

STATE OF ARIZONA

Joint Legislative Budget Committee

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JIM WARING

1716 WEST ADAMS
PHOENIX, ARIZONA 85007

PHONE (602) 926-5491

FAX (602) 926-5416

<http://www.azleg.gov/jlbc.htm>

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JLBC SUBCOMMITTEE ON ACTUARIAL AUDITS

Tuesday, October 24, 2006

1:30 p.m.

Senate Appropriations Room 109

MEETING NOTICE

- Call to Order
- PRESENTATIONS ON ACTUARIAL AUDITS
 1. Retirement Systems
 2. Employee Health Self-Insurance
 3. Title XIX Capitation Rates
 4. Risk Management
- Public Testimony/Committee Questions

MEMBERS:

Senator Bob Burns, Chairman
Senator Robert Cannell

Representative Tom Boone, Vice-Chairman
Representative Russell Pearce
Representative Linda Lopez

The Chairman reserves the right to set the order of the agenda.

10/2/06

People with disabilities may request accommodations such as interpreters, alternative formats, or assistance with physical accessibility. Requests for accommodations must be made with 72 hours prior notice. If you require accommodations, please contact the JLBC Office at (602) 926-5491.

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DATE: October 17, 2006

TO: Senator Bob Burns, Chairman
Members, Joint Legislative Budget Committee

THRU: Richard Stavneak, Director

FROM: Eric Jorgensen, Fiscal Analyst

SUBJECT: Joint Legislative Budget Committee – Report on Actuarial Review of State Programs

Request

The FY 2006 budget appropriated monies to the JLBC Staff budget to contract with actuarial firms to conduct independent reviews of state-contracted actuarial services. These firms have now completed their reviews and are submitting their findings.

Summary

In most cases, the findings of the reports were favorable. Only in the case of the Public Safety Personnel Retirement System (PSPRS) review, which also includes the Correction Officers Retirement Plan (CORP) and Elected Officials' Retirement Plan (EORP), were serious concerns raised. These concerns were of sufficient severity that the actuary recommended that PSPRS conduct a parallel valuation, or a full replication of the valuations and experience studies for all 3 plans, using an independent third-party actuary.

For the Arizona Department of Administration (ADOA) self-insured employee health program, the findings were generally favorable with some recommendations for improvements to methodology and documentation, as well as setting reserve targets.

The Title XIX programs also received a generally favorable review with recommendations for improved data collection and use and changes to the administration portions of the capitation rates. Findings for the Arizona State Retirement System and the ADOA Risk Management System were favorable, with only minor technical recommendations.

(Continued)

This item is for information only; JLBC Staff recommends, however, that agencies report back to the Committee by March 1, 2007 on the implementation of the recommendations found in the reports.

Analysis

The FY 2006 budget (Laws 2005, Chapter 286) appropriated monies to the JLBC Staff budget to contract with actuarial firms to conduct independent reviews of state-contracted actuarial services. The intent of this appropriation was to provide additional insight to the Legislature regarding state programs where costs are driven in part by actuarial assumptions and rates.

After reviewing the use of actuarial analysis within state government, the JLBC Staff determined that 4 programs had the greatest potential for budgetary impact: the pension systems, the state employee self-funded health insurance program, Title XIX capitation rates, and the state risk management system.

In September 2005, the JLBC Staff released a Request for Proposals (RFP) for actuarial review services in each of the 4 areas. Contracts were subsequently awarded to 4 companies to review existing actuarial assumptions, methods, and conclusions and then report their findings to the Legislature. These companies have now completed their reviews and are submitting their findings. Copies of the full reports for each of the programs reviewed are included in the agenda book. The major findings are reported below:

Pension Systems

The pension system audits were performed by Segal, Inc. The review of the ASRS indicated that “the procedures used by ASRS and its consulting actuary are appropriate and reliable in determining the Plan’s actuarial funding levels.” The audit does provide a few technical recommendations related to increased data reconciliation and improved documentation. In all cases, ASRS either agreed with the recommendations or indicated why they believe the recommendations were no longer relevant, due to plan changes.

The review of the PSPRS, CORP and EORP plans, which are collectively administered by PSPRS, however, produced several concerns. The concerns were of serious enough that Segal recommended an independent parallel audit, or full replication of the valuations and experience studies. This audit would be contracted by PSPRS and is well beyond the scope of the JLBC’s currently retained actuarial services. The Segal review states that the magnitude of the impact on the program funding could not be determined without such a parallel audit.

Among the main findings of concern was a significant difference in the calculation of the liabilities associated with a sample of “test lives.” This indicates that the total liability of the system, and therefore the contribution rate, may not be calculated correctly. Other findings include concerns with actuarial methods, aggressive economic assumptions, outdated mortality tables, and inaccurate statements in the actuarial documentation.

PSPRS has expressed concern with several of these findings. While they agree with some of the findings, they believe them to be largely immaterial in the overall funding of the systems.

(Continued)

Nevertheless, PSPRS indicates that they intend to perform parallel audits to identify the magnitude of the problem and correct any errors, as recommended in the findings.

Self-Insured State Employee Health Plan

Milliman, Inc. reviewed the ADOA-administered employee health insurance program and found that overall “the assumptions and results to be within reasonable and expected ranges,” while also noting some areas for further consideration. Major recommendations are that ADOA should:

- Improve projection and estimate calculations to provide more reliable and credible results.
- Use alternative methods to verify results.
- Document sources for calculations and assumptions, and make general improvements to overall documentation.
- Set explicit targets for reserve and contingency balances. This recommendation is estimated to cost an additional \$63 million.

Milliman recommended that ADOA “estimate the per person premium revenue needed for the future plan year,” whereas ADOA currently set rates by targeting a reserve balance. The finding states that the target method was reasonable in the past, due to lack of experience in the new plan; however, now with 2 years of data, an alternative method should also be employed.

ADOA indicated that they agreed with most of the findings. The main point of concern they have with the findings is the creation of the reserve target. While ADOA does have a goal bringing the reserve equal to at least the Incurred But Not Paid (IBNP) claims, they do not plan on requesting additional funding to meet the 10% contingency reserve, which would cost an estimated \$46 million.

Title XIX Programs

Lewis and Ellis, Inc. reviewed Title XIX capitation rates in the Department of Health Services (DHS), the Arizona Health Care Cost Containment System (AHCCCS), and the Department of Economic Services (DES). The reviewed programs were:

- Behavioral Health Services (DHS)
- Children’s Rehabilitative Services (DHS)
- Acute Care (AHCCCS)
- Arizona Long Term Care System (AHCCCS)
- Comprehensive Medical and Dental Program (AHCCCS)
- Developmental Disabilities (DES)

The reviews of each program were generally favorable, finding that “the overall methodology used in developing the statewide capitation rates is reasonable.” These reviews, however, did include 2 common themes in the audit results. First, encounter data, or actual reports of service to clients, was often missing or in a format that was less useful for trend development and other actuarial calculations. This was sometimes due to problems with the data systems being used and sometimes due to problems with the data received from providers or other sources. Missing encounter data leads to less accurate calculations for the capitation rates.

(Continued)

A second theme was that administration costs were generally calculated as a flat percentage of the capitation rate. This administration component is used in some cases to fund the agency and in other cases to fund providers. The report recommends calculating a separate and actual per member per month administration cost, as administration costs are unlikely to rise at the same rate as medical services. This recommendation is consistent with the current legislative policy of backing out the administration component of the capitation rate for programs such as Behavioral Health Services and Developmental Disabilities.

Each of the 3 agencies responded to the audit findings. AHCCCS generally concurred with the findings and will consider each recommendation in future rate settings. Actual implementation will depend on how the recommendations would affect program costs as well as the availability of AHCCCS's resources to make the recommended changes. DES states that most of the findings more directly impact AHCCCS, but that they will work with AHCCCS to address any concerns. Finally, DHS disagrees with the findings stating they believe funding administration as a flat percentage is reasonable, based on their own comparison to actual administration expenses, and that including trend information in the capitation rate report would be too costly.

Risk Management

The review of ADOA's Risk Management Section found that "overall, the methods applied are consistent with actuarial standards and the assumptions underlying the analyses are reasonable and appropriate." The report did include some recommendations as "enhancements" to the program. These enhancements include improving documentation, developing contingency margins and additional contingency reserves, and considering alternate assumptions or methods that better reflect the program's unique experience.

In ADOA's response to the audit, they indicate that they will discuss each of the recommendations with the actuary who conducts the FY 2007 actuarial reports. The only recommendation with which ADOA had significant concerns was setting caps on the fluctuations of agency rates as it could "erode the ... goal of being responsive to the loss experience of each agency."

RS/EJ:dt
Attachments

JOINT LEGISLATIVE BUDGET COMMITTEE REPORTS ON ACTUARIAL AUDITS OF STATE PROGRAMS

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**ARIZONA STATE
RETIREMENT SYSTEM**

**Audit of the
June 30, 2005 Actuarial Valuation**

Submitted by:
***THE SEGAL GROUP, INC.,
THE PARENT OF THE SEGAL COMPANY
ALL RIGHTS RESERVED***
October 2006

DIRECT DIAL NUMBER
416-969-3968

E-MAIL ADDRESS
tlevy@segalco.com

October 5, 2006

Mr. Richard Stavneak
Director
Arizona Joint Legislative Budget Committee
1716 West Adams
Phoenix, AZ 85007

Re: **Actuarial Auditing Services for the Arizona Joint Legislative Budget Committee
(Arizona State Retirement System June 30, 2005 Actuarial Valuation)**

Dear Mr. Stavneak:

We are pleased to present the results of this limited-scope audit of the June 30, 2005 actuarial valuation. The purpose of this audit is to conduct a review of the actuarial methods and procedures employed by the Arizona State Retirement System. This audit includes the following:

1. ***Report review*** – this report includes a review of the valuation results and how they comply with actuarial standards, and whether such valuation reflects appropriate disclosure information under any required reporting.
2. ***Methods and assumptions review*** – this audit provides an analysis and a review of the actuarial assumptions and methods utilized in determining the funded status and accrued liability as of June 30, 2005.
3. ***Assumptions and test lives review and reconciliation*** – this audit discusses the procedures used to validate the participant data and the test lives selected, with a detailed review of the findings.

This review was conducted under the supervision of Thomas D. Levy, a Fellow of the Society of Actuaries, Member of the American Academy of Actuaries and an Enrolled Actuary under ERISA. This review was conducted in accordance with the standards of practice prescribed by the Actuarial Standards Board.

Mr. Richard Stavneak
October 5, 2006
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The assistance of Buck Consultants, an ACS Company (Buck), Arizona State Retirement System (ASRS), and the Arizona Joint Legislative Budget Committee (JLBC) staff is gratefully acknowledged.

Overall, the results of this audit are quite favorable, and indicate that the procedures used by ASRS and its consulting actuary are appropriate and reliable in determining the Plan's actuarial funding levels.

We appreciate the opportunity to be retained as the independent actuarial auditors for Arizona JLBC and we are available to answer any questions you may have on this report.

Sincerely,

Thomas D. Levy, FSA, FCIA, MAAA, EA
Senior Vice President and Chief Actuary

Susan M. Hogarth, MAAA, EA
Consulting Actuary

/dqm

cc: Brad E. Ramirez, FSA, MAAA, EA

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A **limited scope audit** (actuarial review) of any system is intended to provide an assurance that the liabilities and costs of the Plan are reasonable. The review is not a full replication of the actuarial valuation results, but is a review of the key components in the valuation process that encompass the derivation of the liabilities and costs for the Plan. These key components are the data, the benefits valued, the actuarial assumptions used in the funding, and the asset valuation method employed. The receipt of valuation output for a select group of test lives provides the detail necessary to validate each of these key components.

We reviewed all information supplied to us. We also requested and reviewed additional information provided by the retained actuary. Finally, we considered the reasonableness of the actuarial assumptions and methods in the context of the recently completed experience study and our own experience.

The enhancements we recommend are:

- Confirm duplicates in data with ASRS;
- Thorough review of missing data items, through more detailed data questions and answers between Buck and ASRS;
- Tighten the data reconciliation process;
- Review of loads used for retirees electing the “bounce back” (pop-up) form of payment option, versus actuarial equivalence;
- Make corrections to plan provisions and assumptions summarized in the actuarial valuation report; and
- Add gain/loss by source (demographic) to actuarial valuation report.

The valuation data used by the retained actuary appears both accurate and complete when compared to the Plan records. However, we suggest additional items should be included in the data request. We also verified that certain aspects of a select group of sample test life calculations are reasonable.

With respect to the other aspects of this limited scope actuarial audit, we found the following:

- Benefits projected in the sample test life group match stated plan provisions in the actuarial valuation report;
- Actuarial assumptions are within industry norms; and
- Funding and asset valuation methods are consistent with those employed in other public sector plans.

Conclusion

This actuarial valuation audit validates that the methods and assumptions employed are within the norms. We were able to match all test life results with a very high degree of accuracy. While we found some anomalies in the calculations, as disclosed in this audit report, they are minor or negligible in their impact on the Plan.

Such favorable audit findings, however, do not mean the plan is free from risk. The Funded Ratio for the Plan as of June 30, 2005 was 86% for the 401(a) Plan and 71% for the 401(h) Plan. The 401(a) Plan is within the average of public sector plans. The 401(h) supplements are fixed dollar supplements, not tied to pay, and will not increase except through legislative action. This means the 401(h) portion of the Plan will have improving ratios, even if investment returns do not exceed 8.00%, whereas the 401(a) ratios will diminish unless returns exceed 8.00%.

This audit validates the findings of the 2005 actuarial valuation and also supports the funding concerns raised in that valuation.

PURPOSE, SCOPE AND METHODOLOGY OF THE AUDIT

Purpose of the Audit

The Arizona Joint Legislative Budget Committee (JLBC) retained consulting services to determine whether the actuarial procedures and methods used by Arizona State Retirement System (ASRS) and the retained actuary are valid and appropriate to properly value the Plan's retirement benefits. The Arizona JLBC requested a review of the reasonableness of the consulting actuary's conclusions and the conformance of their work with generally accepted actuarial standards and practices. Finally, the Arizona JLBC asked for recommendations of how the Plan can improve procedures for estimating the required level of funding.

Scope of the Audit

This actuarial audit has a specified, limited scope in its review. A full scope audit would include performing the 2005 actuarial valuation from start to finish; in essence, a parallel valuation. This limited scope audit reviews the valuation already performed, through reviewing the benefits, assumptions and methods, without a full replication of the actuarial valuation results. This review is conducted through analyzing detailed output of certain select test lives from the membership group.

