15, 1996. The assumptions are internally consistent and are reasonably based on the actual experience of the Plan. These assumptions are in full compliance with all parameters established by GASB No. 25.

Data

Member data for retired, active and inactive participants was supplied as of June 30, 2001, by the ASRS staff. We have not subjected this data to any auditing procedures, but have examined the data for reasonableness and consistency with the prior year's data. Asset information was supplied by the ASRS staff.

Trend Data and Supporting Schedules

All trend data schedules in the financial section of ASRS's Comprehensive Annual Financial Report (CAFR) were prepared by ASRS. Additionally, all supporting schedules in the actuarial section of the ASRS CAFR were prepared by ASRS.

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

Sincerely,

Gabriel, Roeder, Smith & Company

W. Michael Carter

W. Michael Carter, FSA, MAAA, EA
Senior Consultant

Lewis Ward

Lewis Ward
Consultant

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Executive Summary

Attached is a table summarizing the key results of the June 30, 2001 actuarial valuation of the Arizona State Retirement Plan (the Plan).

The valuation of the Plan reflects several significant items during the 2000/2001 plan year. The major items are:

- An asset gain (based on the actuarial values of assets) of $687 million,
- An additional $218 million in "Excess Investment Earnings" set aside as a reserve for future Permanent Benefit Increase (PBI) COLAs. The total reserve for future PBI COLAs after granting the July 1, 2001 COLA is over $1.36 billion,
- Benefit enhancements of $1.3 billion granted by the 2001 Legislature.

In the aggregate these changes along with other smaller gains and losses have caused the Plan's contribution rate to increase from a calculated rate of 1.92% from the 2000 valuation to a hypothetical 3.86% for the 2001 valuation. We have labeled this contribution rate as the hypothetical rate because the rate will never actually be contributed due to the biennial setting of the contribution rate. A more detailed explanation on the effects of these changes can be found in later sections of the report.

The large number of benefit enhancements has caused the overfunded status to decrease to $2.587 billion.

The favorable actuarial investment experience for fiscal year 2000/2001 along with prior years' favorable experience will allow the granting of a PBI COLA for at least the next four to five years. Currently there are enough excess investment earnings set aside to grant the maximum increase of 4% for at least the next four years.

The number of active members has increased from 183,924 to 191,252, a 4.0% increase. Valuation payroll has increased 7.9%, from $5.894 billion to $6.357 billion.

The yield rate on plan assets for the 2000/2001 fiscal year (when measured by the actuarial asset valuation method) is 10.98% on the pension assets (401(a)) and 13.54% on the health supplement assets (401(h)), compared to last year's returns of 15.68% and 13.76% respectively, and the actuarially assumed rate of return of 8%.

While the contribution rate has increased, it should be noted that if the Plan were not overfunded, the contribution rate would be 5.88% instead of 3.86%. The statutes in fact contemplate that the rate will gradually increase toward 5.88% in the future, in the absence of gains, losses, or legislative changes.

Overall, ASRS continues to be in a well funded position with the ratio of actuarial value of assets to actuarial liabilities exceeding 112%.

The key results of this valuation as of June 30, 2001 may be summarized as follows:

	2001	2000
	(1)	(2)
• Assets (401(a) and 401(h) Combined)		
— Book value	$19.894 billion	$18.810 billion
— Market value	$21.873 billion	$23.188 billion
— Actuarial value	$22.855 billion	$21.127 billion
• Members		
— Actives	191,252	183,924
— Inactives	96,193	81,977
— Receiving benefits	58,920	58,038
— Disabled (LTD)	3,904	3,595
• Covered payroll	$6.357 billion	$5.894 billion
• Normal cost rate	11.75%	10.72%
• UAAL	$(2,586.6) million	$(3,578.4) million
• Actuarial assets as % of actuarial accrued liability	112.8%	120.4%
• Calculated contribution rate	3.86%	1.92%
• Statutory contribution rate	2.00%	2.00%
• Estimated yield on actuarial assets (401(a) only)	10.98%	15.68%
• Employee and employer contributions	$367.2 million	$283.8 million
• Benefit and refund payments	$920.4 million	$788.6 million
• PBI COLA		
— Additional Liability due to July 1st COLA	$269.6 million	$243.3 million
— COLA Percentage Increase	4.0%	4.0%
— Per Year of Service Factor	$29.79	$29.49
— PBI reserve for future COLAs	$1,362.7 million	$1,414.8 million

	2001	2000
	(1)	(1)
• Actuarial gains (losses)		
—Assets	$687 million	$1,493 million
—Liability experience	(140) million	107 million
—Excess earnings reserved for future PBI COLAs	(218) million	(518) million
—Legislative changes	(1,307) million	0 million
—Total	$(978) million	$1,082 million
• GASB 25 disclosure (401(a) pension plan only)		
—Actuarial Accrued Liability (AAL)	$ 19.012 billion	$16.854 billion
—Unfunded AAL	$(2.876) billion	$(3.437) billion
—Actuarial Value of Assets (AVA) as % of AAL	115.18%	120.4%
—Unfunded AAL as % of payroll	(45.2%)	(58.3%)
• Net external cash flow	$(563.0) million	$(515.6) million

• Changes in contribution rate

Item	Contribution Rate	Change in Rate
(1)	(2)	(2)
1. 2000 valuation	2.00%	-
2. 2000/2001 liability experience	2.41%	0.41%
3. Actual assets	1.66%	(0.75%)
4. PBI COLAs	1.87%	0.21%
5. Legislative changes enacted by 2001 Legislature	3.68%	1.81%
6. Statutory increase in funding period	3.86%	0.18%

Split of Total Contribution Rate:

Item	401(a) Account	401(h) Account	Total
(1)	(2)	(3)	(4)
1. Employee Contribution Rates	3.86%	0.00%	3.86%
2. Employer Contribution Rates	2.46%	1.40%	3.86%
3. Total Contribution Rates	6.32%	1.40%	7.72%

Introduction

The actuarial valuation of the Arizona State Retirement Plan (the Plan) is prepared each year to determine the matching employee 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 Statutes.

The actuarial valuation of the Plan as of June 30, 2001 determines a hypothetical contribution rate for the fiscal year 2002/2003. Based on the results of the 2001 Plan valuation, the hypothetical matching contribution rate for the fiscal year beginning July 1, 2002 would increase from the current actual rate of 2.00% to 3.86% of compensation. Please note that this hypothetical rate is never contributed. The actual contribution rate for the 2002/2003 fiscal year is the 2.00% rate determined by the 2000 valuation.

The actuarial assumptions and asset valuation method used in this valuation are those adopted by the Retirement Board on November 15, 1996 and first used for the 1996 valuation. The actuarial liability valuation method was changed by legislative action in 1989 to the Projected Unit Credit (PUC) actuarial valuation method from the prior method of entry-age-normal. These actuarial methods and assumptions as well as a summary of the Plan provisions are contained in Section M.

The valuation includes the 2001 legislative changes. Several significant benefit enhancements were made by the 2001 Legislature. 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 referenced during the year.

The basic results of the valuation are covered in Sections C and D. Sections E through G provide analysis and additional discussion. Section H contains the necessary disclosure items required by the Governmental Accounting Standards Board Statement No. 25.

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. This separation is effective at the benefit's inception June 30, 1989. To reflect this separation, several of the asset tables have been separated into 401(a) pension assets and 401(h) health supplement assets.

Actuarial Balance Sheet and Determination of the Permanent Benefit Increase COLA

The results of the actuarial valuation of the Plan as of June 30, 2000 and June 30, 2001 are summarized in the actuarial balance sheet (Table 1 in Section M). The results for 2001 are based on the benefit provisions of the Plan as of June 30, 2001, as summarized in Table 18, and on the actuarial assumptions and methods shown in Table 19.

Section I of the actuarial balance sheet (Table 1) shows that the actuarial value of present assets as of June 30, 2001 amounts to $22.855 billion (as shown in Item 11). This value includes an adjustment of $2.961 billion to the book value of assets as a result of the actuarial asset valuation method. When the present actuarial assets of $22.855 billion are compared to the actuarial liabilities, the asset side of the actuarial balance sheet exceeds the amount of actuarial liabilities by the amount of $2.587 billion. This amount is shown in Item 12 and represents the negative unfunded actuarial accrued liability. Since the amount is negative, the Plan is deemed overfunded in actuarial terminology.

The actuarial liability for those Plan members who are receiving benefits at the present time is reflected in Item 14 and Item 15, while the actuarial liability for System members who are receiving benefits out of the Plan is shown in Item 16. 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.

In addition to the liabilities for persons receiving benefits and for currently active and inactive members. Item 22 is the reserve set aside by SB 1058 to fund the Permanent Benefit Increase (PBI) COLAs (including the COLA granted on July 1, 2001).

It may be noted that the unfunded actuarial accrued liability (UAAL) becomes the balancing item which makes the actuarial assets and the actuarial liabilities equal.

Since the UAAL is negative, the overfunding of the Plan will result in a required contribution rate which is less than the normal cost rate for the Plan.

The determination of the PBI COLA for 2001 is shown in Items 24 through 33. As shown in Item 30 the statutes used $269.6 million in excess earnings to pay for the 2001 COLA. The per year of service factor for the 2001 COLA is $29.79 as shown in Item 32. The determination of the "Excess Investment Earnings" held in reserve for future COLAs is shown in Items 34 through 36. As shown in Item 36c, $1.363 billion in assets are being held in reserve for future COLAs.