In not performing a full parallel valuation, the following implicit assumptions are made:

- The actuary's valuation system is accurately applying each assumption as stated;
- The actuary's valuation system is properly allocating the present value of benefits between normal cost and actuarial accrued liability; and
- The actuary's valuation system is "adding" together liabilities appropriately for each decrement, for each member, and over the entire population (meaning no segment is being "dropped off" and no particular liabilities are being omitted).

What a limited scope audit can provide is:

- Assurance that appropriate benefits are being valued;
- Confirmation that the valuation system is accurately applying assumptions to the test lives;
- A measurement of actuarial assumptions against a peer group and hence an assessment of their reasonableness;
- Confirmation that the program is valuing benefits as stated in the valuation report;
- A review of the reasonableness of actuarial funding and asset valuation methods; and
- An understanding as to whether there are any indications that the liabilities and contribution rates shown are not reasonable or are incorrectly calculated.

The purpose of this audit is to express an opinion regarding the reasonableness or accuracy of the actuarial assumptions, methods, valuation results, and contribution rates. The limited-scope review is not the same as an actuarial valuation, but represents a “second opinion” of the findings and processes included in the valuation.

Methodology of the Audit for the 2005 Actuarial Valuation

The overall objective of the valuation audit is to ascertain whether, on a long-term basis, the benefit promises can be supported by the existing assets and anticipated contributions to the Plan.

The measurement of the reasonableness of the funding levels encompass three key analyses:

- A verification of the benefits being projected for future payment;
- A verification of the appropriateness of the actuarial assumptions that are used in calculating the liability; and
- A verification of the appropriateness of the funding and asset valuation methods.

Benefits Analysis

Critical to projecting accurate benefits is receiving complete and accurate data. We reviewed the process by which data is prepared for the actuarial valuation, including:

- An assessment of the completeness of the data; and
- A review of the data screening process employed.

We compared our benefit calculations and projections through the test life review with Buck’s and have noted the differences. We also tested that the benefits projected are consistent with governing provisions.

Assumptions Analysis

The second critical component in assessing the reasonableness of the funding levels is in the selection and the application of the actuarial assumptions. With respect to the selection of assumptions, we:

- Examined individual test life calculations; and
- Verified that the assumptions used in the calculations are accurately described in the valuation report.

Methods Analysis

The third component in assessing funding levels is the selection and application of the actuarial cost method (including the method for amortizing the unfunded actuarial accrued liability) and the asset valuation method (including smoothing techniques). We:

- Compared the methods against those used in the industry norm; and
- Provided an assessment of the appropriateness for the Plan.

VALIDATION OF BENEFITS VALUED

Data Used in the Valuation

The ASRS staff supplies the participant data to the retained actuary. We obtained data from ASRS and compared the counts of members to the counts used by the actuary in the valuation report. The counts for all members matched the counts shown in the actuarial valuation report.

The data steps used by Buck for their data reconciliation with ASRS are as follows:

➤ **Active and Inactive Data:**

- 1) Match with last year's active data to identify terminations and new members during the year;
- 2) Refunds, Deaths and Transfers are identified based on the "Dropcode" in the data supplied by ASRS;
- 3) Match with Retired data to identify new retirements; and
- 4) Match with LTD data to identify new disabilities.

➤ **Pay Status Participant Data:**

- 1) Match with last year's Retired data to identify "retired left" and new retirees during the year;
- 2) Deaths are identified based on the "Retirement Status" in the data supplied by ASRS; and
- 3) Match with Active/Inactive/LTD data to identify new retirements.

We recommend the data reconciliation process should be tightened up and counts verified between Buck and ASRS.

We reviewed the data questions and answers between Buck and ASRS, and also the assumptions made for missing data. We noticed that roughly 5.6% of the actives were missing birth date and gender, and were filled with an assumption of average age and gender of the active population. Roughly 15.5% of the inactives were missing birth date and gender, hence assumptions were made to fill the data with average age and sex of the inactive group. For pay status participants, 159 retirees with a Joint and Survivor option were missing beneficiary birth date, which was filled with the spouse age assumption and 17,304 beneficiaries did not have a gender code and were filled with the opposite gender of the retiree. We are aware that ASRS is in the process of requesting missing data from employers through the Data Integrity Correction Project. We recognize this is a step towards receiving more accurate data, and recommend Buck and ASRS continue communicating to receive actual data, as assumptions for missing data can impact the liabilities for the Plan.

During the data review process, we noticed duplicate records were provided in Buck's data. These duplicate records were included in the counts shown in the valuation report, since our counts matched the valuation report, including these duplicate records. We recommend a more detailed data processing

and reconciliation confirmation be performed during the next actuarial valuation to identify all duplicates and the proper records to be valued.

Data Risk Element

Continuing to include duplicate records on data files will increase the costs of the Plan. Maintaining duplicate records will result in double counting records and add to liabilities. We recommend a review of duplicate records and the cost impact to the Plan.

A thorough review of missing data items should be conducted through Buck and ASRS. Assumptions on missing data currently made could be impacting the funding of the Plan.

In testing the data between ASRS and Buck, the match would indicate the actuary is projecting liabilities and costs on ASRS's set of complete data. The confirmation of missing data and duplicates mentioned above further illustrates how the liabilities and costs tie directly to the information provided by ASRS. This accurate data will lead to accurate liabilities and minimize gains and losses to changes in data.

Projected Benefits in the Valuation

Benefits are projected for each potential benefit payable from the Plan. We tested the normal retirement, early retirement, withdrawal, death and disability benefits against the provisions as stated in the actuarial valuation report.

We reviewed the detailed calculations for a selected group of test lives to determine whether Buck correctly projected plan benefits and whether the costs and liabilities were determined in accordance with the Plan's stated methods and assumptions. We requested specific test lives in order to compare the benefit amounts projected in the valuation against our understanding of the Plan's benefits summarized in the state statutes.

The following is a list of recommended analysis of the actuarial liabilities:

- *For retirees who have elected a Joint and Survivor (J&S) form of payment, Buck has increased liabilities by 18.00% (termed as a "load" to liabilities) for those electing 100% J&S, a 12.00% load for 66.67% J&S and 9.00% load for 50% J&S. These loads are included to approximate the "bounce-back" (pop-up) provision upon death of the spouse. We recommend a review of these loads versus actuarial equivalence.*

The following is a list of suggested changes/corrections to the actuarial valuation report:

- *We reviewed the Retiree Health Insurance Premium Supplement for current retirees, through our test use review, and matched Buck's present value of benefits. (We are currently reviewing this benefit for future retirees.)*

The test life comparison exhibit on the next page summarizes the calculations performed by Segal and Buck, and shows the differences by each decrement in the present value of benefits calculation.

ARIZONA STATE RETIREMENT SYSTEM
JUNE 30, 2005 VALUATION
TEST LIFE COMPARISON

ACTIVES:	Active (Young)		Active (Hired 25 - 35)		Active (Hired 52 - 54)		Active (Hired 55 - 70)	
	Buck	Segal	Buck	Segal	Buck	Segal	Buck	Segal
Present Value of Benefits								
CURRENT AGE:								
Death	\$80	\$79	N/A	N/A	N/A	N/A	N/A	N/A
Disability	68	70	N/A	N/A	N/A	N/A	N/A	N/A
Withdrawal	1,575	1,556	N/A	N/A	N/A	N/A	N/A	N/A
Retirement	1,334	1,348	42,554	42,953	73,896	74,817	32,499	32,958
Total PVB (Current Age)	\$3,057	\$3,053	\$42,554	\$42,953	\$73,896	\$74,817	\$32,499	\$32,958
Ratio of Segal/Buck								
Present Value of Benefits:								
CURRENT AGE:								
Death		98.75%		N/A		N/A		N/A
Disability		102.94%		N/A		N/A		N/A
Withdrawal		98.79%		N/A		N/A		N/A
Retirement		101.05%		100.94%		101.25%		101.41%
Total PVB (Current Age)		99.87%		100.94%		101.25%		101.41%

Inactives	Retiree 1: Life Only		Retiree 2: 100% Joint & Survivor		Retiree 3: 66.67% Joint & Survivor		Retiree 4: 50% Joint & Survivor	
	Buck	Segal	Buck	Segal	Buck	Segal	Buck	Segal
Total PVB	\$497,402	\$499,280	\$549,948	\$550,220	\$28,715	\$28,548	\$69,443	\$70,636
Ratio of Segal/Buck								
Total PVB		100.38%		100.05%		99.42%		101.72%

Inactives	Retiree 5: 5 yr Certain & Life		Retiree 6: 10 yr Certain & Life		Retiree 7: 15 yr Certain & Life		Deferred Vested	
	Buck	Segal	Buck	Segal	Buck	Segal	Buck	Segal
Total PVB	\$160,462	\$160,478	\$117,751	\$118,279	\$32,281	\$32,226	\$89,096	\$88,646
Ratio of Segal/Buck								
Total PVB		100.01%		100.45%		99.83%		99.49%

Inactives	Beneficiary		Disabled		Retiree <65 w/health supplement		Retiree >65 w/health supplement	
	Buck	Segal	Buck	Segal	Buck	Segal	Buck	Segal
Total PVB	\$206,276	\$207,890	\$34,031	\$34,176	\$16,771	\$16,833	\$14,880	\$14,888
Ratio of Segal/Buck								
Total PVB		100.78%		100.43%		100.37%		100.06%

VALIDATION OF ACTUARIAL ASSUMPTIONS EMPLOYED

As part of our review of the actuarial assumptions, we have confirmed the current set of assumptions are not unreasonable and not outside the public sector norm.

We reviewed the economic and demographic actuarial assumptions adopted by the Plan against generally accepted actuarial standards and practices contained in Actuarial Standard of Practice No. 27 covering economic assumptions and Actuarial Standard of Practice No. 35 covering demographic and non-economic assumptions, and have found them to be within the confines of the standards.

VALIDATION OF FUNDING AND ASSET VALUATION METHODS

Funding Method for Liabilities

The projected unit credit method is being used in this valuation. This method is less common among public sector plans, but is a reasonable and appropriate method.

We spot-checked the liability calculation for one active member, one deferred vested participant, ten retirees, one beneficiary, and one disabled participant to verify projected annual benefits. We did not run a “parallel” valuation, which is beyond the scope of this audit.

Asset Valuation Method

An actuarial asset valuation method is commonly used to smooth year-to-year fluctuations in the market value of assets, which helps stabilize the calculated contribution rate from year to year. The current method employed by the Plan in determining the actuarial value of assets is one that recognizes market gain and loss fluctuations over a ten-year period.

It is common to have gains and losses smoothed over a period of three to five years, although some plans are moving to a longer period. Just as is done here, many plans first calculate the assumed return based on the actuarial valuation interest rate (8.00% in this case) and then smooth any returns that differ from the assumed rate. Thus, if the Plan earns the assumed rate, no smoothing is needed. As of June 30, 2005, the smoothed value is 108% of the market value, hence the actuarial value of assets exceed market value. Therefore, deferred losses must be made up as well as the actuarial assumed rate, in order to avoid further losses. This means the Plan has to earn in excess of 8.00% in order to maintain a stable contribution rate.

It is unclear if there is a threshold corridor, which minimizes actuarial value of asset volatility, limiting the difference between the actuarial value of assets and market value of assets. A typical corridor would guarantee that the actuarial value is always between 80% and 120% of the market value, regardless of the smoothing method calculation. We recommend reviewing the installation of a corridor and providing the corridor information in the actuarial valuation report, if applicable.

Amortization of the Unfunded Accrued Liability (UAL)

The overriding question for the Arizona State Retirement System is “how adequate are the contribution rates for funding the promised benefits?” Since benefits are established by state statute, one measure of the adequacy is in the period required to pay off the unfunded accrued liability of the Plan. GASB sets forth recommendations that the maximum acceptable amortization period should not exceed 40 years (30 years for actuarial valuations beginning June 15, 2006).

As of the June 30, 2005 actuarial valuation, the period required to pay the unfunded accrued liability is an open 30-year period on a level dollar basis. This period for amortization is GASB compliant as of the June 30, 2005 valuation date.

The funded ratio for the Plan as of June 30, 2005 was 86% for the 401(a) Plan and 71% for the 401(h) Plan, on an actuarial value of asset basis. The 401(a) Plan is within the average of public sector plans.

CONCLUSIONS

This limited scope audit reviewed the data used, the benefits valued, and the actuarial methods and assumptions employed in the June 30, 2005 actuarial valuation. The sample lives provided by the actuary reflect the plan provisions of the Plan as stated in the 2005 actuarial valuation. These sample lives also demonstrate that application of the projected unit credit funding method and the actuarial assumptions were applied as stated in the valuation. The actuarial assumptions, methods, and procedures are reasonable, and reflect the benefit promises and actual experience of the Plan members.

The Arizona JLBC has asked for suggestions to consider in the ongoing valuation of the Plan. We suggest:

Data

- Review duplicate records: Maintaining duplicate records will double count liabilities and increase the costs of the Plan. We recommend a review of duplicate records and the cost impact to the Plan.
- Enhance data request: Receiving accurate and detailed census data is essential in correctly calculating liabilities. We recommend that Buck work with ASRS to obtain accurate data.
- Tighten the data reconciliation process: To the extent that incorrect records are valued, liabilities and contribution rates could fluctuate. We recommend a more comprehensive reconciliation process to avoid changes in these liabilities.
- Missing data: Making assumptions for missing data can alter plan costs; hence obtaining complete data is key to calculating accurate liabilities. We realize ASRS is working on receiving accurate data from employers through the Data Integrity Correction Project, and recommend that Buck and ASRS continue to communicate during this process.

Benefits

- “Bounce Back” (Pop-Up) load: Review the loads used for retirees electing the “Bounce Back” (Pop-Up) form of payment option, versus actuarial equivalence.

Assumptions

- Corrections to Provisions and Assumptions in Actuarial Valuation Report: The actuarial valuation report should be corrected for the following provisions and assumptions:
 - Provide threshold corridor for actuarial value of assets, if applicable; and
 - Summarize “Bounce Back (Pop-Up) assumptions.

Report

- Add gain/loss by source (demographic) analysis to actuarial valuation report: We recommend an analysis of gain/loss by source (demographic) be provided in the June 30, 2006 valuation report, which summarizes the experience between actual decrements versus expected decrements, as well as other sources of gains and losses.

- ❑ Review duplicate records. Advise Buck to meet with ASRS to confirm these records.
- ❑ Enhance data request to include more detailed data. Buck to work with ASRS regarding additional and/or accurate data fields.
- ❑ Thorough review of missing data. Buck work with ASRS regarding actual data items through the Data Integrity Correction Project.
- ❑ Tighten the data reconciliation process. Advise Buck to meet with ASRS to reconcile counts and records used in the data process.
- ❑ “Bounce Back” (Pop-Up) assumption loads for retirees. We recommend Buck review these loads versus actuarial equivalence.
- ❑ Make corrections to Plan provisions and assumptions summarized in the actuarial valuation report.
- ❑ Add gain/loss analysis by source (demographic) to actuarial valuation report.

**ARIZONA STATE
RETIREMENT SYSTEM**

**Audit of the
Experience Study for the Five-Year Period
Ended June 30, 2002**

Submitted by:

***THE SEGAL GROUP, INC.,
THE PARENT OF THE SEGAL COMPANY
ALL RIGHTS RESERVED***

October 2006

DIRECT DIAL NUMBER
416-969-3968

E-MAIL ADDRESS
tlevy@segalco.com

October 5, 2006

Mr. Richard Stavneak
Director
Arizona Joint Legislative Budget Committee
1716 West Adams
Phoenix, AZ 85007

Re: **Actuarial Auditing Services for the Arizona Joint Legislative Budget Committee
(Arizona State Retirement System Actuarial Experience Study for the Five-Year Period
Ended June 30, 2002)**

Dear Mr. Stavneak:

We are pleased to present the results of this limited-scope audit of the experience study for the five-year period ended June 30, 2002. The purpose of this audit is to conduct a review of the actuarial methods and procedures employed by the Arizona State Retirement System. This audit includes the following:

1. ***Data review*** – assesses the consistency and reasonableness of the data used in the study.
2. ***Methods review*** – provides an analysis and a review of the methods utilized in the experience study.
3. ***Recommendation review*** – discusses the reasonability of recommended assumptions and methods based upon the results of the study, and whether the report reflects appropriate disclosure information under any required reporting.

The review of this audit was conducted under the supervision of Thomas D. Levy, a Fellow of the Society of Actuaries, Member of the American Academy of Actuaries and an Enrolled Actuary under ERISA. This review was conducted in accordance with the standards of practice prescribed by the Actuarial Standards Board.

The assistance of Buck Consultants, an ACS Company (Buck), Arizona State Retirement System (ASRS), and the Arizona Joint Legislative Budget Committee (JLBC) staff is gratefully acknowledged.

Overall, the results of this audit are quite favorable, and indicate that the procedures used by ASRS and its consulting actuary were appropriate and reliable in studying the actuarial experience of the Plan.

We appreciate the opportunity to be retained as the independent actuarial auditors for Arizona JLBC and we are available to answer any questions you may have on this report.

Sincerely,

Thomas D. Levy, FSA, FCIA, MAAA, EA
Senior Vice President and Chief Actuary

Brad Ramirez, FSA, MAAA, EA
Consulting Actuary

/dqm

cc: Susan M. Hogarth, MAAA, EA

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An experience study should compare the actual and expected occurrences for each of the decrements. A decrement is defined as change in status during a one-year period. The decrements analyzed in the experience study report and reviewed during this audit are withdrawal, retirement, death and disability. Results in the experience study should be grouped in a reasonable way. If the groups are too large, the amount of data will obscure trends that may exist within the group. If the groups are too small, the study will yield results that are not credible. Five-year age groups were used in the experience study, which is a reasonable grouping structure.

Furthermore, data should also be grouped by gender when the underlying assumption is gender-based. The Plan's gender-based assumptions are healthy mortality and disabled mortality. For these decrements, the experience study data was grouped by gender.

A **limited scope audit** (actuarial review) of any experience study is intended to provide an assurance that the methodology and recommendations of the study are reasonable. The review is not a full replication of the experience study results, but is a review of the key components in the study process that encompass the derivation of the recommendation of assumptions and methods. These key components are the data, the methods used in the study, and the recommendations and conclusions that are drawn.

We reviewed all information supplied to us. We also requested and reviewed additional information provided by the retained actuary. Finally, we considered the reasonableness of the recommended actuarial assumptions and methods in the context of Segal's experience.

PURPOSE, SCOPE AND METHODOLOGY OF THE AUDIT

Purpose of the Audit

The Arizona Joint Legislative Budget Committee (JLBC) retained consulting services to determine whether the experience study procedures and methods used by Arizona State Retirement System (ASRS), which will be termed “the Plan”, and the retained actuary are valid and appropriate to evaluate the Plan’s valuation assumptions and methods. The Arizona JLBC requested a review of the validity of the data used by the actuary and the conformance of their work with generally accepted actuarial standards and practices.

Scope of the Audit

This experience study audit has a specified, limited scope in its review. A full scope audit would include performing the five-year experience study from start to finish; in essence, a parallel study. This limited scope audit reviews the study already performed, through reviewing the data, assumptions and methods, without a full replication of the experience study results. This review is conducted through analyzing detailed output of the experience study results.

In not performing a full parallel experience study, the following implicit assumptions are made:

- The experience study is accurately applying the current assumptions as stated;
- The experience study is properly measuring exposures for each decrement (e.g., timing of decrements during the year); and
- The valuation system is “adding” together probabilities appropriately for each decrement, for each member, and over the entire population (meaning no segment is being “dropped off” and no particular probabilities are being omitted).

What a limited scope audit can provide is:

- Assurance that appropriate assumptions and methods are being evaluated as part of the study;
- Confirmation that the correct data was used over the study period;
- Confirmation that the exposures and counts are placed in the appropriate “bucket” (year);
- A review of the reasonableness of the experience study process; and
- An understanding as to whether there are any indications that the recommendations shown are not reasonable or are incorrectly calculated.

The purpose of this audit is to express an opinion regarding the reasonableness of the data, methods, and recommendations in the experience study. The limited-scope review is not the same as an experience study, but represents a “second opinion” of the findings and processes included in the study.

Methodology of the Audit

The overall objective of the experience study audit is to ascertain whether the analysis of the assumptions and methods was reasonable and performed in accordance with the principles and practices prescribed by the Actuarial Standards Board.

The measurement of the reasonableness of the experience study encompass three key analyses:

- A verification of the data used in the study;
- A verification of the methodology used in the study; and
- A verification of the appropriateness of the study recommendations based upon the study's results.

Data Analysis

Critical to performing the analysis is receiving complete and accurate data. We reviewed the data used in the experience study, including:

- An assessment of the consistency of the data, with the data used in the actuarial valuations during the study period; and
- A review of the reasonableness of the data used.

Methodology Analysis

The second critical component in assessing the reasonableness of the experience study results is in the methodology used in the analysis of valuation assumptions and methods, we:

- Examined the calculations used to evaluate the accuracy of the valuation assumptions and methods; and
- Verified that no significant valuation assumptions or methods were omitted from the study.

Recommendations Analysis

The third component is assessing the recommendations of the experience study. We:

- Verified that the recommendations of the study were consistent with the results of the analysis; and
- Checked that the recommendations were appropriate and reasonable based upon generally accepted actuarial standards and practices.

VALIDATION OF DATA USED

The data used in the experience study should be the same as the data used in each of the annual actuarial valuations over the study period. If the decrement counts are not the same, the experience study conclusions will not be accurate for the period of study and may yield incorrect results. This inaccuracy can occur because the rates for the decrements (withdrawal, retirement, death and disability) would be applied to the incorrect set of data.

We compared the totals of the occurrences of each of the decrements in each of the annual actuarial valuation reports with the totals reported in the experience study report. The valuation totals matched the totals reported in the experience study exhibits almost exactly. In the cases where the totals did not match exactly, the differences were not large enough to have a significant effect on the results of the analysis. This means the valuation and experience study data are consistent with each other and the rates for the decrements are being applied to the appropriate aged-group cells.

In this audit, we will be examining the development of the rates for each decrement. A rate is developed from an experience study by looking at “counts” (number of actual occurrences for each decrement during the one-year period) divided by “exposures” (number of records expected to be exposed to each decrement during the one-year period). This validates that the counts are consistent with those used in the valuation, confirming the consistency between the rates and their application of the valuation. Without this consistency there would be perpetual gain or losses, due to the timing of the application of these rates (allocated to incorrect buckets).

VALIDATION OF METHODOLOGY EMPLOYED

The experience study report reviewed during this audit showed the ratio of actual and expected occurrences for each decrement, but did not show the actual counts by age. Counts by age are useful to show the number of occurrences and allows the reader to judge the credibility of the results. Future experience study reports should include counts as well as actual/expected ratios.

To further verify that the methodology used in the study was reasonable, we analyzed the exposures used in calculating the actual and expected rates. Using the rates given in the experience study report and the totals by decrement (withdrawal, retirement, death and disability) reported in the valuation reports over the study period, we were able to derive the exposures used in calculating the actual and expected rates. Based on our calculations, we conclude that the exposures were calculated in a reasonable manner.

In our opinion, the methods used in the experience study were reasonable. Furthermore, the experience study was performed in accordance with generally accepted actuarial standards and practices.

VALIDATION OF RECOMMENDATIONS MADE

An experience study should yield recommendations that are consistent with the underlying results of the study. The recommendations should also be consistent with generally accepted actuarial standards and practices.

The experience study performed by the retained actuary yielded the following recommendations:

Active Mortality: Change the healthy (pre-retirement) mortality table from the 1983 Group Annuity Mortality Table with Margins (set back one year for males) to the 1994 Group Annuity Mortality Static Table (projected to 2005 with scale AA). This recommendation is consistent with the results of the study and reasonable based upon current generally accepted actuarial standards and practices. This change was approved for future valuations.

Active Disability: Reduce rates. This recommendation is consistent with the results of the study and reasonable based upon current actuarial standards of practice. This change was approved for future valuations.

Active Withdrawal: No change recommended. The overall actual/expected ratios are greater than 100% (meaning the Plan is currently taking regular gains since the members are terminating faster than assumed) at almost every combination of age and service, indicating that changes to the assumptions may be warranted. While it is true that withdrawal rates are often affected by economic conditions, more explanation is needed as to why and how these economic conditions would affect withdrawal over the study period. Furthermore, if there is a pattern of inactive members returning to active service, an explicit assumption (or adjustment to the current withdrawal assumptions) should be considered.

Active Retirement: Increase rates for higher service employees, decrease rates for lower service employees. This recommendation is consistent with the results of the study and reasonable based upon current generally accepted actuarial standards and practices. This change was approved for future valuations.

Retired Mortality: Change the healthy (post-retirement) mortality table from the 1983 Group Annuity Mortality Table with Margins (set back one year for males) to the 1994 Group Annuity Mortality Static Table (projected to 2005 with scale AA). This recommendation is consistent with the results of the study and reasonable based upon current generally accepted actuarial standards and practices. This change was approved for future valuations.

Disabled Mortality: Reduce rates. This recommendation is consistent with the results of the study and reasonable based upon current generally accepted actuarial standards and practices. Further, recent developments indicate disability is not impairing life expectancy as much as previously thought. This change was approved for future valuations.

Purchase of Service Assumption: Load credited service by 2.15%. While using a percentage load on service is a reasonable method to approximate the value of service purchases, it is unclear how this amount is derived. More explanation is necessary to verify that the adjustment is reasonable. (This assumption could also be backtested in the next experience study.)

Health Insurance Premium Supplement Eligibility: No change recommended. Based upon the table, recent experience may suggest lowering the 75% eligibility assumption and 60% dependent assumption. We recommend continued monitoring of these assumptions.

Inflation Assumption: No change recommended. The 4.25% inflation assumption is at the high end of the reasonable range in light of the data presented. We agree that this assumption should be reviewed in conjunction with the other economic assumptions.

Investment Return Assumption: No change recommended. The 3.75% real rate of return assumption is conservative based upon the target asset allocation. We agree that this assumption should be reviewed in conjunction with the other economic assumptions.

Salary Increase Assumption: No change recommended. Recent experience indicates that the salary increase assumption should be increased. We agree that this assumption should be reviewed in conjunction with the other economic assumptions.

CONCLUSIONS

This limited scope audit reviewed the data used, the methodology, and the recommendations employed in the Report on the Actuarial Experience Study for the Five-Year Period Ended June 30, 2002 by the retained actuary.

Our observations are as follows:

- The data used by the actuary was valid and consistent with the actuarial valuations over the study period.
- The experience study procedures were performed in accordance with principles and practices prescribed by the Actuarial Standards Board.
- Future experience study reports should show counts by age groups for each of the decrements.
- The data appears to support increasing withdrawal rates. More explanation is needed as to how economic conditions have affected withdrawals over the study period.
- An explicit assumption (or explicit adjustment on the current withdrawal rates) should be considered in order to properly value inactive withdrawals that return to active service.
- More explanation is needed on the derivation of the adjustment used to value service purchases.
- The data would appear to suggest a decrease in the assumption for the future retirees eligible for the health insurance premium supplement
- The economic assumptions in total are within reasonable ranges, but when viewed separately each assumption may be on the edges of the reasonable ranges based on the findings indicated in the original experience study. The inflation assumption is on the high end of the reasonable range. The real rate of return assumption is low based upon the target asset allocation. The salary increase assumption could be raised based upon the experience shown. All of the economic assumptions should be reevaluated to make sure that they are individually reasonable and consistent with each other.

Recommendations

The experience study is thorough, consistent and meets the standards with the Actuarial Standards Board. We found no areas of risk, and our recommendations reflect areas for ongoing improvement.

Since the experience study was performed based upon data that is almost four years old, we do not recommend that the results of this study be updated. However, we recommend that the Plan's next scheduled experience study reflect these changes.



ARIZONA STATE RETIREMENT SYSTEM

3300 NORTH CENTRAL AVENUE • PO BOX 33910 • PHOENIX, AZ 85067-3910 • PHONE (602) 240-2000

7660 EAST BROADWAY BOULEVARD • SUITE 108 • TUCSON, AZ 85710-3776 • PHONE (520) 239-3100

TOLL FREE OUTSIDE METRO PHOENIX AND TUCSON 1-800-621-3778

contactus@asrs.state.az.us

Paul Matson
Director

October 5, 2006

Mr. Richard Stavneak
Director
Joint Legislative Budget Committee
State of Arizona
1716 West Adams
Phoenix, AZ 85007



Dear Mr. Stavneak:

RE: The ASRS Perspective on the Audit of Actuarial Services by The Segal Group, Inc.

As you requested, I have reviewed the draft reports that you provided on Segal's audits of the ASRS 2002 actuarial experience study and our 2005 valuation of the Plan, and offer the following comments:

Experience Study

General Comments

The most important finding is in the penultimate paragraph of the cover letter, which says:

“Overall, the results of this audit are quite favorable, and indicate that the procedures used by ASRS and its consulting actuary were appropriate and reliable in studying the actuarial experience of the Plan.”