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 2001 valuation results, which are supported by the information contained in Table 2, Table 3, and Tables 4a and 4b. The required contribution rate for the 2002/2003 and 2003/2004 fiscal years (Item VIII) was determined by the 2000 actuarial valuation. Table 2 summarizes the various cost items for the 2000 actuarial valuation versus the 2001 valuation. Table 3 breaks down the normal cost by its various components, while Tables 4a and 4b develop the actuarial value of assets.

Turning first to the normal cost of the Plan, Table 3 indicates that the normal cost as of June 30, 2001 is 11.75% of pay, compared to 10.72% in the 2000 valuation. This normal cost is developed based on the prescribed PUC actuarial valuation method. It is inclusive of the amount contributed by the employee. The normal cost for the health insurance premium supplement is 0.72% of pay. The normal cost for the deferred retirement benefit for disabled employees is 0.30%. The normal cost for the retirement benefits (as shown in Item 1) is 9.62%, while the normal cost for the death benefits is 0.32% of pay. The remaining 0.79% 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. 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 and 4b is \$20.821 billion and \$1.052 billion respectively. The total excess (shortfall) of investment income deferred for recognition in future years as shown in Item 2e of Tables 4a and 4b is -\$1.067 billion and \$0.085 billion respectively. The resulting actuarial value of assets shown in Item 6 of Tables 4a and 4b is \$21.888 billion and \$0.967 billion respectively. The actuarial value for the combined Plan assets is \$22.855 billion.

Table 2 compares a number of the key actuarial items for the 2001 valuation with the corresponding items for the 2000 valuation. It is seen that the normal cost rate has increased from 10.72% to 11.75% as noted above. The actuarial accrued liability has increased from \$17.5 billion to \$20.3 billion as shown in Item 5h. Item 6 indicates that the present actuarial assets have increased by about \$1.8 billion during the year, from \$21.1 billion to \$22.9 billion.

The employer and employee contribution rates are determined as 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 is overfunded, the percent of pay needed to amortize the UAAL is negative. For the June 30, 2001 valuation, the normal cost of the Plan is 11.75% and the amortization of the UAAL is -4.03%. So the calculated employee and employer rates are equal to: $1/2 \times \{11.75\% + (-4.03\%)\} = 3.86\%$.

If the overfunded status of the Plan were eliminated, or in other words, if the UAAL were \$0, then the employee and employer rate would be: $1/2 \times \{11.75\% + 0.00\%\} = 5.88\%$.

This difference of 2.02% (i.e., 5.88% - 3.86%) is due totally to the overfunded status of the Plan. Thus, the current overfunded condition of the Plan is equivalent to a 2.02% of pay reduction in the hypothetical employee and employer contribution rates determined by the 2001 valuation.

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. Book Value of Assets	$18,905,027,382	$988,941,457	$19,893,968,839
2. Market Value of Assets	$20,820,944,803	$1,051,971,617	$21,872,916,420
3. Actuarial Value of Assets	$21,888,183,666	$966,959,873	$22,855,143,539

The hypothetical employee and employer contribution rates determined by the 2001 valuation are 3.86% of compensation. Because of the separation of the health premium supplement into the 401(h) account, we must split the contribution rates into that portion going to the 401(a) account and that portion going to the 401(h) account. We have assumed that all employee contributions will be contributed to the 401(a) account. This assumption is made to avoid any possible qualification problems due to refunds of employee contributions. 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	3.86%	0.00%	3.86%
2. Employer Contribution Rates	2.46%	1.40%	3.86%
3. Total Contribution Rates	6.32%	1.40%	7.72%

Actuarial Gains and Losses

Section C has noted that the unfunded actuarial accrued liability (UAAL) is a negative $2.587 billion in 2001. As seen in Table 2, this compares to negative $3.578 billion in 2000. As shown in Table 2, Item 4 is the normal cost rate of the plan. The normal cost rate is 11.75% for 2001 and compares to 10.72% for 2000. The contribution rate has increased from a calculated rate of 2.00% of pay as determined by the 2000 valuation to 3.86% of pay as determined by the 2001 valuation after allowance is made for the 2001 legislative changes. 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 decrease.

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, 2001 is $22.168 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 $22.855 billion (as repeated in Item 9 of Tables 5a and 5b). Thus the asset gain for the year is the difference between the actual value and the expected value, or $687.0 million (as shown in Item 10 of Tables 5a and 5b), down from last year's gain of $1.493 billion.

This asset gain 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 7, Column 4 of Tables 11a and 11b, the yield on the actuarial value of 401(a) and 401(h) assets was 10.98% and 13.54% respectively. Note that the rate of return on the market value of the 401(a) assets was –3.70% for fiscal year 2000/2001. However, the rate of return on the actuarial value of the 401(a) assets was 10.98%. This is related to the smoothing effect of the asset valuation method on the actuarial value of assets. The impact of the negative return for 2000/2001 will be spread over five years.

Table 6 develops the total actuarial gain for the year and separates it between the asset gain and the liability gain (loss). The items in Table 6 that are used to develop the expected UAAL as of June 30, 2001 are derived from Table 2 and Table 9. In Item 7 of Table 6, the total actuarial loss for the year is seen to be $977.7 million. Since the asset gain for the year is $687.0 million, and since $217.5 million of this asset gain will be used by the PBI COLA this means that there has been an actuarial loss associated with the liability side of the Plan in an amount equal to $1.447 billion.

Item 12 in Table 6 breaks down the liability gain (loss) among its components. Item 10 in Table 6, shows that $217.5 million in excess investment earnings from 2001 are being set aside as a reserve for future PBI COLAs. This reserve results from favorable investment returns during the 2000/2001 plan year.

The total liability loss for the year is $1.447 billion. As shown above, the additional reserve established in 2001 for the future "Excess Investment Earnings" COLAs reduces the UAAL by $217.5 million.

The $140.5 million liability experience loss compares to a liability experience gain for 2000 of $107.0 million. The liability experience loss of $140.5 million amounts to (0.69%) of the actuarial accrued liability of $20.269 billion.

Item 12 of Table 6 shows that the benefit enhancements granted by the 2001 Legislature created $1.307 billion in additional liabilities for the Plan.

Change in Assets During the Year

This section provides an analysis of the change in the accounting assets during the year, a reconciliation of actuarial assets with total assets, 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 was first applicable as of June 30, 1992.

Table 8 reconciles the actuarial value of assets as of June 30, 2000 and June 30, 2001 with the book value of assets reported to us in 2000 and 2001 by the Arizona State Retirement System. Item 1 is the book value of assets that was reported. In Item 2 certain liabilities of the investment fund which are not available to pay benefits are netted out of the total book value of assets. In Item 3 it is necessary to add back in the amount of refunds and benefits payable since they are netted out of the reported assets but are included in the valuation assets (with an offsetting miscellaneous liability item). The remaining net book value of assets (Item 4) is decreased by the book value of assets held for the System members (Item 5), to produce the net book value of Plan assets in Item 6. To this net book value of Plan assets is added the actuarial adjustment for the year under the asset valuation method to arrive at the total actuarial assets for this valuation of the Plan.

As may be seen from Table 8, the total book value of assets reported to us in 2001 is $22.271 billion. The liabilities of the investment fund which must be netted out against the book value are $1,825.1 million (Item 2f). The book value of assets for all System members is $552.4 million (Item 5). The net book value of Plan assets (as previously shown in Table 1) becomes $19.894 billion. After adjusting this net book value by $2.961 billion under the asset valuation method, the total actuarial asset value becomes $22.855 billion (Item 8).

Tables 9a and 9b trace the change in book value for Plan valuation purposes from the beginning of the year value to the end of the year value. Item 2 of Tables 9a and 9b is the various 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, and in Item 9 are certain other transfers and payments during the year.

The net increase in book value of the combined Plan assets during the year is shown in Item 11 of Tables 9a and 9b is $1.084 billion. This increase is lower than the increase of $1.237 billion for 2000.

Tables 11a and 11b use the increases and decreases in Tables 9a and 9b to produce an estimated yield on assets. Column 2 shows the estimated yield on a book value basis. Column 3 provides the corresponding information on a market value basis, while Column 4 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. For both the market value and the actuarial value of assets (Columns 3 and 4) it is necessary to increase the net investment income for the year by the unrealized capital gain or loss for the year. The unrealized gain or loss for the year is equal to the change in the market over book at the beginning of the year versus the end of the year. As may be seen from Item 1 of Table 11, there has been a substantial unrealized loss for the year under the market value basis.

In Item 7 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 4, the yield for the actuarial value. The Plan has an estimated yield of 10.98% on the 401(a) assets and 13.54% 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 gain for the year resulting from the estimated actuarial yield compared to the assumed 8% is $687.0 million.

Both the estimated actuarial yield and the resultant actuarial asset gain are lower than in the 2000 valuation. The 10.98% actuarial yield rate on the 401(a) assets compares to 15.68% on the 401(a) assets last year, while the $0.687 billion asset experience gain compares to a $1.493 billion gain last year.

Tables 4a and 4b and Tables 10a and 10b 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 May 22, 1992. This method starts with the market value of assets and is modified by the "Excess (Shortfall)" between expected investment return and actual income. Only 20% of this Excess (Shortfall) is recognized in the valuation immediately following the year in which the Excess (Shortfall) occurs. The remaining 80% of the Excess (Shortfall) is deferred until future valuations, with an additional 20% recognized in each subsequent valuation until 100% of the difference is recognized in the fifth year.

The combined 401(a) and 401(h) deferral of Excess (Shortfall) investment income for the year (shown in Item 2e of Tables 4a and 4b) is -$982.2 million. Tables 10a and 10b show the development of the Excess (Shortfall) of investment income for the past four years.