As you know, statutes require the ASRS to perform experience studies every five years, and the last study ran from July 1, 1997, to June 30, 2002. Some of the questions Segal raises with respect to the 2002 study will not be relevant for the 2007 study, and others will be addressed in the study which will run through June 30, 2007.

Specific Comments

Segal recommends including counts as well as ratios of actual-to-expected decrements. Where these counts were not shown in the last study, we plan to have them added in the next study.

Segal asks why the withdrawal rates were not increased. There are two reasons. The first is that ASRS members often withdraw and then return to service. When the number of withdrawals are offset by the number returning to service, the actual-to-expected ratios are close to one. The second is that it was anticipated that lower levels of withdrawal would occur in the five-year period following the study than were experienced in the previous five years because of changes in the economy – withdrawal rates tend to be higher in times of low unemployment and vice versa. Again, it is expected that the picture will be clearer when the next five-year study is completed.

Segal asks to see the derivation of the assumption relating to the cost of future service purchases. While we have provided that derivation to Segal, it is no longer relevant. As you are aware, the 2004 legislature changed the cost basis for service purchases from the average normal cost method to the actuarial present value method. As a result of this change, there is no longer a need for this assumption, and it has been removed in the 2004 and later valuations.

Segal asks why the assumption relating to future eligibility for health supplements was not changed. As you know, the amounts of health supplements were increased and rural supplements were introduced in 2001 – the middle of our experience study period. It was determined that there not enough experience with the latest health plan design to justify changing assumptions. We plan to have this issue reviewed in the next study to determine whether the assumption should be changed.

Segal comments that the economic assumptions are within reasonable ranges, with the inflation assumption on the high end and the real rate of return on the low end of that range. We will be reviewing this in our next study as well. Economic assumptions affect estimates of future salaries and therefore future retirement benefits, Permanent Benefit Increases, costs of service purchases, interest that is credited on contributions, and many other Plan features. We plan to review these assumptions in this holistic context in the next study.

2005 Valuation of the Plan

General Comments

The two most important sentences describing the findings of this audit are:

“Overall, the results of this audit are quite favorable, and indicate that the procedures used by ASRS and its consulting actuary are appropriate and reliable in determining the Plan’s actuarial funding levels.”

“This actuarial valuation audit validates that the methods and assumptions employed are within the norms.”

Specific Comments

Segal notes member data that lacks date of birth and sex information. The ASRS is in the process of gathering the missing information through its Data Integrity Correction Project.

Segal notes some duplicate records for members. The duplicates of which we are aware (about 400 records) relate to retired members who return to work and have their pensions suspended. For such members, both a retired record (which shows the suspended pension) and an active record (which shows the pension that the member is earning on service since his return) have been retained. When such members retire for a second time, their periods of service are combined, and their pensions are determined based on all their service and pay. Accordingly, in future valuations, such members will be treated as active members with all their service restored. In that way, there will be correct counts and liabilities for this group of members.

There is also a potential for double counting disabled members if the code identifying them as disabled members is missing or mistyped on the inactive member file. For 2006 and later valuations,

we plan to have the inactive member file compared with the final disabled member file to make sure the disabled members are removed from the inactive member file.

Segal questions whether a corridor is used in computing the actuarial value of assets, i.e., whether the actuarial value of assets is restricted to be within, say, 20% of the market value. Since 2002, our valuations have not used a corridor. The calculation of actuarial asset values in the report involves no corridor. The ASRS decided to move to ten-year smoothing of actuarial assets and eliminate the corridor in 2002. The reason for this change was the need to stabilize contribution rates. We will have a sentence added to the description of the method to say explicitly that there is no corridor.

Segal recommends adding an analysis of gains and losses by source to each report. The investment gains and losses are shown separately from the liability gains and losses. Liability gains and losses are shown separately in Exhibit 6.1 for legislative changes, assumption changes, Permanent Benefit Increases, and other experience. Breaking down the liability gains further is not likely to be helpful because the results will vary widely from year to year. For example, the ASRS may experience a mortality gain one year and a loss the next. It is felt that it is more helpful to analyze the liability experience every five years in the required experience studies where the volume of data is larger and experience is more credible.

In general, the modifications listed above are not material.

ASRS Strategic Initiatives

The ASRS has been focused on the funding of its benefit programs and the required levels of contributions. Since 2003, the ASRS has directly, or with the help of the Legislature and the Governor's Office, engaged in a series of cost reduction initiatives (such as the change to actuarial present value for service purchases, and reducing interest credits on contributions for withdrawing members) that have reduced total contribution rates to date by .95% from what they would otherwise have been. This amounts to a combined \$69.2 million annual savings for employees and employers. Moreover, these initiatives will reduce future contribution rates by an additional 1.47% from what they would otherwise be, amounting to an additional \$114.7 million annual savings for employees and employers. The attachment "Impact of ASRS Cost Reduction Initiatives" describes the impact of these initiatives.

We have recently explored additional changes that policy makers may wish to consider to stabilize future contribution rates and ensure the continued financial health of the Plan.

We appreciate having the opportunity to comment on these audits and will be pleased to address any remaining issues.

Sincerely,



Paul Matson
Director

PM/gkw
Attachment

Impact of ASRS Cost Reduction Initiatives

Amounts in Millions of Dollars

Action	Reduction in Total Contribution Rate*	Annual Reduction in Total Contribution Amount	Present Value of Savings on Actuarial Valuation Basis	Present Value of Savings on Open Group Basis
Cost Savings Initiatives Contained in Current Valuation & Reflected in Lower Current Contribution Rate				
SP Change from normal cost to actuarial present value	0.60%	\$43.80	\$338.90	\$1,217.10
Decrease interest credited on withdrawn contributions from 8% to 4%	0.30%	\$21.90	\$191.30	\$542.00
Correction of PBI reserve	0.05%	\$3.50	\$42.00	\$42.00
sub-total, savings in current valuation	0.95%	\$69.20	\$572.20	\$1,801.10
Cost Savings Initiatives Contained in Future Valuation & Reflected in Lower Future Contribution Rates				
SP Increase interest rate on PDAs from 0% to 8%	0.20%	\$14.60	\$177.40	\$262.20
Pop-up restrictions	0.46%	\$36.90	\$448.40	\$662.70
Early retirement incentives	0.22%	\$16.10	\$195.20	\$289.10
Rescinding modified DROP	0.56%	\$44.90	\$545.90	\$806.30
LTD program design changes	0.03%	\$2.20	\$26.60	\$39.50
sub-total, savings in future valuation	1.47%	\$114.70	\$1,393.50	\$2,059.80
GRAND TOTAL	2.42%	\$183.90	\$1,965.70	\$3,860.90

*These effects on the total contribution rate are multiplied by current payroll to give annual savings amounts in the next column. The annual savings amounts are then converted to the present values shown in the last two columns. On the Actuarial Valuation Basis, the savings from basing service purchases on actuarial present value is a reduction in future service liabilities. For the reduction in the interest crediting rate, the savings arise from reductions in future service and past service liabilities. Other Actuarial Valuation Basis savings are reductions to past service liabilities, i.e., capitalizations of the annual savings amounts over 30 years. On the open group basis, present values are generally perpetuities that anticipate the savings effect on current and future members. The exception is the PBI change, which is a one-time correction.

Some of these changes were not reflected in their entirety in the 2004 valuation report, but will be captured in future reports as actuarial gains. For example, the Plan valuation contains no assumption on Payroll Deduction Agreements (PDAs), so the absence of interest charges in the past has been reflected as an actuarial loss. The change to 8% interest charges will end the losses and eventually reduce the total contribution rate by .20%.

**ARIZONA PUBLIC SAFETY PERSONNEL
RETIREMENT SYSTEM**

**Audit of the
June 30, 2005 Actuarial Valuation**

Submitted by:
***THE SEGAL GROUP, INC.,
THE PARENT OF THE SEGAL COMPANY
ALL RIGHTS RESERVED***
October 2006

DIRECT DIAL NUMBER
416-969-3968

E-MAIL ADDRESS
tlevy@segalco.com

October 5, 2006

Mr. Richard Stavneak
Director
Arizona Joint Legislative Budget Committee
1716 West Adams
Phoenix, AZ 85007

Re: **Actuarial Auditing Services for the Arizona Joint Legislative Budget Committee
(Arizona Public Safety Personnel Retirement System June 30, 2005 Actuarial Valuation)**

Dear Mr.Stavneak:

We are pleased to present the results of this limited-scope audit of the June 30, 2005 actuarial valuation. The purpose of this audit is to conduct a review of the actuarial methods and procedures employed by the Arizona Public Safety Personnel Retirement System. This audit includes the following:

1. ***Report review*** – this report includes a review of the valuation results and how they comply with actuarial standards, and whether such valuation reflects appropriate disclosure information under any required reporting.
2. ***Methods and assumptions review*** – this audit provides an analysis and a review of the actuarial assumptions and methods utilized in determining the funded status and accrued liability as of June 30, 2005.
3. ***Assumptions and test lives review and reconciliation*** – this audit discusses the procedures used to validate the participant data and the test lives selected, with a detailed review of the findings.

This review was conducted under the supervision of Thomas D. Levy, a Fellow of the Society of Actuaries, Member of the American Academy of Actuaries and an Enrolled Actuary under ERISA. This review was conducted in accordance with the standards of practice prescribed by the Actuarial Standards Board.

Mr. Richard Stavneak
October 5, 2006
Page 2

The assistance of Rodwan Consulting Company, Public Safety Personnel Retirement System (PSPRS) and the Arizona Joint Legislative Budget Committee (JLBC) staff is gratefully acknowledged.

We appreciate the opportunity to be retained as the independent actuarial auditors for Arizona JLBC and we are available to answer any questions you may have on this report.

Sincerely,

Thomas D. Levy, FSA, FCIA, MAAA, EA
Senior Vice President and Chief Actuary

Susan M. Hogarth, MAAA, EA
Consulting Actuary

/dqm

cc: Brad Ramirez, FSA, MAAA, EA

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A **limited scope audit** (actuarial review) of any system is intended to provide an assurance that the liabilities and costs of the System are reasonable. The review is not a full replication of the actuarial valuation results, but is a review of the key components in the valuation process that encompass the derivation of the liabilities and costs for the System. These key components are the data, the benefits valued, the actuarial assumptions used in the funding, and the asset valuation method employed. The receipt of valuation output for a select group of test lives provides the detail necessary to validate each of these key components.

We reviewed all information supplied to us. We also requested and reviewed additional information provided by the retained actuary. Finally, we considered the reasonableness of the actuarial assumptions and methods in the context of the recently completed experience study and our own experience.

Conclusion:

We have discovered numerous areas of concern in the valuation of the liabilities. Some may be immaterial but some could have a larger impact. It is also possible that some adjustments will offset other ones. A limited scope audit may identify areas of concern, but it generally cannot provide information on the materiality of the consequences if there are shortcomings. Therefore, we recommend the performance of a full replication valuation. We understand PSPRS is likely to perform an updated experience study as part of the June 30, 2006 actuarial valuation and to have a second actuarial firm complete a parallel actuarial valuation and experience study. This will provide the retained actuary with the opportunity to incorporate the recommendations of this report, give the Trustees comfort that the experience study is complete and accurate, and allow for discussion of the recommendations flowing from that study. We support this proposed process, and believe it is an appropriate response to our findings.

The enhancements we recommend are:

Liabilities/Benefits:

- Revise the liability under the active disability benefit to accurately reflect the Fire High versus Fire Low disability rates;
- Review the liability under the active benefits before normal retirement age as we were not able to match these benefits;
- Review the benefits and liability under the Health Insurance Premium Subsidy as part of the revised valuation review;
- Review rates of retirement since adoption of the current DROP provision and also review retirement experience with less than 20 years against current retirement rate assumptions and change if warranted; and
- Review retired mortality experience.

Valuation Process:

- Match timing of salary with timing of decrement.

Assumptions:

- Assumptions tend to be on the “high inflation” side when viewed in comparison with other similar systems. We recommend a review of these assumptions.

Report:

- Make corrections to plan provisions and assumptions summarized in the actuarial valuation report;
- Add gain/loss by source to actuarial valuation report; and
- Revise valuation results incorporating the audit findings mentioned throughout this report.

The valuation data used by the retained actuary appears both accurate and complete when compared to the System records with minor exceptions. We also verified that certain data aspects of a select group of sample test life calculations are reasonable.

With respect to the other aspects of this limited scope actuarial audit, we found the following:

- Benefits projected in the sample test life group do not always match plan provisions as described in the actuarial valuation report;
- Assumptions tend to be on the “high inflation” side when viewed in comparison with other similar systems; and
- Funding and asset valuation methods are consistent with those employed in other public sector plans.

PURPOSE, SCOPE AND METHODOLOGY OF THE AUDIT

Purpose of the Audit

The Arizona Joint Legislative Budget Committee (JLBC) retained consulting services to determine whether the actuarial procedures and methods used by Public Safety Personnel Retirement System (PSPRS) and the retained actuary are valid and appropriate to properly value the Arizona Public Safety Personnel Retirement System's retirement benefits. The Arizona JLBC requested a review of the reasonableness of the consulting actuary's conclusions and the conformance of their work with generally accepted actuarial standards and practices. Finally, the Arizona JLBC asked for recommendations of how the System can improve procedures for estimating the required level of funding.

Scope of the Audit

This actuarial audit has a specified, limited scope in its review. A full scope audit would include performing the 2005 actuarial valuation from start to finish - in essence, a parallel valuation. This limited scope audit reviews the valuation already performed, through reviewing the benefits, assumptions and methods, without a full replication of the actuarial valuation results. This review is conducted through analyzing detailed output of certain select test lives from the membership group.

In not performing a full parallel valuation, the following implicit assumptions are made:

- The actuary's valuation system is accurately applying each assumption as stated;
- The actuary's valuation system is properly allocating the present value of benefits between normal cost and actuarial accrued liability; and
- The actuary's valuation system is adding together liabilities appropriately for each decrement, for each member, and over the entire population (meaning no segment is being "dropped off" and no particular liabilities are being omitted).

What a limited scope audit can provide is:

- Assurance that appropriate benefits are being valued;
- Confirmation that the valuation system is accurately applying assumptions to the test lives;
- A measurement of actuarial assumptions against a peer group and hence an assessment of their reasonableness;
- Confirmation that the program is valuing benefits as stated in the valuation report;
- A review of the reasonableness of actuarial funding and asset valuation methods; and

- An understanding as to whether there are any indications that the liabilities and contribution rates shown are not reasonable or are incorrectly calculated. Note that a limited scope audit will generally not be sufficient to determine the materiality of any recommended modifications nor whether some adjustments offset other ones.

The purpose of this audit is to express an opinion regarding the reasonableness or accuracy of the actuarial assumptions, methods, valuation results, and contribution rates. The limited-scope review is not the same as an actuarial valuation, but represents a “second opinion” of the findings and processes included in the valuation.

Methodology of the Audit for the 2005 Actuarial Valuation

The overall objective of the valuation audit is to ascertain whether, on a long-term basis, the benefit promises can be supported by the existing assets and anticipated contributions to the System.

The measurement of the reasonableness of the funding levels encompasses three key analyses:

- A verification of the benefits being projected for future payment;
- A verification of the appropriateness of the actuarial assumptions that are used in calculating the liability; and
- A verification of the appropriateness of the funding and asset valuation methods.

Benefits Analysis

Critical to projecting accurate benefits is receiving complete and accurate data. We reviewed the process by which data is prepared for the actuarial valuation, including:

- An assessment of the completeness of the data; and
- A review of the data screening process employed.

We compared our benefit calculations and projections through the test life review with the retained actuary's and have noted the differences. We also tested that the benefits projected are consistent with governing provisions.

Assumptions Analysis

The second critical component in assessing the reasonableness of the funding levels is in the selection and the application of the actuarial assumptions. With respect to the selection of assumptions, we;

- Reviewed the most recent Experience Study, as described in a separate report;
- Examined individual test life calculations; and
- Verified that the assumptions used in the calculations are accurately described in the valuation report.

Methods Analysis

The third component in assessing funding levels is the selection and application of the actuarial cost method (including the method for amortizing the unfunded actuarial accrued liability) and the asset valuation method (including smoothing techniques). We:

- Compared the methods against industry norms; and
- Provided an assessment of the appropriateness for the System.

VALIDATION OF BENEFITS VALUED

Data Used in the Valuation

The PSPRS staff supplies the participant data to the retained actuary. We obtained data from PSPRS and compared the counts of members to the counts used by the actuary in the valuation report. The counts for all members matched between the data we received and the actuarial valuation report.

The retained actuary receives near-complete data from PSPRS. The data reconciliation process completed by the retained actuary involves initial data checks to determine missing or inconsistent data. Questions regarding this data are addressed to the PSPRS staff. Once answered, the retained actuary produces age, service and payroll summaries for active members, and attained age and pension benefit summaries for retirees of each of the groups to confirm the totals are consistent with those provided by the PSPRS staff.

The salary data received by the retained actuary from the PSPRS staff is computed based on the most recent annual member contributions, since the employer groups do not furnish salary data. We understand that this is because salary data is not included in the System's records. In effect, the process used to generate salary generates the total pay in the year prior to the valuation date, not the rate of pay on the valuation date. We recommend that the retained actuary verify that the application of the salary projections is consistent with this fact.

During the data review process, we noticed duplicate records were provided in the retained actuary's data. These duplicate records were included in the counts shown in the valuation report, since our counts including the duplicates matched the valuation report. We were informed by the retained actuary that she is satisfied that apparently duplicate records are legitimate and that there is little or no overcounting of participants.

The form of payment for pay status members (retired members and survivors) was not provided in the retained actuary's data or the PSPRS data. The retained actuary has indicated they are valuing all retired members who have a survivor birth date provided in the data, as receiving an 80% Joint and Survivor benefit. We were informed that this is a limitation in the available data. Given that limitation, the actuary's process is acceptable.

Data Risk Element

In testing the data between PSPRS and the retained actuary, the match would indicate the actuary is projecting liabilities and costs on PSPRS' set of complete data. Because some desirable data elements are not in the System's records, there is a possibility of distortion in the actuarial results. However, it seems unlikely that this issue can be addressed, and the consequences may be immaterial.

Projected Benefits in the Valuation

Benefits are projected for each potential benefit payable from the System. We tested the normal retirement, early retirement, withdrawal, death and disability benefits against the provisions as stated in the actuarial valuation report.

We reviewed the detailed calculations for a selected group of test lives to determine whether the valuation correctly projected plan benefits and whether the costs and liabilities were determined in accordance with the System's stated methods and assumptions. We requested specific test lives in order to compare the benefit amounts projected in the valuation against our understanding of the System's benefits summarized in the Summary of Benefits at www.psprs.com. In a number of cases we found that the benefits shown in the test lives did not match those summarized in the report, or the benefits summarized on the System's website.

The Police and Fire units were divided into four assumption groups, based on their expected rates of active member withdrawals. Generally, larger, urban units have lower withdrawal rates (labeled Police Low and Fire Low) and small, rural units have higher withdrawal rates (labeled Police High and Fire High).

The following is a list of recommended analyses of the actuarial liabilities requiring a parallel type audit:

- *The valuation assumes all decrements occur at mid-year, while using a beginning of year Final Average Salary. The decrement and salary should occur at the same time. In addition, the last year of Final Average Salary used for the retirement decrement in the active liability is the same as the Final Average Salary used for the year prior to retirement. Thus, the liabilities for all decrements are off by six months of Final Average Salary. In addition, at the highest assumed retirement age, the Final Average Salary is off an additional year. The liabilities for the most significant decrement, retirement, are off by eighteen months of Final Average Salary. The liabilities could be more accurately valued by matching the timing of salary with the timing of each decrement.*
- *We are not able to match withdrawal, disability nor pre-retirement death benefits under the active liability before Normal Retirement Age for the Fire Low test life. We are not able to ascertain what benefit is being valued; hence we recommend a further review of these benefits.*
- *Fire High disability rates are being used on the Fire Low membership. We recommend that the valuation be revised for the active liability under the disability decrement for Fire Low participants to use Fire Low disability rates. We note that the disability benefits are only a small portion of the total cost, so the overall effect of this item may be modest. However, it is important to state it correctly, at least so that proposed changes in this benefit provision are priced correctly.*
- *The valuation report states disability rates for Police and Fire, split by High and Low, but are not split on duty versus non-duty related occurrences. We were informed that 92% of disability awards are duty-related, so this item may be insignificant.*

- *In the current actuarial valuation, liabilities do not include an assumption for future DROP (Deferred Retirement Option Plan) members. The current DROP members are treated as retired participants with their benefit frozen at their DROP election date. The benefits are accumulated in their DROP account with interest valued at the valuation interest rate. We recommend a review of current DROP members and assumptions for future DROP members, which may impact System costs. Rarely is a DROP cost neutral, hence, not valuing the DROP provision is deferring actuarial costs of the DROP into the future. The retained actuary suggests that there may be a margin of conservativeness in the existing retirement age assumption such that this cost is included implicitly. We believe that there should be a separate, explicit cost for this provision.*

The following is a list of suggested changes/corrections to the actuarial valuation report:

- *The spouse age assumption that males are three years older than females should be stated in the actuarial valuation report.*
- *The married assumption of 90% should be stated in the actuarial valuation report.*
- *The Retirement Rates for Fire High and Fire Low are mislabeled in the actuarial valuation report, based on our test life review, which matches the rates shown in the Experience Study. These rates should be corrected in the report.*

The actuarial valuation report states that the “Future Benefit Increase Reserve” is an investment income reserve held for future pension increases pursuant to state statute. The Board may consider testing the adequacy of the reserve against an assumption for ad-hoc Cost-of-Living Adjustments (COLA) to the original retirement benefits.

We realize there is a liability accounted for under the Health Insurance Premium Subsidy, and recommend a thorough review of the health benefits during the valuation rerun.

The test life comparison exhibit on the next page summarizes the calculations performed by Segal and the retained actuary, and shows the differences by each decrement in the present value of benefits calculation.

ARIZONA PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM

JUNE 30, 2005 VALUATION

TEST LIFE COMPARISON

(excluding health insurance premium subsidy and non-vested refund benefits)

ACTIVES:	Active (Fire Low)		Active (Police High)	
	Rodwan	Segal	Rodwan	Segal
Present Value of Benefits				
CURRENT AGE:				
Death	\$1,371	\$2,474	N/A	N/A
Disability	2,670	7,191	N/A	N/A
Withdrawal	3,079	2,249	N/A	N/A
Retirement	151,332	155,335	\$ 63,275	\$ 69,892
Total PVB (Current Age)	\$158,452	\$167,249	\$63,275	\$69,892
ENTRY AGE:				
Death	\$1,371	\$2,474	N/A	N/A
Disability	\$2,670	\$7,191	N/A	N/A
Withdrawal	\$3,079	\$2,249	N/A	N/A
Retirement	\$151,332	\$155,335	\$24,017	\$26,528
Total PVB (Entry Age)	\$158,452	\$167,249	\$24,017	\$26,528
RATIO OF SEGAL/RODWAN				
Present Value of Benefits:				
CURRENT AGE:				
Death		180.45%		N/A
Disability		269.34%		N/A
Withdrawal		73.04%		N/A
Retirement		102.65%		110.46%
Total PVB (Current Age)		105.55%		110.46%
ENTRY AGE:				
Death		180.45%		N/A
Disability		269.34%		N/A
Withdrawal		73.04%		N/A
Retirement		102.65%		110.46%
Total PVB (Entry Age)		105.55%		110.46%

Inactives	Deferred Vested		Retiree 1		Retiree 2	
	Rodwan	Segal	Rodwan	Segal	Rodwan	Segal
Total PVB	\$40,791	\$40,791	\$376,356	\$376,356	\$259,798	\$259,756
RATIO OF SEGAL/RODWAN						
Total PVB		100.00%		100.00%		99.98%

Inactives	Disabled Retiree		Beneficiary		QDRO	
	Rodwan	Segal	Rodwan	Segal	Rodwan	Segal
Total PVB	\$458,421	\$458,442	\$200,741	\$200,782	\$12,283	\$12,308
RATIO OF SEGAL/RODWAN						
Total PVB		100.00%		100.02%		100.20%

VALIDATION OF ACTUARIAL ASSUMPTIONS EMPLOYED

As part of our review of the actuarial assumptions, we recommend the following be reviewed:

- The economic assumptions are all near the high end of the rates used by comparable systems. There should be a separate explicit assumption for administrative (i.e. non-investment) expenses.
- Mortality table for Healthy and Disabled participants is based on the 1971 Group Annuity Mortality Table projected to 2000 for males (Healthy) and 1984 for males (Disability), and the same tables are set back six years for females. We recommend updating these tables to more recent mortality tables.

We reviewed the economic and demographic actuarial assumptions adopted by the System against generally accepted actuarial standards and practices contained in Actuarial Standard of Practice No. 27 covering economic assumptions and Actuarial Standard of Practice No. 35 covering demographic and non-economic assumptions. Our concerns are noted above.

VALIDATION OF FUNDING AND ASSET VALUATION METHODS

Funding Method for Liabilities

The entry-age normal method is being used in this valuation. This is a common and appropriate method for this type of plan. The entry-age normal funding method is somewhat conservative and provides for a stable annual cost (as a percentage of payroll) throughout a participant's working career.

We spot-checked the liability calculation for two active members, one deferred vested participant, two retirees, one disabled, one beneficiary and one QDRO to verify projected annual benefits. We did not run a "parallel" valuation, which is beyond the scope of this audit.

Asset Valuation Method

An actuarial asset valuation method is commonly used to smooth year-to-year fluctuations in the market value of assets, which helps stabilize the calculated contribution rate from year to year. The current method employed by the System in determining the actuarial value of assets is one that recognizes market gain and loss fluctuations over a seven-year period.

It is common to have gains and losses smoothed over a period of three to five years, although some plans are moving to a longer period. Just as is done here, many plans first calculate the assumed return based on the actuarial valuation interest rate (8.50%, net of expenses in this case) and then smooth any returns that differ from the assumed rate. Thus, if the System earns the assumed rate, no smoothing is needed. As of June 30, 2005, the smoothed value is 118% of the market value; hence the actuarial value of assets exceeds market value. Therefore, deferred losses must be made up as well as the actuarial assumed rate, in order to avoid further losses. This implies the System must earn well in excess of 8.50% in order to maintain a stable contribution rate.

It is unclear if there is a threshold corridor, which constrains actuarial value of asset volatility, limiting the difference between the actuarial value of assets and market value of assets. A typical corridor would guarantee that the actuarial value is always between 80% and 120% of the market value, regardless of the smoothing method calculation. We recommend reviewing the installation of a corridor and providing the corridor information in the actuarial valuation report, if applicable.

Amortization of the Unfunded Actuarial Accrued Liability (UAAL)

The overriding question for the Arizona Public Safety Personnel Retirement System is "how adequate are the contribution rates for funding the promised benefits?" Since both benefits and contribution rates are established by state statute, one measure of the adequacy is in the period required to pay off the unfunded accrued liability of the System. GASB sets forth recommendations that the maximum acceptable amortization period should not exceed 40 years (30 years for actuarial valuations beginning June 15, 2006).

As of the June 30, 2005 actuarial valuation, the period required to pay the unfunded actuarial accrued liability is 20 years, using a 6.00% payroll growth assumption. The period for amortization is GASB compliant as of the June 30, 2005 valuation date (we understand that the period has been changed to 30 years for the 2006 actuarial valuation). The funded ratio for the System as of June 30, 2005 was 82% on an actuarial value of asset (valuation assets) basis, which is within the average of public sector plans (on a market value basis, the funded ratio is 77%).

CONCLUSIONS

This limited scope audit reviewed the data used, the benefits valued, and the actuarial methods and assumptions employed in the June 30, 2005 actuarial valuation. The sample lives provided by the actuary reflect the plan provisions of the System as stated in the 2005 actuarial valuation. These sample lives also demonstrate that application of the entry age normal funding method and the actuarial assumptions were applied as stated in the valuation. This audit raises concerns in the benefits being valued as well as the assumptions.

The Arizona JLBC has asked for suggestions to consider in the ongoing valuation of the System. We suggest:

Benefits

- Timing review: The retained actuary assumes all decrements occur at mid-year, while using a beginning of year Final Average Salary. For the retirement decrement, the Final Average Salary is determined eighteen months prior to the assumed retirement date. We recommend a review of decrement timing versus salary to more accurately value the liabilities to match the timing of salary with the timing of each decrement.
- Active disability liability revision: The active disability liability for Fire Low participants are currently calculated using Fire High disability rates. We recommend revising these rates and liabilities of the System.
- Retirement rate assumption review: The current assumption for retirement rates begins for members with 20 or more years of service. We recommend an experience study review of retirements with regards to service. We also recommend an explicit cost be included for the DROP.
- Ancillary benefit review: We recommend a review of withdrawal, disability and pre-retirement death benefits for actives before Normal Retirement Age.
- Health Insurance Premium Subsidy review: We recommend a thorough review of benefits and liabilities associated with the Health Insurance Premium Subsidy.