Impact of Changes

Previous sections of this report have discussed the actuarial gains and losses for the year and the estimated yield for the year.

The impact on the contribution rate of the various factors affecting that rate has been analyzed in Table 7. The starting point in Item 1 is the contribution rate determined by the June 30, 2000 actuarial valuation, namely 2.00% of pay for employers and employees currently being contributed for the 2001/2002 plan year.

The contribution rate determined by the 2001 valuation is a hypothetical rate which will never actually be contributed. For informational and comparison purposes the rate has been calculated assuming the contribution rate would be contributed in the 2002/2003 plan year. If there had been no changes to the Plan by the 2001 Legislature and if experience had been exactly as anticipated by the actuarial assumptions, Item 2 shows that the total contribution rate would have remained at 2.00%.

When the actual liability experience for the year is factored in, the contribution rate increases by 0.41% of pay (Item 3). This includes any changes in the normal cost percentage between 2000 and 2001.

The actual asset performance of the Plan is the next change analyzed (Item 4). The contribution rate drops 0.75% of pay as a result of the favorable investment performance (on an actuarial basis). The decrease in the required contribution rate from asset experience is indicative of the favorable investment return (10.98% on an actuarial basis) over the assumed investment return (8%).

The reserves for future PBI COLAs add back 0.21% to the contribution rate (Item 5). The largest change in the contribution rate is due to the benefit enhancements enacted by the 2001 Legislature. As shown in Item 6, the contribution rate increased 1.81% due to these changes.

The phase-in of the increase in the funding period toward 30 years resulted in an increase of 0.18% of pay, which results in a final rate of 3.86%.

There has been a significant increase in the contribution rate associated with the health supplement. The 2000 calculated rate for the health supplement was 0.06% of pay. The 2001 calculated rate is 1.40% of pay. This increase is due solely to the substantial increases in the health insurance premium supplement and the temporary "rural coverage" benefit.

GASB No. 25 Disclosure

The Governmental Accounting Standards Board (GASB) has issued Statement No. 25 which provides the manner in which the actuarial condition of a public sector retirement system is to be disclosed. This new disclosure format is required for plan years beginning after June 15, 1996, which is the plan year beginning July 1, 1996 in ASRS's case.

The required schedule of funding progress is shown in Table 17a. In Table 17b the schedule of annual required contributions required by GASB No. 25 is shown. Table 17c provides notes to the required supplemental information.

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

January 4, 2002

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

Dear Retirement Board Members:

Subject: Actuarial Valuation as of June 30, 2001

In preparing the above referenced 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.

Sincerely,

W. Michael Carter, FSA, MAAA, EA
Senior Consultant

nlb

Historical Comparisons and Statistical Summaries

Various statistical data on the Plan has been included in prior actuarial valuation reports. Corresponding information for this valuation is shown in the tables contained in Section N. In addition, Tables 12 through 16 of Section M contain certain actuarial trend information, which may be of interest.

Table 12 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-three years of historical information are shown in the table. As may be seen, 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 caused all four numbers to increase this year. It may be noted that since the Plan has been overfunded since 1987, all ratios are negative for 1987 through 2001.

Table 13 provides a twenty-two year history of the growth in active membership, covered payroll, and average salary. Table 14 illustrates the growth in retired participants over the last nineteen years. Table 15 shows a history of contribution rates for both the employee and the employers. In addition, it shows the contribution rate calculated by this valuation.

Table 16 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. Note that the dramatic increase in benefit payments combined with a decreasing contribution rate has resulted in a continuation of a negative net external cash flow.

Summary and Closing Comments

To summarize the results of the actuarial valuation of the Arizona State Retirement Plan as of June 30, 2001, the contribution rate for the 2001/2002 and 2002/2003 plan year of 2.00% of pay for both the employees and the employers was set by the 2000 valuation. The 2001 valuation determined that the hypothetical contribution rate needed to pay the normal cost of the plan and fund the UAAL over the next 16 years is currently 3.86% of pay. It should be expected that in the absence of gains and losses, the contribution rate will increase to 3.86% of pay for the next biennial contribution period July 1, 2003 to June 30, 2005.

There have been actuarial gains due to investment performance on an actuarial basis and significant liability increases due to legislative benefit enhancements. The net result is that the plan continues to be well funded. As a result of past gains, the Plan continues to be overfunded from an actuarial viewpoint as of June 30, 2001.

It is important to understand that the statutory amortization mechanism is designed to reduce the overfunding of the Plan. As this occurs, the contribution rate for both employees and employers will trend towards ½ the normal cost rate. The current normal cost rate is 11.75%, so ½ of this would be 5.88%. In the absence of gains, losses, or benefit changes, the contribution rate will increase from 3.86% toward 5.88% in the future.

Actuarial Certification

ARIZONA STATE RETIREMENT PLAN

Actuarial Certification Statement

This is to certify that Watson Wyatt Worldwide has prepared an actuarial valuation of the Arizona State Retirement Plan as of June 30, 2001.

Actuarial calculations have been made with respect to a total of 350,269 members, comprised of 191,252 active employees, 96,193 inactive members, and 58,920 retired members and beneficiaries, and 3,904 members on long term disability. In addition, there are 912 System retirees receiving ad hoc benefits from Plan assets.

The actuarial calculations establish a total benefit cost of 7.72% of the annual compensation of employees. The total normal cost rate is 11.75% of compensation, and the required amortization payment determined in accordance with Section 38-737 is –4.03% of compensation.

The actuarial cost factors as of June 30, 2001 are as follows:

I. Actuarial accrued liabilities				
A. Liabilities due to members' benefits				
1. Active members				
a. Retirement benefits	$8,424,685,300			
b. Health insurance premium supplement	822,162,500			
c. Disability deferred retirement benefits	140,782,300			
d. Pre-retirement death benefits	241,221,027			
e. Withdrawal benefits	351,261,840			
f. Total active members		$9,980,112,967		
2. Inactive members		698,838,565		
3. Retired members and beneficiaries		7,674,814,500		
4. Disabled members (deferred retirement)		210,715,400		
5. Benefit increases for other-than-plan participants		12,464,700		
6. Total present value of benefits			$18,576,946,132	
B. Other miscellaneous liabilities and reserves			0	
C. Reserve for future PBI COLAs			1,691,568,312	
D. Total actuarial accrued liability				$ 20,268,514,444
II. Actuarial value of assets				$ 22,855,143,539
III. Unfunded actuarial accrued liability (Item I – Item II)				$ (2,586,629,095)
IV. Amortization of unfunded actuarial accrued liability (Per Section 38-737)			$(256,174,962)	
V. Normal cost for the year			747,218,041	
VI. Total contribution for the year (Item IV + Item V)				$ 491,043,079
VII. Total covered payroll (projected to 2001/2002 plan year)				$ 6,356,698,800

VIII. Total contribution for fiscal years 2001/2002 and 2002/2003 as a percentage of covered payroll	401(a) Account	401(h) Account	Total
A. Employee portion	2.00%	0.00%	2.00%
B. Employer portion	1.94%	0.06%	2.00%
C. Total	3.94%	0.06%	4.00%

The assumptions applied in the actuarial valuation were adopted November 15, 1996 by board action, to be effective for valuations on and after June 30, 1996. 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
22	0.08%	0.10%
32	0.11	0.16
42	0.20	0.31
52	0.66	0.73
62	1.67	1.25

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

	Years of Service				
	Male Members				
Age	1	2	5	8	10+
22	33.24%	25.31%	12.68%	6.60%	11.04%
32	18.87	14.03	8.76	4.80	4.67
42	16.93	9.82	6.24	3.80	2.01
52	16.18	8.54	4.43	3.10	1.38
62	19.05	10.18	3.73	2.50	1.10

	Years of Service				
	Female Members				
Age	1	2	5	8	10+
22	26.86%	23.58%	18.08%	12.31%	18.04%
32	18.51	15.39	9.69	7.30	6.47
42	16.44	11.05	6.20	4.14	2.08
52	14.31	9.09	5.05	2.68	1.52
62	14.57	9.71	4.65	2.41	0.83

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

	Years of Service				
Age	10-14	20	25	30	35+
50	5.00%	5.00%	5.00%	10.00%	12.50%
55	5.00	6.00	16.25	18.75	12.50
60	9.00	26.25	25.00	30.00	30.00
62	34.00	42.00	44.00	50.00	50.00
65	55.00	55.00	60.00	60.00	60.00
66 and above	55.00	60.00	60.00	60.00	60.00

6. Mortality rates - 1983 Group Annuity Mortality Table (with margins, set back one year for males and with no setback for females).

7. Mortality rates after disability - Post disablement mortality rates are based on experience of other large public sector system, grading into post-retirement mortality rates at age 83.

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

9. Funding method - Projected unit-credit.

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

All trend data schedules in the financial section and the supporting schedules in the actuarial section of ASRS's Comprehensive Annual Financial Report were prepared by ASRS.