Assumptions

- Corrections to Provisions and Assumptions in Actuarial Valuation Report: The actuarial valuation report should be corrected for the following provisions and assumptions:
 - The spouse age assumption of males are three years older than females should be disclosed;
 - The married assumption of 90% should be disclosed;
 - Retirement rates for the Fire High and Fire Low are switched in the actuarial valuation report based upon test life review and the most recent Experience Study. These should be corrected.
 - The DROP election assumption should be reviewed for potential future DROP participants;
 - The economic assumptions are generally at the high end of the range for comparable plans.

Report

- Add gain/loss by source analysis to actuarial valuation report: We recommend an analysis of gain/loss by source be provided in the June 30, 2006 valuation report, summarizing the experience between actual decrements versus expected decrements as well as other sources of gains and losses.

- ❑ Timing review. The retained actuary to review timing of decrements and salary.
- ❑ Active disability liability revision. The retained actuary to correct this liability calculation and determine the cost impact to the System.
- ❑ Retirement rate assumption review. A possible experience study on retirement rates for members with less than 20 years of service.
- ❑ Ancillary benefit review for actives prior to Normal Retirement Age.
- ❑ Review of Health Insurance Premium Subsidy during the rerun of the valuation.
- ❑ DROP account and assumption review, concerning future elections.
- ❑ Make corrections to System provisions and assumptions summarized in the actuarial valuation report.
- ❑ Add gain/loss analysis by demographic source (retirement, withdrawal, death and disability) to the actuarial valuation report.
- ❑ Rerun valuation to analyze actual benefits promised, liabilities and cost impacts to the System of anticipated revisions.

**ARIZONA PUBLIC SAFETY PERSONNEL
RETIREMENT SYSTEM**

**Audit of the
Experience Study for the Five-Year
Period Ended June 30, 2003**

Submitted by:

***THE SEGAL GROUP, INC.,
THE PARENT OF THE SEGAL COMPANY
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October 2006

DIRECT DIAL NUMBER
416-969-3968

E-MAIL ADDRESS
tlevy@segalco.com

October 5, 2006

Mr. Richard Stavneak
Director
Arizona Joint Legislative Budget Committee
1716 West Adams
Phoenix, AZ 85007

**Re: Actuarial Auditing Services for the Arizona Joint Legislative Budget Committee
(Arizona Public Safety Personnel Retirement System Actuarial Experience Study for
the Five-Year Period Ended June 30, 2003)**

Dear Mr. Stavneak:

We are pleased to present the results of this limited-scope audit of the experience study for the five-year period ended June 30, 2003. The purpose of this audit is to conduct a review of the actuarial methods and procedures employed by the Arizona Public Safety Personnel Retirement System. This audit includes the following:

1. **Data review** –assesses the consistency and reasonableness of the data used in the study.
2. **Methods review** –provides an analysis and a review of the methods utilized in the experience study.
3. **Recommendation review** –discusses the reasonability of recommended assumptions and methods based upon the results of the study, and whether the report reflects appropriate disclosure information under any required reporting.

We were not asked to review the experience studies for the Corrections Officer or Elected Officials' Plans.

This review was conducted under the supervision of Thomas D. Levy, a Fellow of the Society of Actuaries, Member of the American Academy of Actuaries and an Enrolled Actuary under ERISA. This review was conducted in accordance with the standards of practice prescribed by the Actuarial Standards Board.

Mr. Richard Stavneak
October 5, 2006
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The assistance of Rodwan Consulting Company, Public Safety Personnel Retirement System (PSPRS), and the Arizona Joint Legislative Budget Committee (JLBC) staff is gratefully acknowledged.

We appreciate the opportunity to be retained as the independent actuarial auditors for Arizona JLBC and we are available to answer any questions you may have on this report.

Sincerely,

Thomas D. Levy, FSA, FCIA, MAAA, EA
Senior Vice President and Chief Actuary

Brad Ramirez, FSA, MAAA, EA
Consulting Actuary

/dqm

cc: Susan M. Hogarth, MAAA, EA

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A **limited scope audit** (actuarial review) of any experience study is intended to provide an assurance that the methodology and recommendations of the study are reasonable. The review is not a full replication of the experience study results, but is a review of the key components in the study process that encompass the derivation of the recommendation of assumptions and methods. These key components are the data, the methods used in the study, and the recommendations and conclusions that are drawn.

We reviewed all information supplied to us. We also requested and reviewed additional information provided by the retained actuary. Finally, we considered the reasonableness of the recommended actuarial assumptions and methods in the context of our own experience.

Fundamentals of the Experience Study

An experience study will look at the actual experience of the plan by decrement (death, disability, retirement, and withdrawal), and compare it to the expected experience. Expected experience is derived from applying the actuarial assumptions to the plan's specific data. The data and assumptions used in this comparison are critical in being sure the correct conclusions are being reached.

For each decrement, the experience study will first determine how many members are “exposed” to that decrement for the appropriate time period. For example, if we are measuring death for those at age 70 in 2003, we need to first determine how many were age 70 in the year 2003. That is known as the “exposure” group, since that will be the number exposed to the decrement of death.

Next, we determine how many deaths were expected. To do that, we take the probability of death for those age 70 and apply it to those in that group. For example, if there are 100 exposures, and if 10 percent is the probability of death at that age, then the expected number of deaths is 10.

Finally, looking at the actuarial data we compare the expected number of deaths to the actual number to see how the assumption compares to reality.

Non-conformities in Any Experience Study

If the period under study is not in alignment with the data, the study could in fact be measuring deaths at age 69 or 71 when it is attempting to measure deaths at age 70. Thus, it is paramount to be sure that the years and probabilities are in alignment with each other. This review looked at the determination of the expected counts for each decrement, and reviewed that the data was applied to its appropriate age group.

Summary

This audit found several non-conformities that are outlined within. The non-conformities are of such potential severity that we recommend a parallel audit, or full replication of the experience study, so the trustees can be sure that the valuation assumptions reasonably reflect the anticipated experience of the plan. We understand that PSPRS is likely to perform an updated experience study as part of the June 30, 2006 actuarial valuation and to have a second actuarial firm complete a parallel experience study. This will provide the retained actuary with the opportunity to incorporate the recommendations of this report, give the Trustees comfort that the experience study is complete and accurate, and allow for discussion of the recommendations flowing from that study. We support this proposed process, and believe it is an appropriate response to our findings.

PURPOSE, SCOPE AND METHODOLOGY OF THE AUDIT

Purpose of the Audit

The Arizona Joint Legislative Budget Committee (JLBC) retained consulting services to determine whether the experience study procedures and methods used by Arizona Public Safety Personnel Retirement System (PSPRS or “the Plan”), and the retained actuary are valid and appropriate to evaluate the System’s valuation assumptions and methods. The Arizona JLBC requested a review of the validity of the data used by the actuary and the conformance of their work with generally accepted actuarial standards and practices.

Scope of the Audit

This experience study audit has a specified, limited scope in its review. A full scope audit would include performing the five-year experience study from start to finish; in essence, a parallel study. This limited scope audit reviews the study already performed, through reviewing the data, assumptions and methods, without a full replication of the experience study results. This review is conducted through analyzing detailed output of the experience study results.

In not performing a full parallel experience study, the following implicit assumptions are made:

- The experience study is accurately applying the current assumptions as stated;
- The experience study is properly measuring exposures for each decrement; and
- The experience study is “adding” together probabilities appropriately for each decrement, for each member, and over the entire population (meaning no segment is being “dropped off” and no particular probabilities are being omitted).

What a limited scope audit can provide is:

- Assurance that appropriate assumptions and methods are being evaluated as part of the study;
- Confirmation that the correct data was used over the study period;
- Confirmation that the exposures and counts are placed in the appropriate “bucket” (year);
- A review of the reasonableness of the experience study process; and
- An understanding as to whether there are any indications that the recommendations shown are not reasonable or are incorrectly calculated.

The purpose of this audit is to express an opinion regarding the reasonableness of the data, methods, and recommendations in the experience study. The limited-scope review is not the same as an experience study, but represents a “second opinion” of the findings and processes included in the study.

A limited scope audit may identify areas of concern, but it generally cannot provide information on the materiality of the consequences if there are shortcomings. Therefore, in our conclusions, we recommend the performance of a full replication experience study.

Methodology of the Audit

The overall objective of the experience study audit is to ascertain whether the analysis of the system's assumptions and methods was reasonable and performed in accordance with the principles and practices prescribed by the Actuarial Standards Board.

The measurement of the reasonableness of the experience study encompass three key analyses:

- A verification of the data used in the study;
- A verification of the methodology used in the study; and
- A verification of the appropriateness of the study recommendations based upon the study's results.

Data Analysis

Critical to performing the analysis is receiving complete and accurate data. We reviewed the data used in the experience study, including:

- An assessment of the consistency of the data, with the data used in the actuarial valuations during the study period; and
- A review of the reasonableness of the data used.

Methodology Analysis

The second critical component in assessing the reasonableness of the experience study results is in the methodology used in the analysis of valuation assumptions and methods, we:

- Examined the calculations used to evaluate the accuracy of the valuation assumptions and methods; and
- Verified that no significant valuation assumptions or methods were omitted from the study.

Recommendations Analysis

The third component is assessing the recommendations of the experience study. We:

- Verified that the recommendations of the study were consistent with the results of the analysis; and
- Checked that the recommendations were appropriate and reasonable based upon generally accepted actuarial standards and practices.

VALIDATION OF DATA USED

The data used in the experience study should be the same as the data used in each of the annual actuarial valuations over the study period. If the decrement counts are not the same, the experience study conclusions will not be accurate for the period of study and may yield incorrect results.

It appears that the experience study was based upon calendar year data. However, the title of the report indicates that the data and exposures were based upon plan years (July 1 through June 30). This mislabeling will not affect the overall results of the study.

VALIDATION OF METHODOLOGY EMPLOYED

Our review of the experience study methodology yielded the following conclusions:

Group Size Appropriate

An experience study should compare the actual and expected occurrences for each of the decrements. Results should be grouped in a reasonable way. If the groups are too large, the amount of data will obscure trends that may exist within the group. If the groups are too small, the study will yield results that are not credible. Five-year age groups were used in the experience study, which is a reasonable grouping structure.

Inconsistent Rounding Comparison in Service

For analysis of retirements and withdrawals during the select period, it appears that the actuarial data rounded service to the nearest whole year. This would result in participants with between 1.50 and 2.49 years of service being grouped as having 2.00 years of service. However, the valuation assumptions state that the grouping should occur on a completed year basis: those with 2.00 to 2.99 years of service should be grouped together. In order to compare expected to actual on these decrements, they must be compared on the same basis so any change in assumption will be consistent.

Age Versus Service Rounding

While service amounts were rounded to the nearest whole year, ages appeared to be rounded down to the latest completed year. This will make members look younger. This means their true age-based probability for any given decrement will not be applied to them, creating biased results.

Need for Service-Based and Age/Service-Based Retirement Analysis

Retirements were not analyzed differently for those eligible by service (20 years and any age) and age/service (15 years at age 62) retirements. Since these groups often exhibit dramatically different retirement patterns, it may have been useful to study these groups separately.

Mortality Must be Measured for Retirees

The analysis of mortality appeared to review only active participant deaths. Due to the low incidence of death for actives, the low credibility of this data is a concern. Mortality results for retired participants and beneficiaries are much more significant since mortality on retirees carries the highest liability for the decrement and would have a much greater effect on the total plan liabilities. Further, it is well established that retirees have significantly different rates of death from those of the same age who are still working. Therefore, any analysis of mortality should recognize deaths for retirees and beneficiaries. Measuring mortality based only on actives is an inadequate measure of this decrement.

We are aware that public safety employees often claim that they have atypically short life expectancies. We are unaware of any valid studies supporting this claim. Further, we note that life insurance companies, who have the most data on mortality by occupation, do not charge extra solely because someone is a public safety employee (although there are other occupations where that is routinely done). We take that as strong evidence that mortality among public safety employees is not materially worse than for other occupations.

The retained actuary indicated that a retiree mortality study was done, but was excluded from the report due to lack of statistical significance. We believe it is the best and most relevant information available, and therefore should have been included. Its statistical significance goes to the weight it is given in setting assumptions for the future, but we believe it is relevant to that discussion and should not have been omitted altogether.

Mortality Must be Measured Recognizing Gender Differences

The actuary's analysis of mortality did not group separate totals for gender. Mortality rates vary between genders and results should be analyzed for males and females separately.

DROP Results Relied on Pre-DROP Data

In studying retirements under the DROP, the study grouped results before the DROP, under the first DROP, and under the revised DROP. Combining experience under three significantly different plan provisions, two of which no longer apply, makes the results impossible to use as a foundation for selecting a prospective assumption. We believe that only experience under the revised DROP has any relevance, and even that experience may be distorted because it is a new benefit.

We also note that there does not appear to be any explicit assumption for the cost of the DROP. The retained actuary suggested that this factor may be included implicitly because of conservatism in the retirement age assumption. We believe it is a better practice to cost each benefit explicitly, even if experience data is limited or non-existent because a benefit is new.

Future Retirement Rate Studies

The current valuation methodology is to base retirement rates upon service. In our experience, retirement in public safety systems is also highly correlated with age. For future studies, we recommend looking at the correlation between retirement rates and age to see if an age-based or blended age/service retirement assumption would be a better fit in this case.

Future Studies to Study Duty and Non-Duty Disability Separately

Since there are different benefits for accidental disabilities and ordinary disabilities, it is generally preferable to study the incidence of these benefits separately. The study only examined disabilities in total. The retained actuary indicated that less than 10% of disabilities are "ordinary." If so, we accept that the separation would be immaterial.

VALIDATION OF RECOMMENDATIONS MADE

An experience study should yield recommendations that are consistent with the underlying results of the study. The recommendations should also be consistent with actuarial standards of practice.

The experience study yielded the following recommendations:

Withdrawal Rates: Lower rates at early years of employment, higher rates at later years.

The withdrawal assumption recommendations are reasonable given that the underlying data is correct. However, if service grouping issues are present (inconsistent groups based on ages), the recommendations would not be related to the appropriate group.

Retirement and DROP Rates: Higher rates for most years of service. The retirement assumption recommendations are reasonable given that the underlying data is correct. However, if the DROP exposure issues are present (blended with obsolete plan provisions or inconsistent based on incorrect age groupings), the appropriateness of the recommendations would be affected. A split of retirements by those eligible for age/service-based retirement versus service-based retirement should be considered for the valuation since those behaviors do tend to differ.

Disability Rates: No change recommended. This is reasonable given that the underlying data is correct.

Mortality Rates: No change recommended. The analysis should have been performed by gender and included participants in pay status. Furthermore, the current mortality table (1971 Group Annuity Mortality projected to 2000, set back for females) is based on old data and is no longer widely used. Consideration should be given to updating this table with a more modern one, perhaps with a margin for future mortality improvement. Mortality clearly differs by gender, and this study did not perform that differentiation. The study based its recommendations for active and retired lives based on active mortality only. The mortality rates need to be based on the true underlying set of data.

Inflation Assumption: No change recommended. The 5.25% inflation assumption is at the high end of the reasonable range in light of the data presented. This assumption should be reviewed in conjunction with the other economic assumptions.

Investment Return Assumption: No change recommended. The 8.50% investment return assumption is at the high end of current practice. The 3.50% real rate of return assumption is conservative based upon a normal asset allocation. This assumption should be reviewed in conjunction with the other economic assumptions.

Salary Increase Assumption: No change recommended. The 6.00% “across-the-board” salary increase assumption is at the high end of current practice. This assumption should be reviewed in conjunction with the other economic assumptions.

CONCLUSIONS

This limited scope audit reviewed the data used, the methodology, and the recommendations employed in the Report on the Actuarial Experience Study for the Period July 1, 1998 through June 30, 2003.

Our observations are as follows:

- The period of the study was on a calendar year basis, not a plan year basis as indicated in the report title.
- Service was rounded to the nearest whole year in the analysis of retirement and select period withdrawal, inconsistent with valuation methodology. This means the conclusions on assumptions could be misstated.
- Ages were rounded down to the greatest completed year, which is inconsistent with the rounding of service. This means the probabilities of decrement are being applied to members at “wrong” ages.
- Retirements were not split between those eligible for age/service-based retirement versus service-based retirement.
- Mortality was not analyzed for retirees or beneficiaries. This is one of the most serious non-conformities of this study, since the primary group to receive death benefits is retirees and beneficiaries and their liabilities must be determined based on their own experience.
- Mortality was not analyzed on a gender-specific basis.
- Retirement experience under past plan provisions has been mixed with experience under the current provision, thus obscuring any information related to the present provision.
- Retirement was not analyzed by age. Doing so might have yielded useful results.
- Disabilities were analyzed in total, not split by type of disability benefit.
- A more modern mortality table should be considered.
- The economic assumptions in total are on the edges of reasonable ranges. The inflation assumption is on the high end of the reasonable range. The real rate of return assumption is low based upon a normal asset allocation. All of the economic assumptions should be reevaluated to make sure that they are individually reasonable and consistent with each other.

Recommendations

We recommend a complete parallel experience study, incorporating the recommendations within this report.

**ARIZONA CORRECTIONS OFFICER
RETIREMENT PLAN**

**Audit of the
June 30, 2005 Actuarial Valuation**

Submitted by:
***THE SEGAL GROUP, INC.,
THE PARENT OF THE SEGAL COMPANY
ALL RIGHTS RESERVED***
October 2006

DIRECT DIAL NUMBER
416-969-3968

E-MAIL ADDRESS
tlevy@segalco.com

October 5, 2006

Mr. Richard Stavneak
Director
Arizona Joint Legislative Budget Committee
1716 West Adams
Phoenix, AZ 85007

Re: **Actuarial Auditing Services for the Arizona Joint Legislative Budget Committee
(Arizona Corrections Officer Retirement Plan June 30, 2005 Actuarial Valuation)**

Dear Mr. Stavneak:

We are pleased to present the results of this limited-scope audit of the June 30, 2005 actuarial valuation. The purpose of this audit is to conduct a review of the actuarial methods and procedures employed by the Arizona Corrections Officer Retirement Plan. This audit includes the following:

1. ***Report review*** – this report includes a review of the valuation results and how they comply with actuarial standards, and whether such valuation reflects appropriate disclosure information under any required reporting.
2. ***Methods and assumptions review*** – this audit provides an analysis and a review of the actuarial assumptions and methods utilized in determining the funded status and accrued liability as of June 30, 2005.
3. ***Assumptions and test lives review and reconciliation*** – this audit discusses the procedures used to validate the participant data and the test lives selected, with a detailed review of the findings.

This review was conducted under the supervision of Thomas D. Levy, a Fellow of the Society of Actuaries, Member of the American Academy of Actuaries and an Enrolled Actuary under ERISA. This review was conducted in accordance with the standards of practice prescribed by the Actuarial Standards Board.

Mr. Richard Stavneak
October 5, 2006
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The assistance of Rodwan Consulting Company, Public Safety Personnel Retirement System (PSPRS) and the Arizona Joint Legislative Budget Committee (JLBC) staff is gratefully acknowledged.

We appreciate the opportunity to be retained as the independent actuarial auditors for Arizona JLBC and we are available to answer any questions you may have on this report.

Sincerely,

Thomas D. Levy, FSA, FCIA, MAAA, EA
Senior Vice President and Chief Actuary

Susan M. Hogarth, MAAA, EA
Consulting Actuary

/dqm

cc: Brad Ramirez, FSA, MAAA, EA

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A **limited scope audit** (actuarial review) of any system is intended to provide an assurance that the liabilities and costs of the Plan are reasonable. The review is not a full replication of the actuarial valuation results, but is a review of the key components in the valuation process that encompass the derivation of the liabilities and costs for the Plan. These key components are the data, the benefits valued, the actuarial assumptions used in the funding, and the asset valuation method employed. The receipt of valuation output for a select group of test lives provides the detail necessary to validate each of these key components.

We reviewed all information supplied to us. We also requested and reviewed additional information provided by the retained actuary. Finally, we considered the reasonableness of the actuarial assumptions and methods in the context of the recently completed experience study and our own experience.

Conclusion:

We have discovered numerous areas of concern in the valuation of the liabilities. Some may be immaterial but some could have a larger impact. It is also possible that some adjustments will offset other ones. A limited scope audit may identify areas of concern, but it generally cannot provide information on the materiality of the consequences if there are shortcomings. Therefore, we recommend the performance of a full replication valuation. We understand that PSPRS is likely to have a second actuarial firm complete a parallel actuarial valuation as of June 30, 2006. This will provide the retained actuary with the opportunity to incorporate the recommendations of this report and give the Trustees comfort that the valuation has been performed correctly. We support this proposed process, and believe it is an appropriate response to our findings.

The enhancements we recommend are:

Liabilities/Benefits:

- Revise the liability under the active retirement benefit to accurately reflect the benefit formula for all years;
- Revise the liability under the active withdrawal benefit to accurately reflect the termination refund;
- Perform further analysis of the pre-retirement death and disability benefits for actives;
- Review the benefits and liability under the Health Insurance Premium Subsidy as part of the revised valuation review;
- Perform an Experience Study on the effect of the type of disability occurrence (accidental versus duty-related) and mortality (normal versus duty-related); and
- Explicitly value vested termination (deferred retirement) benefits.

Valuation Process:

- Match timing of salary with timing of decrement.

Assumptions:

- Assumptions tend to be on the “high inflation” side when viewed in comparison with other similar systems. We recommend a review of these assumptions.

Report:

- Make corrections to plan provisions and assumptions summarized in the actuarial valuation report;
- Add gain/loss by source to actuarial valuation report; and
- Revise valuation results incorporating the audit findings mentioned throughout this report.

The valuation data used by the retained actuary appears both accurate and complete when compared to the Plan records with minor exceptions. We also verified that certain data aspects of a select group of sample test life calculations are reasonable.

With respect to the other aspects of this limited scope actuarial audit, we found the following:

- Benefits projected in the sample test life group do not always match plan provisions as described in the actuarial valuation report;
- Assumptions tend to be on the “high inflation” side when viewed in comparison with other similar systems.; and
- Funding and asset valuation methods are consistent with those employed in other public sector plans.

PURPOSE, SCOPE AND METHODOLOGY OF THE AUDIT

Purpose of the Audit

The Arizona Joint Legislative Budget Committee (JLBC) retained consulting services to determine whether the actuarial procedures and methods used by Public Safety Personnel Retirement System (PSPRS) and the retained actuary are valid and appropriate to properly value the Arizona Corrections Officer Retirement Plan's retirement benefits. The Arizona JLBC requested a review of the reasonableness of the consulting actuary's conclusions and the conformance of their work with generally accepted actuarial standards and practices. Finally, the Arizona JLBC asked for recommendations of how the Plan can improve procedures for estimating the required level of funding.

Scope of the Audit

This actuarial audit has a specified, limited scope in its review. A full scope audit would include performing the 2005 actuarial valuation from start to finish - in essence, a parallel valuation. This limited scope audit reviews the valuation already performed, through reviewing the benefits, assumptions and methods, without a full replication of the actuarial valuation results. This review is conducted through analyzing detailed output of certain select test lives from the membership group.

In not performing a full parallel valuation, the following implicit assumptions are made:

- The actuary's valuation system is accurately applying each assumption as stated;
- The actuary's valuation system is properly allocating the present value of benefits between normal cost and actuarial accrued liability; and
- The actuary's valuation system is adding together liabilities appropriately for each decrement, for each member, and over the entire population (meaning no segment is being "dropped off" and no particular liabilities are being omitted).

What a limited scope audit can provide is:

- Assurance that appropriate benefits are being valued;
- Confirmation that the valuation system is accurately applying assumptions to the test lives;
- A measurement of actuarial assumptions against a peer group and hence an assessment of their reasonableness;
- Confirmation that the program is valuing benefits as stated in the valuation report;
- A review of the reasonableness of actuarial funding and asset valuation methods; and

- An understanding as to whether there are any indications that the liabilities and contribution rates shown are not reasonable or are incorrectly calculated. Note that a limited scope audit will generally not be sufficient to determine the materiality of any recommended modifications nor whether some adjustments offset other ones.

The purpose of this audit is to express an opinion regarding the reasonableness or accuracy of the actuarial assumptions, methods, valuation results, and contribution rates. The limited-scope review is not the same as an actuarial valuation, but represents a “second opinion” of the findings and processes included in the valuation.

Methodology of the Audit for the 2005 Actuarial Valuation

The overall objective of the valuation audit is to ascertain whether, on a long-term basis, the benefit promises can be supported by the existing assets and anticipated contributions to the Plan.

The measurement of the reasonableness of the funding levels encompasses three key analyses:

- A verification of the benefits being projected for future payment;
- A verification of the appropriateness of the actuarial assumptions that are used in calculating the liability; and
- A verification of the appropriateness of the funding and asset valuation methods.

Benefits Analysis

Critical to projecting accurate benefits is receiving complete and accurate data. We reviewed the process by which data is prepared for the actuarial valuation, including:

- An assessment of the completeness of the data; and
- A review of the data screening process employed.

We compared our benefit calculations and projections through the test life review with the retained actuary's and have noted the differences. We also tested that the benefits projected are consistent with governing provisions.

Assumptions Analysis

The second critical component in assessing the reasonableness of the funding levels is in the selection and the application of the actuarial assumptions. With respect to the selection of assumptions, we;

- Examined individual test life calculations; and
- Verified that the assumptions used in the calculations are accurately described in the valuation report.

Methods Analysis

The third component in assessing funding levels is the selection and application of the actuarial cost method (including the method for amortizing the unfunded actuarial accrued liability) and the asset valuation method (including smoothing techniques). We:

- Compared the methods against industry norms; and
- Provided an assessment of the appropriateness for the Plan.

VALIDATION OF BENEFITS VALUED

Data Used in the Valuation

The PSPRS staff supplies the participant data to the retained actuary. We obtained data from PSPRS and compared the counts of members to the counts used by the actuary in the valuation report. The counts for the active, disabled members and spouse beneficiaries matched. The count for the retirees was one record higher in the valuation report, and the child beneficiary count was one lower in the valuation report. The count for inactive members was nine records lower in the valuation report. With 14,359 members as of June 30, 2005, nine records represent less than 0.1% of the total and are therefore not significant.

The retained actuary receives near complete data from PSPRS. The data reconciliation process completed by the retained actuary involves initial data checks to determine missing or inconsistent data. Questions regarding this data are addressed to the PSPRS staff. Once answered, the retained actuary produces age, service and payroll summaries for active members, and attained age and pension benefit summaries for retirees of each of the groups to confirm the totals are consistent with those provided by the PSPRS staff.

With regards to missing/incorrect data:

- The retained actuary and PSPRS have made an assumption of age 25 at valuation date for missing dates of birth for new hires.
- Records with missing salary were not filled, and \$0 salary was used in the liability calculation. This understates the liability of the Plan. An average salary should be used so a liability can be developed.
- Three records were missing date of hire and service as of the valuation date. The retained actuary confirmed their assumption of a date of hire of July 1, 2005, which corresponds to service equal to zero. This is a reasonable assumption.

The salary data received by the retained actuary from the PSPRS staff is computed based on the most recent annual member contributions, since the employer groups do not furnish salary data. We understand that this is because salary data is not included in the System's records. In effect, the process used to generate salary generates the total pay in the year prior to the valuation date, not the rate of pay on the valuation date. We recommend that the retained actuary verify that the application of the salary projections is consistent with this fact.

During the data review process, we noticed duplicate records were provided in the retained actuary's data. These duplicate records were included in the counts shown in the valuation report, since our counts matched the valuation report, including these duplicate records. We were informed by the retained actuary that she is satisfied that apparently duplicate records are legitimate and that there is little or no overcounting of participants.

The form of payment for pay status members (retired members and survivors) was not provided in the retained actuary's data or the PSPRS data. The retained actuary has indicated they are valuing all retired members, who have a survivor birth date provided in the data, as receiving a 80% Joint and Survivor benefit. We were informed that this is a limitation in the available data. Given that limitation, the actuary's process is acceptable.

Data Risk Element

In testing the data between PSPRS and the retained actuary, the match would indicate the actuary is projecting liabilities and costs on PSPRS' set of complete data. Because some desirable data elements are not in the Plan's records, there is a possibility of distortion in the actuarial results. However, it seems unlikely that this issue can be addressed, and the consequences may be immaterial.

Projected Benefits in the Valuation

Benefits are projected for each potential benefit payable from the Plan. We tested the normal retirement, early retirement, withdrawal, death and disability benefits against the provisions as stated in the actuarial valuation report.