W. Michael Carter

W. Michael Carter, FSA, MAAA, EA, Senior Consultant

Actuarial Tables

Actuarial Balance Sheet Showing Present and Prospective Assets and Liabilities After Actuarial Adjustment

ACTUARIAL ASSETS

		June 30, 2001 (1)	June 30, 2000 (2)
I.	Present Assets At Actuarial Value:		
1.	Reserve for retired members and beneficiaries	$ 7,674,814,500	$ 7,003,591,600
2.	Reserve for disabled members	210,715,400	151,641,600
3.	Reserve for other-than-plan retirees	12,464,700	11,955,800
4.	Reserve for PBI COLAs		
	(a) Reserve for July 1st COLA	243,211,400	235,987,500
	(b) Reserve for future COLAs	1,448,356,912	1,414,790,586
5.	Employee contributions		
	(a) Plan members	2,876,445,119	2,758,428,341
	(b) System members	N/A	N/A
6.	Employer contributions		
	(a) Plan	2,771,071,043	2,670,827,290
	(b) System	N/A	N/A
7.	Other miscellaneous		
	(a) ASRS building and land	0	0
	(b) Other	0	0
8.	Additional assets	4,656,889,765	4,562,725,749
9.	Total present assets	$ 19,893,968,839	$ 18,809,948,466
10.	Adjustment to book value due to actuarial asset valuation method	2,961,174,700	2,316,929,025
11.	Total actuarial value of present assets	$ 22,855,143,539	$ 21,126,877,491
II.	Prospective Assets:		
12.	Unfunded actuarial accrued liability	(2,586,629,095)	(3,578,354,360)
13.	TOTAL ACTUARIAL ASSETS	$ 20,268,514,444	$ 17,548,523,131

ACTUARIAL LIABILITIES

	June 30, 2001 (1)	June 30, 2000 (2)
III. Present Value Of Benefits Presently Being Paid:		
14. (a) Benefits for retired members and beneficiaries	$ 7,300,326,500	$ 6,740,962,600
(b) Health insurance premium supplement	374,488,000	262,629,000
15. (a) Benefits for disabled members	187,897,200	137,347,600
(b) Health insurance premium supplement	22,818,200	14,294,000
16. (a) Benefits for other-than-plan participants	5,205,800	6,324,700
(b) Health insurance premium supplement	7,258,900	5,631,100
17. Total present value of benefits presently being paid	$ 7,897,994,600	$ 7,167,189,000
IV. Present Value Of Benefits Payable In The Future To Present Members:		
18. Active members		
(a) Service retirement benefits	$ 8,424,685,300	$ 6,691,410,100
(b) Health insurance premium supplement	822,162,500	401,580,400
(c) Disability retirement benefits	140,782,300	111,590,600
(d) Pre-retirement death benefits	241,221,027	208,997,622
(e) Withdrawal benefits	351,261,840	706,907,824
(f) Total active members	$ 9,980,112,967	$ 8,120,486,546
19. Inactive members	698,838,565	610,069,499
20. Total	$ 18,576,946,132	$ 15,897,745,045
V. Other Liabilities And Reserves:		
21. Reserve for other miscellaneous liabilities and reserves	$ 0	$ 0
22. Reserve for PBI COLAs	$ 1,691,568,312	$ 1,650,778,086
23. TOTAL ACTUARIAL LIABILITIES	$ 20,268,514,444	$ 17,548,523,131

Determination of Permanent Benefit Increase COLA

VI. Determination of July 1, 2001 PBI COLA:

24.	Actuarial Present Value (APV) for all Retirees and Beneficiaries as of June 30, 2000	6,740,962,600
25.	Rate of Return on Actuarial Value of Assets for Fiscal Year Ending June 30, 2000	15.68%
26.	Excess Earnings Available for COLA	
	a. Carry Over From Prior Year	897,084,658
	b. Current Year (Item 24 x [Item 25 - 8%])	517,705,928
	c. Total Excess Earnings Available for COLA (Item 26.a. + Item 26.b.)	1,414,790,586
27.	One Percent of APV of all Retirees and Beneficiaries as of June 30, 2000	67,409,626
28.	Preliminary COLA % (Item 26.c. / Item 27 x 0.01)	21.0%
29.	Actual COLA % (Item 28, but not greater than 4% and equal to 0% if less than 1%)	4.0%
30.	Target Cost of 2001 COLA (Item 27 x Item 29)	269,638,504
31.	APV of $1 Per Year of Service for Eligible Group	9,050,900
32.	Per Year of Service Factor for 2001 COLA	$ 29.79
33.	Excess Investment Earnings to be Carried Forward to Next Year	1,145,152,082

VII. Determination of Reserves for Future PBI COLAs:

34.	Actuarial Present Value (APV) for all Retirees and Beneficiaries as of June 30, 2001	7,300,326,500
35.	Rate of Return on Actuarial Value of Assets for Fiscal Year Ending June 30, 2001	10.98%
36.	Excess Earnings Reserves for Future COLAs	
	a. Carry Over From Prior Year (Item 33)	1,145,152,082
	b. Current Year (Item 34 x [Item 35 - 8%])	217,549,730
	c. Total Excess Earnings Reserves for Future COLAs	1,362,701,812

Summary of Cost Items

		Valuation as of June 30, 2001		Valuation as of June 30, 2000	
		Cost Item	Cost as % of Pay	Cost Item	Cost as % of Pay
		(1)	(2)	(3)	(4)
1.	Participants				
	a. Active members	191,252		183,924	
	b. Inactive members	96,193		81,977	
	c. Retired members and beneficiaries	58,920		58,038	
	d. Disabled retirees	3,904		3,595	
	e. Total	350,269		327,534	
	f. Other-than-plan retirees receiving benefit increases from the Plan	912		1,051	
2.	Covered payroll	$ 6,356,698,800		$ 5,893,800,100	
3.	Averages for active members				
	a. Average age	43.8		43.6	
	b. Average years of service	8.2		8.2	
	c. Average pay	$ 33,237		$ 32,045	
4.	Normal cost rate	11.75%		10.72%	
5.	Actuarial accrued liability				
	a. Retired members and beneficiaries	$ 7,674,814,500		$ 7,003,591,600	
	b. Disabled members	210,715,400		151,641,600	
	c. Benefits for other-than-plan retirees	12,464,700		11,955,800	
	d. Active members	9,980,112,967		8,120,486,546	
	e. Inactive members	698,838,565		610,069,499	
	f. Other miscellaneous	0		0	
	g. Reserve for PBI COLAs	1,691,568,312		1,650,778,086	
	h. Total	$ 20,268,514,444	318.9%	$ 17,548,523,131	297.7%
6.	Present actuarial assets	$ 22,855,143,539	359.5%	$ 21,126,877,491	358.5%
7.	Unfunded actuarial accrued liability	$ (2,586,629,095)	(40.7%)	$ (3,578,354,360)	(60.7%)
8.	Section 38-737 funding period	16 years		15 years	
9.	Section 38-737 contribution rate				
	A. 401(a) Account				
	a. Employee	3.86%		2.00%	
	b. Employer	2.46%		1.94%	
	c. Total	6.32%		3.94%	
	B. 401(h) Account				
	a. Employee	0.00%		0.00%	
	b. Employer	1.40%		0.06%	
	c. Total	1.40%		0.06%	
	C. Total of Combined Accounts				
	a. Employee	3.86%		2.00%	
	b. Employer	3.86%		2.00%	
	c. Total	7.72%		4.00%	
10.	Estimated yield on 401 (a) actuarial assets	10.98%		15.68%	
11.	Relative size of unfunded actuarial accrued liability				
	a. As percentage of actuarial assets	(11.3%)		(16.9%)	
	b. As percentage of covered payroll	(40.7%)		(60.7%)	
	c. As percentage of total actuarial accrued liability	(12.8%)		(20.4%)	

Analysis of Normal Cost by Component

Benefit Component	Normal Cost as % of Pay	
	2001	2000
(1)	(2)	(3)
1. Retirement benefits	9.62%	9.17%
2. Health insurance premium supplement	0.72%	0.31%
3. Disability benefits (Deferred Retirement)	0.30%	0.27%
4. Death benefits	0.32%	0.29%
5. Termination benefits		
a. Refunds	0.48%	0.46%
b. Vested deferred benefits	0.31%	0.22%
c. Total	0.79%	0.68%
6. Total	11.75%	10.72%

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

Item	Valuation as of June 30, 2001	Valuation as of June 30, 2000
(1)	(2)	(3)
1. Excess (shortfall) of investment income for current year and previous three years (see Table 10a):		
a. Current year	$ (2,581,468,783)	$ 207,131,363
b. Current year -1	207,131,363	1,206,024,662
c. Current year -2	1,206,024,662	1,956,237,399
d. Current year -3	1,956,237,399	1,608,286,639
2. Deferral of excess (shortfall) of investment income for:		
a. Current year (80% deferral)	$ (2,065,175,026)	$ 165,705,090
b. Current year -1 (60% deferral)	124,278,818	723,614,797
c. Current year -2 (40% deferral)	482,409,865	782,494,960
d. Current year -3 (20% deferral)	391,247,480	321,657,328
e. Total deferred for year	$ (1,067,238,863)	$ 1,993,472,175
3. Market value of plan assets, end of year	$ 20,820,944,803	$ 22,285,375,387
4. Preliminary actuarial value of plan assets, end of year (Item 3 - Item 2.e.)	$ 21,888,183,666	$ 20,291,903,212
5. Actuarial value of assets corridor		
a. 80% of market value of assets, end of year	$ 16,656,755,842	$ 17,828,300,310
b. 120% of market value of assets, end of year	$ 24,985,133,764	$ 26,742,450,464
6. Final actuarial value of plan assets, end of year (Item 4, but not less than Item 5.a., or greater than Item 5.b.)	$ 21,888,183,666	$ 20,291,903,212

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

Item	Valuation as of June 30, 2001	Valuation as of June 30, 2000
(1)	(2)	(3)
1. Excess (shortfall) of investment income for current year and previous three years (see Table 10b):		
a. Current year	$ 61,315,688	$ 14,299,080
b. Current year -1	14,299,080	41,999,439
c. Current year -2	41,999,439	52,899,852
d. Current year -3	52,899,852	47,016,896
2. Deferral of excess (shortfall) of investment income for:		
a. Current year (80% deferral)	$ 49,052,550	$ 11,439,264
b. Current year -1 (60% deferral)	8,579,448	25,199,663
c. Current year -2 (40% deferral)	16,799,776	21,159,941
d. Current year -3 (20% deferral)	10,579,970	9,403,379
e. Total deferred for year	$ 85,011,744	$ 67,202,247
3. Market value of plan assets, end of year	$ 1,051,971,617	$ 902,176,526
4. Preliminary actuarial value of plan assets, end of year (Item 3 - Item 2.e.)	$ 966,959,873	$ 834,974,279
5. Actuarial value of assets corridor		
a. 80% of market value of assets, end of year	$ 841,577,294	$ 721,741,221
b. 120% of market value of assets, end of year	$ 1,262,365,940	$ 1,082,611,831
6. Final actuarial value of plan assets, end of year (Item 4, but not less than Item 5.a., or greater than Item 5.b.)	$ 966,959,873	$ 834,974,279

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

Item	Valuation as of June 30, 2001	Valuation as of June 30, 2000
(1)	(2)	(3)
1. Actuarial assets, beginning of year	$ 20,291,903,212	$ 18,043,254,227
2. Total contributions during year	310,882,741	231,098,681
3. Benefits paid during year	(788,045,300)	(685,960,467)
4. Refunds paid during year	(91,824,591)	(64,976,507)
5. Expenses (other than investment) for the year	N/A	(10,775,218)
6. Other changes and net transfers	(68,074,200)	(85,883,775)
7. Assumed net investment income at 8%		
a. Beginning of year assets	1,623,352,257	1,443,460,338
b. Contributions	12,435,310	9,243,947
c. Benefits	(34,148,630)	(29,724,954)
d. Refunds	(3,672,984)	(2,599,060)
e. Expenses	N/A	(431,009)
f. Other	(2,722,968)	(3,435,351)
g. Total	$ 1,595,242,985	$ 1,416,513,911
8. Expected actuarial assets, end of year (Sum of Items 1 through 7)	$ 21,250,084,847	$ 18,843,270,852
9. Actual actuarial assets, end of year	$ 21,888,183,666	$ 20,291,903,212
10. Asset gain for year (Item 9 - Item 8)	$ 638,098,819	$ 1,448,632,360

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

Item	Valuation as of June 30, 2001	Valuation as of June 30, 2000
(1)	(2)	(3)
1. Actuarial assets, beginning of year	$ 834,974,279	$ 717,705,627
2. Total contributions during year	56,308,301	52,673,815
3. Benefits paid during year	(40,500,337)	(37,651,498)
4. Refunds paid during year	0	0
5. Expenses (other than investment) for the year	N/A	0
6. Other changes and net transfers	0	0
7. Assumed net investment income at 8%		
a. Beginning of year assets	66,797,942	57,416,450
b. Contributions	2,252,332	2,106,953
c. Benefits	(1,755,015)	(1,631,565)
d. Refunds	0	0
e. Expenses	N/A	0
f. Other	0	0
g. Total	$ 67,295,259	$ 57,891,838
8. Expected actuarial assets, end of year (Sum of Items 1 through 7)	$ 918,077,502	$ 790,619,782
9. Actual actuarial assets, end of year	$ 966,959,873	$ 834,974,279
10. Asset gain for year (Item 9 - Item 8)	$ 48,882,371	$ 44,354,497

Actuarial Gain or Loss for the Year

Item	Valuation as of June 30, 2001	Valuation as of June 30, 2000
(1)	(2)	(3)
A. Calculation of Total Actuarial Gain or Loss		
1. Unfunded actuarial accrued liability (UAAL), previous year	$ (3,578,354,360)	$ (2,639,060,325)
2. Normal cost for the year	$ 631,666,459	$ 601,154,219
3. Contributions for the year	$ (367,191,042)	$ (283,772,496)
4. Interest at 8%		
a. On UAAL	$ (286,268,349)	$ (211,124,826)
b. On normal cost	50,533,317	48,092,338
c. On contributions	(14,687,642)	(11,350,900)
d. Total	$ (250,422,674)	$ (174,383,388)
5. Expected UAAL (Sum of Items 1 - 4)	$ (3,564,301,617)	$ (2,496,061,990)
6. Actual UAAL	$ (2,586,629,095)	$ (3,578,354,360)
7. Gain (loss) for the year (Item 5 - Item 6)	$ (977,672,522)	$ 1,082,292,370
B. Source of Gains and Losses		
8. Asset gain for the year (Tables 5a and 5b, Item 10)	$ 686,981,190	$ 1,492,986,857
9. Experience asset gain as a percentage of actuarial assets	3.0%	7.1%
10. PBI COLA		
a. Excess Earnings Reserve for Fiscal Year 2001	(217,549,730)	N/A
b. Excess Earnings Reserve for Fiscal Year 2000	N/A	(517,705,928)
11. Total actuarial accrued liability gain (loss)for the year (Item 7 – Item 8 – Item 10)	$ (1,447,103,982)	$ 107,011,441
12. Analysis of actuarial accrued liability gain (loss)		
a. Legislative changes	(1,306,633,655)	N/A
b. Experience liability gain (loss) for the year	(140,470,327)	107,011,441
c. Total actuarial accrued liability gain (loss)	$ (1,447,103,982)	$ 107,011,441
13. Experience liability gain (loss) as percentage of total actuarial liability (Item 12b as % of total actuarial liability of 20,268,514,444 for 2001 and 17,548,523,131 for 2000)	(0.69%)	0.61%

Analysis of Change in Contribution Rate

	Basis	Unfunded Actuarial Accrued Liability ($ Millions)	Statutory Employer/Employee Contribution Rate	Statutory Funding Period	Attributable Change in Contribution Rate	Rolling 30-Year Employer/ Employee Rate[1]
	(1)	(2)	(3)	(4)	(5)	(6)
1.	Valuation as of June 30, 2000	$(3,578.4)	2.00%	15	--	2.87%
2.	Valuation as of June 30, 2001, using expected assets and liabilities	$(3,564.3)	2.00%	14	0.00%	2.87%
3.	Valuation as of June 30, 2001, using expected assets, but actual liabilities	$(3,423.8)	2.41%	14	0.41%	3.37%
4.	Valuation as of June 30, 2001, using actual assets and liabilities	$(4,110.8)	1.66%	14	(0.75%)	2.84%
5.	Valuation as of June 30, 2001, including impact of PBI COLAs	$(3,893.3)	1.87%	14	0.21%	2.98%
6.	Valuation as of June 30, 2001, including legislative changes	$(2,586.6)	3.68%	14	1.81%	4.35%
7.	Valuation as of June 30, 2001, including impact of phase-in of increase in funding period to 30 years	$(2,586.6)	3.86%	16	0.18%	4.35%

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

Reconciliation of Actuarial Value of Assets With Total Assets as Reported in the 2000 and 2001 Annual Reports (401(a) & 401(h) Combined)

	June 30, 2001 (1)	June 30, 2000 (2)
1. Total book value of assets as reported in the annual report	$ 22,271,422,403	$ 21,137,563,327
2. Liabilities of the Investment Fund		
a. Payable for securities on loan	1,528,313,442	1,299,484,677
b. Payable for securities purchased	280,019,334	432,212,009
c. Forward contacts payable	16,388,576	50,761,408
d. Payable to OASDI fund	0	0
e. Miscellaneous liabilities and payables	372,071	493,703
f. Total liabilities of Investment Fund	1,825,093,423	1,782,951,797
3. Refund and benefit checks payable, netted out of Item 1	0	0
4. Book value of assets available for benefits (Item 1 - Item 2f + Item 3)	20,446,328,980	19,354,611,530
5. Book value of assets for System members	552,360,141	544,663,064
6. Net book value of Plan assets (Item 4 - Item 5)	19,893,968,839	18,809,948,466
7. Addition to book value for actuarial assets	2,961,174,700	2,316,929,025
8. Actuarial value of assets for actuarial valuation	$ 22,855,143,539	$ 21,126,877,491

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

	Year Ending June 30, 2001 (1)	Year Ending June 30, 2000 (2)
1. Book value, beginning of year	$ 18,044,733,899	$ 16,895,566,936
2. Contributions and receipts during the year		
a. Employee contributions	132,814,291	124,242,416
b. Employer contributions	132,814,291	71,568,212
c. Member reimbursements of employee contributions	37,378,864	34,677,269
d. Member reimbursements of employer contributions	249,153	522,270
e. Other miscellaneous receipts	7,626,142	88,514
f. Total	310,882,741	231,098,681
3. Investment income for the year (net of investment expenses)	1,507,819,089	1,765,664,249
4. Benefit payments		
a. Retirement and disability benefits	(774,642,921)	(672,443,277)
b. Death benefits	(13,402,379)	(13,517,190)
c. Total	(788,045,300)	(685,960,467)
5. Refunds of contributions	(91,824,591)	(64,976,507)
6. Employer adjustments	(56,302,135)	0
7. Administrative expenses	(9,843,046)	(10,775,218)
8. Miscellaneous	(621,210)	0
9. Other		
a. Transfers from Plan	(4,548,877)	(98,941,212)
b. Reimbursements and lump sums	0	17,619,438
c. Transfers to PSPRS	(7,223,188)	(4,562,001)
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	(11,772,065)	(85,883,775)
10. Change in audited assets, beginning of year	0	0
11. Total change in book value	860,293,483	1,149,166,963
12. Book value, end of year	$ 18,905,027,382	$ 18,044,733,899

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

		Year Ending June 30, 2001	Year Ending June 30, 2000
		(1)	(2)
1.	Book value, beginning of year	$ 765,214,567	$ 677,111,508
2.	Contributions and receipts during the year		
	a. Employee contributions	0	0
	b. Employer contributions	56,308,301	52,673,815
	c. Member reimbursements of employee contributions	0	0
	d. Member reimbursements of employer contributions	0	0
	e. Other miscellaneous receipts	0	0
	f. Total	56,308,301	52,673,815
3.	Net investment income for the year	207,918,926	73,080,742
4.	Benefit payments	(40,500,337)	(37,651,498)
5.	Refunds of contributions	0	0
6.	Employer adjustments	0	0
7.	Administrative expenses	0	0
8.	Miscellaneous	0	0
9.	Other	0	0
10.	Change in audited assets beginning of year	0	0
11.	Total change in book value	223,726,890	88,103,059
12.	Book value, end of year	$ 988,941,457	$ 765,214,567

Table 10a

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

Item	2001	2000	1999	1998
(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)	$ 1,915,917,421	$ 4,240,641,488	$ 4,133,055,767	$ 3,245,288,652
b. Market value over book value (beginning of year)	4,240,641,488	4,133,055,767	3,245,288,652	2,751,031,868
c. Unrealized gain/(loss) during the year	(2,324,724,067)	107,585,721	887,767,115	494,256,784
2. Net investment income for year (based on book value)	1,507,819,089	1,765,664,249	1,806,498,727	2,720,897,275
3. Expenses and fees for year	9,843,046	10,775,218	9,932,871	8,386,901
4. Actual net investment income based on market value of assets (Item 1.c. + Item 2 - Item 3)	(826,748,024)	1,862,474,752	2,684,332,971	3,206,767,158
5. Market value of assets, beginning of year	22,285,375,387	21,028,622,703	18,710,866,239	15,857,384,081
6. Contributions during year	310,882,741	231,098,681	281,825,544	247,815,924
7. Benefits paid during year	(788,045,300)	(685,960,467)	(617,919,300)	(566,137,283
8. Refunds paid during year	(91,824,591)	(64,976,507)	(26,089,213)	(29,749,907
9. Expenses for year	0	(10,775,218)	(9,932,871)	(8,386,901
10. LTD management fees for year	0	0	0	0
11. Other changes and net transfers	(68,074,200)	(85,883,775)	(40,415,622)	(47,887,897
12. Expected net investment income at 8%				
a. Market value of assets, beginning of year	1,782,830,031	1,682,289,816	1,496,869,299	1,268,590,726
b. Contributions	12,435,310	9,243,947	11,273,022	9,912,637
c. Benefits	(34,148,630)	(29,724,954)	(26,776,503)	(24,532,616
d. Refunds	(3,672,984)	(2,599,060)	(1,043,569)	(1,189,996
e. Expenses	0	(431,009)	(397,315)	(335,476
f. LTD management fees	0	0	0	0
g. Other	(2,722,968)	(3,435,351)	(1,616,625)	(1,915,516
h. Total	1,754,720,759	1,655,343,389	1,478,308,309	1,250,529,759
13. Excess investment income for year (Item 4 - Item 12.h.)	$ (2,581,468,783)	$ 207,131,363	$ 1,206,024,662	$ 1,956,237,399

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

Item	Plan Year Ending June 30, 2001	2000	1999	1998
(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)	$ 63,030,160	$ 136,961,959	$ 130,647,511	$ 97,492,547
b. Market value over book value (beginning of year)	136,961,959	130,647,511	97,492,547	80,457,701
c. Unrealized gain/(loss) during the year	(73,931,799)	6,314,448	33,154,964	17,034,846
2. Net investment income for year (based on book value)	207,918,926	73,080,742	64,303,662	80,635,108
3. Expenses and fees for year	0	0	0	0
4. Actual net investment income based on market value of assets (Item 1.c. + Item 2 - Item 3)	133,987,127	79,395,190	97,458,626	97,669,954
5. Market value of assets, beginning of year	902,176,526	807,759,019	679,090,567	540,554,248
6. Contributions during year	56,308,301	52,673,815	66,144,982	73,534,074
7. Benefits paid during year	(40,500,337)	(37,651,498)	(34,935,156)	(32,667,709)
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	72,174,122	64,620,722	54,327,245	43,244,340
b. Contributions	2,252,332	2,106,953	2,645,799	2,941,363
c. Benefits	(1,755,015)	(1,631,565)	(1,513,857)	(1,415,601)
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	72,671,439	65,096,110	55,459,187	44,770,102
13. Excess investment income for year (Item 4 - Item 12.h.)	$ 61,315,688	$ 14,299,080	$ 41,999,439	$ 52,899,852

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

Item	Basis of Assets		
	Book Value	Market Value	Actuarial Value
(1)	(2)	(3)	(4)
1. Calculation of unrealized gain (loss) for the year			
a. Market over book, end of year	$ 0	$ 1,915,917,421	$ 2,983,156,284
b. Market over book, beginning of year	0	4,240,641,488	2,247,169,313
c. Unrealized gain (loss) during the year (Item a - Item b)	$ 0	$ (2,324,724,067)	$ 735,986,971
2. Net investment income for the year (including net realized gains and net of investment expenses, based on book income)	$ 1,507,819,089	$ 1,507,819,089	$ 1,507,819,089
3. Administrative expenses for the year	$ 9,843,046	$ 9,843,046	$ 9,843,046
4. Net investment income for the asset valuation method (Item 1c + Item 2 - Item 3 = I)	$ 1,497,976,043	$ (826,748,024)	$ 2,233,963,014
5. Beginning of year asset value			
a. For actuarial purposes	$ 18,044,733,899	$ 22,285,375,387	$ 20,291,903,212
b. Additional investment fund assets netted against investment fund liabilities	465,159,652	465,159,652	465,159,652
c. Total assets (A)	$ 18,509,893,551	$ 22,750,535,039	$ 20,757,062,864
6. End of year asset value			
a. For actuarial purposes	$ 18,905,027,382	$ 20,820,944,803	$ 21,888,183,666
b. Additional investment fund assets netted against investment fund liabilities	285,259,511	285,259,511	285,259,511
c. Total assets (B)	$ 19,190,286,893	$ 21,106,204,314	$ 22,173,443,177
7. Estimated yield based on 2I/(A + B - I)	8.28%	-3.70%	10.98%

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

Item	Basis of Assets: Book Value	Basis of Assets: Market Value	Basis of Assets: Actuarial Value
(1)	(2)	(3)	(4)
1. Calculation of unrealized gain (loss) for the year			
a. Market over book, end of year	$ 0	$ 63,030,160	$ (21,981,584)
b. Market over book, beginning of year	0	136,961,959	69,759,712
c. Unrealized gain (loss) during the year (*Item a - Item b*)	$ 0	$ (73,931,799)	$ (91,741,296)
2. Net investment income for the year (*including net realized gains and net of investment expenses, based on book income*)	$ 207,918,926	$ 207,918,926	$ 207,918,926
3. Administrative expenses for the year	$ 0	$ 0	$ 0
4. Net investment income for the asset valuation method (Item 1c + Item 2 - Item 3 = I)	$ 207,918,926	$ 133,987,127	$ 116,177,630
5. Beginning of year asset value			
a. For actuarial purposes	$ 765,214,567	$ 902,176,526	$ 834,974,279
b. Additional investment fund assets netted against investment fund liabilities	18,307,468	18,307,468	18,307,468
c. Total assets (A)	$ 783,522,035	$ 920,483,994	$ 853,281,747
6. End of year asset value			
a. For actuarial purposes	$ 988,941,457	$ 1,051,971,617	$ 966,959,873
b. Additional investment fund assets netted against investment fund liabilities	11,520,470	11,520,470	11,520,470
c. Total assets (B)	$ 1,000,461,927	$ 1,063,492,087	$ 978,480,343
7. Estimated yield based on 2I/(A + B - I)	26.38%	14.49%	13.54%

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)
1979	$437	$1,252	34.9%	$1,356	32.2%	$3,004	14.5%
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%)

Growth of Covered Payroll and Active Participants

	Active Members		Covered Payroll		Average Salary	
Year Ending June 30,	Number	Percent Increase	Amount in $ Millions	Percent Increase	Amount	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%

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

Year Ending June 30,	New Retirees		New Disabled Members on LTD Program		All Retirees		All Disabled Members on LTD Program	
	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)
1983	1,841	$ 385	--	--	18,842	$ 299	--	--
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

History of Contribution Rates

Fiscal Year Beginning July 1	Calculated Rates		Actual Rates		Total Rate	
	Employee	Employer	Employee	Employer	Calculated	Actual
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1978	7.00	5.77	7.00	7.00	12.77	14.00
1979	7.00	6.34	7.00	7.00	13.34	14.00
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

[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)%

[1] Including LTD management fees prior to 1996.
[2] 401(a) assets and 401(h) 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) (2) - (3)	Funded Ratio	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	10,540	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%)

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

* As a percentage of payroll.

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, 2001
Actuarial cost method	Projected Unit Credit
Amortization method	Level dollar, 16 years grading to 30
Payroll growth rate for amortization	N/A
Remaining amortization period	9 years[1]
Asset valuation method	5-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 $1,692 million as of June 30, 2001

[1] Remaining amortization period as of June 30, 2001 using actual contribution rate of 1.94% (401(a) only).

Summary of the Benefit Provisions of the Retirement Plan as of June 30, 2001

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 an 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 or more	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 which 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 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% for employees with five years of service and increases 10% 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 dependent 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 U 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 at least age 55 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 Increases 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%.

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

1. <u>PUC Funding Method</u>

   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. <u>$12,000 Minimum Average Compensation for Current Retirees</u>

   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. <u>2.0% Ad Hoc COLAs</u>

   - 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 or before June 30, 1989 shall receive a 2.0% permanent benefit increase to their June 30, 1990 base benefit.

4. <u>Early Retirement Window</u>

   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. <u>3.0% Tax Equity Allowance</u>

   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. <u>3.0% Tax Equity Allowance</u>

   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. <u>Recalculation of Retiree Benefits Using 2.0% Benefit Multiplier</u>

   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. <u>2.3% Ad Hoc Increase</u>

   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. <u>Rule of 80</u>

   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. <u>Pop-up Option</u>

   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. <u>3.0% Tax Equity Allowance</u>

   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 members 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 members 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 the valuation and June 30, 2002 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. Minimum LTD Benefit

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

2. Minimum Retiree Benefit

   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. Pop-up Benefit

   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. Excess Investment Earnings COLA

   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. Change in Section 38-737 Funding Period

   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 should cease to be overfunded, the funding period would immediately go to 30-years.

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

1. Change in Maximum Increase Provided by Excess Investment Earnings COLA

   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 recipients 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 1999/2000 fiscal year.

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

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 will increase 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. Increase in Maximum Service While on LTD

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

5. Changes in Permanent Benefit Increase COLA

   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. Health Insurance Premium Benefit Increase

   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. Graded Multiplier

   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 an 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 retried 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 members 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.

Statement of Actuarial Methods and Assumptions Used in Determining Cost (Adopted by Board Action on November 15, 1996) (Effective as of June 30, 1996)

A. Actuarial Assumptions

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

2. Mortality

a. Pre-retirement .... 1983 Group Annuity Mortality Table (with margins, set back one year for males and with no setback for females. Rates at representative ages are shown below.)

	Rates of Mortality (Active)	
Age	Male Participants	Female Participants
20	.000365	.000189
25	.000444	.000253
30	.000572	.000342
35	.000785	.000476
40	.001128	.000665
45	.001932	.001010
50	.003513	.001647
55	.005660	.002541
60	.008384	.004241
65	.013868	.007064
70	.019296	.012385

b. Post-retirement................................ Healthy rates are based on the 1983 Group Annuity Mortality Table with margins, set back one year for males, and with no setback for females. Disabled rates are based on the experience of other large public sector retirement systems through age 82; thereafter Non-Disabled Mortality is assumed. Rates at representative ages are shown below.

	Rates of Mortality			
	Non-Disabled	Disabled	Non-Disabled	Disabled
Age	Male Participants		Female Participants	
20	.000365	.069879	.000189	.053877
25	.000444	.077774	.000253	.054887
30	.000572	.102203	.000342	.076604
35	.000785	.127088	.000476	.107853
40	.001128	.117613	.000665	.113967
45	.001932	.081841	.001010	.075172
50	.003513	.069484	.001647	.051392
55	.005660	.062612	.002541	.045671
60	.008384	.062217	.004241	.036058
65	.013868	.061722	.007064	.027868
70	.019296	.067459	.012385	.024778

3. Disability Rates .... Group long-term disability rates based on the Society of Actuaries 1987 Disability Incidence Study (with a 6-month elimination period). Sample rates are shown below.

	Rates of Decrement due to Disability	
Age	Male Participants	Female Participants
20	.000766	.000978
25	.000851	.001072
30	.000973	.001352
35	.001218	.002004
40	.001689	.002707
45	.002798	.003867
50	.005128	.006081
55	.009644	.009362
60	.014990	.012126

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
					Females 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 (1)	Merit Component (2)	Total Salary Increase* (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 - 23	24	25	30	35+
50	0.000	0.050	0.050	0.050	0.050	0.050	0.050	0.100	0.125
55	0.000	0.050	0.050	0.050	0.060	0.075	0.163	0.188	0.125
60	0.000	0.050	0.090	0.110	0.263	0.238	0.250	0.300	0.300
62	0.000	0.050	0.340	0.340	0.420	0.420	0.440	0.500	0.500
65	0.025	0.050	0.550	0.550	0.550	0.550	0.600	0.600	0.600
66+	0.025	0.100	0.550	0.550	0.600	0.600	0.600	0.600	0.600

7. Future Retirees Eligible for the Health Insurance Premium Supplement

It is assumed 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 Terminated Members Who Will Not Withdraw Their Contributions

It is assumed 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 the employees are assumed to elect to receive the deferred benefit. If the employee is assumed to elect the enhanced refund option then it is also assumed that the employee forfeits the supplement.

Employees who terminate with less than five years of service are assumed to withdraw their employee contributions with interest.

Employees who terminate eligible for early retirement are assumed to commence payments.

B. Actuarial Value of Assets

The actuarial value of assets is equal to the market value of assets less a five-year phase in of the Excess (Shortfall) between expected investment return and actual income with the resulting value not being less than 80% or more than 120% of the market value of assets.

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, 2001 actuarial valuation the period is 16 years.

D. Data for Valuation

In preparing the June 30, 2001 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

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, 2001	As of June 30, 2000	As of June 30, 2001	As of June 30, 2000	As of June 30, 2001	As of June 30, 2000	As of June 30, 2001	As of June 30, 2000
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
State Employees:								
Men	16,319	16,387	45.6	45.3	9.3	9.2	$37,800	$36,590
Women	27,942	27,137	43.1	42.9	7.5	7.4	29,234	28,233
Total	44,261	43,524	44.0	43.8	8.2	8.1	$32,392	$31,380
Teachers:								
Men	14,626	14,471	44.2	43.9	11.2	11.2	$40,604	$39,279
Women	44,527	43,004	43.3	43.1	10.1	10.1	35,330	34,036
Total	59,153	57,475	43.5	43.3	10.4	10.4	$36,634	$35,356
Political Subdivision Employees:								
Men	30,631	29,383	44.7	44.4	7.9	7.9	$34,752	$33,143
Women	57,207	53,542	42.8	42.6	6.2	6.2	23,027	21,963
Total	87,838	82,925	43.4	43.3	6.8	6.8	$27,116	$25,924
All Active Plan Members:								
Men	61,576	60,241	44.8	44.6	9.1	9.0	$36,950	$35,555
Women	129,676	123,683	43.0	42.9	7.8	7.8	28,589	27,536
Total	191,252	183,924	43.6	43.4	8.2	8.2	$31,281	$30,163

Employees in Active Service as of June 30, 2001
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 and Over
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Total	61,576	25,206	13,071	9,455	6,275	4,113	2,467	801	188
Under 20	175	175	0	0	0	0	0	0	0
20 - 24	1,833	1,810	23	0	0	0	0	0	0
25 - 29	4,401	3,897	495	9	0	0	0	0	0
30 - 34	6,120	3,828	1,946	332	14	0	0	0	0
35 - 39	7,123	3,187	2,155	1,394	367	20	0	0	0
40 - 44	8,741	3,104	2,019	1,859	1,297	444	18	0	0
45 - 49	10,122	3,006	2,019	1,811	1,493	1,353	431	9	0
50 - 54	10,811	2,705	1,993	1,838	1,563	1,265	1,219	224	4
55 - 59	7,299	1,951	1,370	1,288	970	721	575	376	48
60 - 64	3,494	966	707	684	465	240	186	156	90
65 and over	1,457	577	344	240	106	70	38	36	46

Employees in Active Service as of June 30, 2001 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 and Over
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Total	129,676	60,723	27,397	18,803	11,713	6,912	3,232	781	115
Under 20	350	350	0	0	0	0	0	0	0
20 - 24	4,568	4,523	45	0	0	0	0	0	0
25 - 29	10,759	9,388	1,353	18	0	0	0	0	0
30 - 34	12,997	7,897	4,258	819	23	0	0	0	0
35 - 39	22,873	15,312	4,168	2,598	753	42	0	0	0
40 - 44	18,257	7,445	4,615	3,251	2,222	702	22	0	0
45 - 49	20,825	6,509	5,030	4,021	2,567	1,976	703	19	0
50 - 54	19,903	4,816	4,136	4,102	3,032	1,986	1,522	308	1
55 - 59	12,352	2,816	2,373	2,562	2,072	1,540	642	300	47
60 - 64	5,117	1,149	1,012	1,112	845	551	284	116	48
65 and over	1,675	518	407	320	199	115	59	38	19

Employees in Active Service as of June 30, 2001
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 and Over
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Total	191,252	85,929	40,468	28,258	17,988	11,025	5,699	1,582	303
Under 20	525	525	0	0	0	0	0	0	0
20 – 24	6,401	6,333	68	0	0	0	0	0	0
25 – 29	15,160	13,285	1,848	27	0	0	0	0	0
30 – 34	19,117	11,725	6,204	1,151	37	0	0	0	0
35 – 39	29,996	18,499	6,323	3,992	1,120	62	0	0	0
40 – 44	26,998	10,549	6,634	5,110	3,519	1,146	40	0	0
45 – 49	30,947	9,515	7,049	5,832	4,060	3,329	1,134	28	0
50 – 54	30,714	7,521	6,129	5,940	4,595	3,251	2,741	532	5
55 – 59	19,651	4,767	3,743	3,850	3,042	2,261	1,217	676	95
60 – 64	8,611	2,115	1,719	1,796	1,310	791	470	272	138
65 and over	3,132	1,095	751	560	305	185	97	74	65

Employees in Active Service as of June 30, 2001 by Annual Salary and by Sex

Annual Salary			Number of Employees	Percent of All Employees	Men	Women
(1)			(2)	(3)	(4)	(5)
Total			191,252	100.0%	61,576	129,676
Less than		$6,000	4,345	2.3	614	3,731
$6,000	-	7,999	4,583	2.4	545	4,038
8,000	-	9,999	5,850	3.1	736	5,114
10,000	-	11,999	6,529	3.4	856	5,673
12,000	-	13,999	6,085	3.2	1,003	5,082
14,000	-	15,999	6,357	3.3	1,283	5,074
16,000	-	17,999	7,083	3.7	1,788	5,295
18,000	-	19,999	8,127	4.2	2,325	5,802
20,000	-	21,999	8,942	4.7	2,552	6,390
22,000	-	24,999	14,012	7.3	4,063	9,949
25,000	-	29,999	27,913	14.6	8,467	19,446
30,000	-	34,999	25,128	13.1	8,546	16,582
35,000	-	39,999	18,969	9.9	7,151	11,818
40,000	-	44,999	13,919	7.3	5,552	8,367
45,000	-	49,999	9,998	5.2	4,209	5,789
50,000 and over			23,412	12.2	11,886	11,526

Employees in Active Service as of June 30, 2001
by Age and by Average Annual Salary

MEN

Age	Employees	Average Annual Salary
(1)	(2)	(3)
Total	61,576	$ 36,950
Under 20	175	9,806
20 - 24	1,833	18,983
25 - 29	4,401	26,930
30 - 34	6,120	31,761
35 - 39	7,123	34,542
8,741	8,741	37,630
45 - 49	10,122	39,907
50 - 54	10,811	42,552
55 - 59	7,299	41,837
60 - 64	3,494	38,938
65 and over	1,457	31,217

Employees in Active Service as of June 30, 2001
by Age and by Average Annual Salary

WOMEN

Age (1)	Number of Employees (2)	Average Annual Salary (3)
Total	129,676	$ 28,589
Under 20	350	9,893
20 - 24	4,568	17,854
25 - 29	10,759	24,729
30 - 34	12,997	26,777
35 - 39	22,873	23,758
40 - 44	18,257	28,581
45 - 49	20,825	31,545
50 - 54	19,903	34,350
55 - 59	12,352	32,989
60 - 64	5,117	30,313
65 and over	1,675	23,766

Employees in Active Service as of June 30, 2001 by Age and by Average Annual Salary

ALL EMPLOYEES

Age (1)	Number of Employees (2)	Average Annual Salary (3)
Total	191,252	$ 31,281
Under 20	525	9,864
20 - 24	6,401	18,177
25 - 29	15,160	25,368
30 - 34	19,117	28,373
35 - 39	29,996	26,319
40 - 44	26,998	31,511
45 - 49	30,947	34,280
50 - 54	30,714	37,237
55 - 59	19,651	36,275
60 - 64	8,611	33,813
65 and over	3,132	27,232

Retirement Benefits Awarded Under Plan
During Year Ended June 30, 2001

BY AGE, AVERAGE MONTHLY AMOUNT, AND SEX

Age on June 30, 2000	Number of Retirees	Average Monthly Amount	Men	Women
(1)	(2)	(3)	(4)	(5)
Total	4,224	$ 1,465	1,769	2,455
Under 55	724	1,934	315	409
56-59	1,134	1,854	452	682
60-64	1,476	1,293	591	885
65-69	687	890	307	380
70-74	148	845	73	75
75-79	45	699	26	19
80-84	8	699	3	5
85-89	1	1,491	1	0
90-94	1	1,627	1	0
95 and over	0	0	0	0

Retirement Benefits in Force on June 30, 2001

BY AGE, AVERAGE MONTHLY AMOUNT, AND SEX

Age on June 30, 2000	Number of Retirees	Average Monthly Amount	Men	Women
(1)	(2)	(3)	(4)	(5)
Total	58,920	$ 1,211	26,079	32,841
Under 55	2,005	1,588	909	1,096
56-59	5,328	1,728	2,279	3,049
60-64	9,085	1,451	3,684	5,401
65-69	12,278	1,238	5,439	6,839
70-74	11,384	1,145	5,350	6,034
75-79	8,763	1,029	4,077	4,686
80-84	5,900	904	2,715	3,185
85-89	2,881	773	1,209	1,672
90-94	1,058	744	360	698
95 and over	238	737	57	181

Retirement Benefits in Force on June 30, 2001

BY YEARS OF SERVICE, AVERAGE MONTHLY AMOUNT, AND SEX

Years of Service	Number of Retirees	Average Monthly Amount	Men	Women
(1)	(2)	(3)	(4)	(5)
Total	58,920	$ 1,211	26,079	32,841
Less than 5	1,338	130	752	586
5-9	9,450	293	4,267	5,183
10-14	12,164	600	4,886	7,278
15-19	10,033	939	3,801	6,232
20-24	10,115	1,414	3,676	6,439
25-29	9,611	2,119	4,859	4,752
30-34	4,891	2,694	3,035	1,856
35-39	1,120	2,956	718	402
40-44	180	2,694	80	100
45 and over	18	2,671	5	13

Retirement Benefits in Force on June 30, 2001

BY MONTHLY AMOUNT AND SEX

Monthly Amount	Number of Retirees	Percent of All Retirees	Men	Women
(1)	(2)	(3)	(4)	(5)
Total	58,920	100.0%	26,079	32,841
Under $100	1,078	1.8%	433	645
$100 – 199	2,941	5.0%	1,106	1,835
$200 – 299	4,172	7.1%	1,576	2,596
$300 – 399	3,819	6.5%	1,477	2,342
$400 – 499	3,643	6.2%	1,390	2,253
$500 – 599	4,208	7.1%	1,501	2,707
$600 – 699	3,253	5.5%	1,275	1,978
$700 – 799	3,455	5.9%	1,280	2,175
$800 – 899	2,902	4.9%	1,186	1,716
$900 – 999	2,874	4.9%	1,099	1,775
$1,000 and over	26,575	45.1%	13,756	12,819

Retirement Benefits in Force on June 30, 2001

BY EMPLOYEE GROUP, AGE AND SEX

	State			Teachers			Political Subdivision		
Monthly Amount	Total	Men	Women	Total	Men	Women	Total	Men	Women
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Total	15,716	8,286	7,430	20,529	7,497	13,032	22,675	10,296	12,379
55 and under	459	235	224	982	383	599	564	291	273
56 – 60	1,073	567	506	2,738	1,040	1,698	1,517	672	845
61 – 64	2,133	1,066	1,067	3,820	1,293	2,527	3,132	1,325	1,807
65 – 69	3,187	1,681	1,506	4,343	1,588	2,755	4,748	2,170	2,578
70 – 74	3,124	1,707	1,417	3,567	1,405	2,162	4,693	2,238	2,455
75 – 79	2,634	1,380	1,254	2,204	929	1,275	3,925	1,768	2,157
80 – 84	1,843	1,006	837	1,508	543	965	2,549	1,166	1,383
85 – 89	913	480	433	809	222	587	1,159	507	652
90 – 94	276	137	139	453	87	366	329	136	193
95 and over	74	27	47	105	7	98	59	23	36

Retirement Benefits in Force on June 30, 2001

BY EMPLOYEE GROUP, YEARS OF SERVICE AND SEX

	State			Teachers			Political Subdivision		
Monthly Amount	Total	Men	Women	Total	Men	Women	Total	Men	Women
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Total	15,716	8,286	7,430	20,529	7,497	13,032	22,675	10,296	12,379
Less than 5	450	269	181	190	80	110	698	403	295
5 – 9	3,165	1,465	1,700	1,412	475	937	4,873	2,327	2,546
10 – 14	3,793	1,647	2,146	2,400	630	1,770	5,971	2,609	3,362
15 – 19	2,791	1,379	1,412	2,885	723	2,162	4,357	1,699	2,658
20 – 24	2,234	1,199	1,035	4,371	1,141	3,230	3,510	1,336	2,174
25 – 29	1,885	1,264	621	5,570	2,455	3,115	2,156	1,140	1,016
30 – 34	1,071	810	261	2,931	1,610	1,321	889	615	274
35 – 39	279	223	56	644	343	301	197	152	45
40 – 44	44	28	16	114	39	75	22	13	9
45 and over	4	2	2	12	1	11	2	2	0

Retirement Benefits in Force on June 30, 2001

BY EMPLOYEE GROUP, MONTHLY AMOUNT AND SEX

	State			Teachers			Political Subdivision		
Monthly Amount	Total	Men	Women	Total	Men	Women	Total	Men	Women
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Total	15,716	8,286	7,430	20,529	7,497	13,032	22,675	10,296	12,379
Under $100	221	108	113	170	48	122	687	277	410
$100 - 199	822	311	511	420	129	291	1,699	666	1,033
200 - 299	1,344	534	810	619	151	468	2,209	891	1,318
300 - 399	1,247	518	729	639	165	474	1,933	794	1,139
400 - 499	1,108	474	634	627	178	449	1,908	738	1,170
500 - 599	1,329	511	818	786	194	592	2,093	796	1,297
600 - 699	1,004	457	547	690	177	513	1,559	641	918
700 - 799	1,011	422	589	908	242	666	1,536	616	920
800 - 899	840	425	415	764	225	539	1,298	536	762
900 - 999	774	367	407	841	196	645	1,259	536	723
1,000 and over	6,016	4,159	1,857	14,065	5,792	8,273	6,494	3,805	2,689