We reviewed the detailed calculations for a selected group of test lives to determine whether the valuation correctly projected plan benefits and whether the costs and liabilities were determined in accordance with the Plan's stated methods and assumptions. We requested specific test lives in order to compare the benefit amounts projected in the valuation against our understanding of the Plan's benefits summarized in the Summary of Benefits at www.psprs.com.

The following is a list of recommended analyses of the actuarial liabilities requiring a parallel type audit:

- *The valuation assumes all decrements occur at mid-year, while using a beginning of year Final Average Salary. The decrement and salary should occur at the same time. The liabilities could be more accurately valued by matching the timing of salary with the timing of each decrement. The current method assumes a member might terminate mid-year, but earn lower pay for that half year.*
- *The termination refund benefit defined in the actuarial valuation report and Summary of Benefits website is stated as following a schedule from 100% to 200% (which includes an additional amount under a service schedule) of member contributions based on years of service from 5 to 10 years and 200% after 10 years of service. The active withdrawal benefit is being valued by the retained actuary as 100% of member contributions for all years, hence this is understating liabilities. We recommend correcting this calculation, which will result in a cost impact to the Plan.*
- *1. The normal retirement benefit for members with less than 20 years of service is not shown in the valuation report, but is defined in the Summary of Benefits as 2.50% times Final Average Salary times years of service. The retained actuary's test life defines this benefit as 10% of Final Average Salary (for all years of service) plus 4.00% of Final Average Salary times service for service greater than ten years. This benefit is understated and should be reviewed as it is understating liabilities and is a cost impact to the Plan.*

2. For members with 20 years of service, but less than 25 years, the normal retirement benefit should be 50% of Final Average Salary plus 2.00% times Final Average Salary times service greater than 20 years. However, the valuation is overstating this as 50% of Final Average Salary plus 2.50% times Final Average Salary times service.

3. The benefit for members with service greater than or equal to 25 years is being valued with an extra year of service, hence the benefit maximum of 80% of Final Average Salary is applied one year early. This is understating the liabilities.

We recommend a revised valuation to determine the cost impact and savings to the Plan, regarding these retirement benefit corrections.

- *The benefit for vested terminations is calculated by the retained actuary in Excel as the present value of benefits of 2.50% times Final Average Salary times service, deferred to 62 with interest only, but not less than the present value of employee contributions. These are not being valued through the liability programs, and are not defined for vested terminations under the Summary of Benefits from the PSPRS website. We recommend an explicit study of the vested terminated benefits to determine the cost impact to the Plan.*
- *Further analysis regarding the retained actuary's calculation of disability and death benefits versus actual Plan definition of benefits is recommended. Through our test life review, we compared the definitions for disability and pre-retirement death benefits in the actuarial valuation report versus the Summary of Benefits on www.psprs.com, and were not able to match the disability and pre-retirement death benefits currently being valued by the retained actuary. We recommend a more detailed review of these benefits.*
- *The valuation report states one set of disability and mortality rates, which are not split between duty-related and non-duty related. The retained actuary assumes 100% of pre-retirement deaths are duty related. We recommend an Experience Study or analysis regarding the duty versus non-duty related disability and death to determine if it warrants more specific assumptions due to actual experience.*
- *We recommend the removal of the Vested Termination (Deferred Retirement) benefit shown in actuarial valuation report, since this benefit is not provided by the Plan and is not being valued.*

The following is a list of suggested changes/corrections to the actuarial valuation report:

- *The spouse age assumption that males are three years older than females should be stated, in the actuarial valuation report.*
- *The married assumption of 90% should be stated in the actuarial valuation report.*
- *The actuarial valuation report should state the normal retirement benefit for members with less than 20 years of service.*
- *The actuarial valuation report should include the definition of the pre-retirement death benefit for vested terminated participants. The death benefits are not being valued by the retained actuary, however we recommend this benefit be added which would increase the costs to the*

Plan.

The actuarial valuation report states that the “Future Benefit Increase Reserve” is an investment income reserve held for future pension increases pursuant to state statute. The Board may consider testing the adequacy of the reserve against an assumption for ad-hoc Cost-of-Living Adjustments (COLA) to the original retirement benefits.

We realize there is a liability accounted for under the Health Insurance Premium Subsidy, and we recommend a thorough review of the health benefits during the valuation rerun.

The test life comparison exhibit on the next page summarizes the calculations performed by Segal and the retained actuary, and shows the differences by each decrement in the present value of benefits calculation.

ARIZONA CORRECTIONS OFFICER RETIREMENT PLAN

JUNE 30, 2005 VALUATION

TEST LIFE COMPARISON

(excluding health insurance premium subsidy and non-vested refund benefits)

ACTIVES:	Active (Youngest)		Active (Hired After Age 30)		Active (Hired After Age 45)	
	Rodwan	Segal	Rodwan	Segal	Rodwan	Segal
Present Value of Benefits						
CURRENT AGE:						
Death	\$216	\$472	N/A	N/A	N/A	N/A
Disability	287	1,107	N/A	N/A	N/A	N/A
Withdrawal	5,926	8,106	N/A	N/A	N/A	N/A
Retirement	15,623	15,852	\$52,700	\$54,061	\$20,374	\$25,542
Total PVB (Current Age)	\$22,052	\$25,537	\$52,700	\$54,061	\$20,374	\$25,542
ENTRY AGE:						
Death	\$216	\$472	N/A	N/A	N/A	N/A
Disability	287	1,107	N/A	N/A	N/A	N/A
Withdrawal	5,926	8,106	N/A	N/A	N/A	N/A
Retirement	15,623	15,852	\$10,895	\$11,176	\$13,956	\$17,496
Total PVB (Entry Age)	\$22,052	\$25,537	\$10,895	\$11,176	\$13,956	\$17,496
RATIO OF SEGAL/RODWAN						
Present Value of Benefits:						
CURRENT AGE:						
Death		218.52%		N/A		N/A
Disability		385.71%		N/A		N/A
Withdrawal		136.79%		N/A		N/A
Retirement		101.47%		102.58%		125.37%
Total PVB (Current Age)		115.80%		102.58%		125.37%
ENTRY AGE:						
Death		218.52%		N/A		N/A
Disability		385.71%		N/A		N/A
Withdrawal		136.79%		N/A		N/A
Retirement		101.47%		102.58%		125.37%
Total PVB (Entry Age)		115.80%		102.58%		125.37%

Inactives	Deferred Vested		Retiree 1		Retiree 2	
	Rodwan	Segal	Rodwan	Segal	Rodwan	Segal
Total PVB	\$43,315	\$37,115	\$272,800	\$272,832	\$296,682	\$296,572
RATIO OF SEGAL/RODWAN						
Total PVB		85.69%		100.01%		99.96%

Inactives	Disabled Retiree		Beneficiary		Child Beneficiary	
	Rodwan	Segal	Rodwan	Segal	Rodwan	Segal
Total PVB	\$189,039	\$189,039	\$111,564	\$111,536	\$73,070	\$72,928
RATIO OF SEGAL/RODWAN						
Total PVB		100.00%		99.97%		99.81%

VALIDATION OF ACTUARIAL ASSUMPTIONS EMPLOYED

As part of our review of the actuarial assumptions, we recommend the following be reviewed:

- The economic assumptions are all near the high end of the rates used by comparable systems. There should be a separate explicit assumption for administrative (i.e. non-investment) expenses.
- Mortality table for healthy and disabled participants is based on the 1971 Group Annuity Mortality Table projected to 2000 for males (Healthy) and 1984 for males (Disability), and the same tables are set back six years for females. We recommend updating these tables to more recent mortality tables.

We reviewed the economic and demographic actuarial assumptions adopted by the Plan against generally accepted actuarial standards and practices contained in Actuarial Standard of Practice No. 27 covering economic assumptions and Actuarial Standard of Practice No. 35 covering demographic and non-economic assumptions. Our concerns are noted above.

VALIDATION OF FUNDING AND ASSET VALUATION METHODS

Funding Method for Liabilities

The entry-age normal method is being used in this valuation. This is a common and appropriate method for this type of plan. The entry-age normal funding method is somewhat conservative and provides for a stable annual cost (as a percentage of payroll) throughout a participant's working career.

We spot-checked the liability calculation for three active members, one deferred vested participant, two retirees, one disabled, and two beneficiaries to verify projected annual benefits. We did not run a "parallel" valuation, which is beyond the scope of this audit.

Asset Valuation Method

An actuarial asset valuation method is commonly used to smooth year-to-year fluctuations in the market value of assets, which helps stabilize the calculated contribution rate from year to year. The current method employed by the Plan in determining the actuarial value of assets is one that recognizes market gain and loss fluctuations over a seven-year period.

It is common to have gains and losses smoothed over a period of three to five years, although some plans are moving to a longer period. Just as is done here, many Plans first calculate the assumed return based on the actuarial valuation interest rate (8.50%, net of expenses in this case) and then smooth any returns that differ from the assumed rate. Thus, if the Plan earns the assumed rate, no smoothing is needed. As of June 30, 2005, the smoothed value is 116% of the market value, hence the actuarial value of assets exceeds market value. Therefore, deferred losses must be made up as well as the actuarial assumed rate, in order to avoid further losses. This means the Plan has to earn in excess of 8.50% in order to maintain a stable contribution rate.

It is unclear if there is a threshold corridor, which constrains actuarial value of asset volatility, limiting the difference between the actuarial value of assets and market value of assets. A typical corridor would guarantee that the actuarial value is always between 80% and 120% of the market value, regardless of the smoothing method calculation. We recommend reviewing the installation of a corridor and providing the corridor information in the actuarial valuation report, if applicable.

Amortization of the Unfunded Actuarial Accrued Liability (UAAL)

The overriding question for the Arizona Corrections Officer Retirement Plan is "how adequate are the contribution rates for funding the promised benefits?" Since both benefits and contribution rates are established by state statute, one measure of the adequacy is in the period required to pay off the unfunded accrued liability of the Plan. GASB sets forth recommendations that the maximum acceptable amortization period should not exceed 40 years (30 years for actuarial valuations beginning June 15, 2006).

As of the June 30, 2005 actuarial valuation, the period required to pay the unfunded actuarial accrued liability is 20 years, using a 6.00% payroll growth assumption. This period for amortization is GASB compliant as of the June 30, 2005 valuation date.

The funded ratio for the Plan as of June 30, 2005 was 96% on an actuarial value of asset (valuation assets) basis, which is above the average of public sector plans (on a market value basis the funded

ratio is 87%).

CONCLUSIONS

This limited scope audit reviewed the data used, the benefits valued, and the actuarial methods and assumptions employed in the June 30, 2005 actuarial valuation. The sample lives provided by the actuary reflect the plan provisions of the Plan as stated in the 2005 actuarial valuation. These sample lives also demonstrate that application of the entry age normal funding method and the actuarial assumptions were applied as stated in the valuation. This audit raises concerns in the benefits being valued as well as the assumptions.

The Arizona JLBC has asked for suggestions to consider in the ongoing valuation of the Plan. We suggest:

Benefits

- Timing review: The retained actuary assumes all decrements occur at mid-year, while using a beginning of year Final Average Salary. We recommend a review of decrement timing versus salary to more accurately value the liabilities to match the timing of salary with the timing of each decrement.
- Active withdrawal liability revision: The Plan states that a tiered percentage of employee contribution refund should be used for the withdrawal benefit. We discovered the withdrawal benefit is not being calculated consistent with Plan provisions, and recommend revising this calculation as it understates liabilities for the Plan.
- Vested termination benefit analysis: The benefit for current vested terminations is valued as a deferred benefit in Excel, and discounted only with interest (and no mortality). We recommend an explicit study of these benefits regarding the cost to the Plan.
- Normal retirement benefit correction: The normal retirement benefit should be revised to reflect the correct plan provisions regarding benefit multipliers for all years of service. Current calculations are not valuing benefits in accordance with the stated plan provisions.
- Disability and pre-retirement death benefit review: Further analysis and review should be completed to determine the cost impact to the Plan regarding the calculation of these benefits, as we were not able to match benefits using those stated in the Summary of Benefits from PSPRS.
- Health Insurance Premium Subsidy review: We recommend a thorough review of benefits and liabilities associated with the Health Insurance Premium Subsidy.

Assumptions

- Corrections to Provisions and Assumptions in Actuarial Valuation Report: The actuarial valuation report should be corrected for the following provisions and assumptions:
 - The spouse age assumption of males are three years older than females should be disclosed;
 - The married assumption of 90% should be disclosed;
 - The vested termination (deferred retirement) benefit should be removed from the report; and
 - The economic assumptions are generally at the high end of the range for comparable plans.

Report

- Add gain/loss by source analysis to actuarial valuation report: We recommend an analysis of gain/loss by source be provided in the June 30, 2006 valuation report, summarizing the experience between actual decrements versus expected decrements as well as other sources of gains and losses.

- ❑ Explicit study of vested termination (deferred retirement) benefits. The retained actuary work with PSPRS to receive actual benefits.
- ❑ Timing review. The retained actuary to review timing of decrements and salary.
- ❑ Active withdrawal liability revision. The retained actuary to correct this liability calculation.
- ❑ Normal retirement benefit correction. The retained actuary revise normal retirement benefits to reflect correct Plan provisions and determine cost impact to the Plan.
- ❑ Disability and pre-retirement death benefit review. The retained actuary to analyze actual plan benefits versus those used for Plan liabilities to determine all applicable impacts to the Plan.
- ❑ Review of Health Insurance Premium Subsidy during the rerun of the valuation.
- ❑ Make corrections to Plan provisions and assumptions summarized in the actuarial valuation report.
- ❑ Add gain/loss analysis by demographic source (retirement, withdrawal, death and disability) to the actuarial valuation report.
- ❑ Rerun valuation to analyze actual benefits promised, liabilities and cost impacts to the Plan of anticipated revisions.

**ARIZONA ELECTED OFFICIALS'
RETIREMENT PLAN**

**Audit of the
June 30, 2005 Actuarial Valuation**

Submitted by:
***THE SEGAL GROUP, INC.,
THE PARENT OF THE SEGAL COMPANY
ALL RIGHTS RESERVED***
October 2006

DIRECT DIAL NUMBER
416-969-3968

E-MAIL ADDRESS
tlevy@segalco.com

October 5, 2006

Mr. Richard Stavneak
Director
Arizona Joint Legislative Budget Committee
1716 West Adams
Phoenix, AZ 85007

Re: **Actuarial Auditing Services for the Arizona Joint Legislative Budget Committee
(Arizona Elected Officials' Retirement Plan June 30, 2005 Actuarial Valuation)**

Dear Mr. Stavneak:

We are pleased to present the results of this limited-scope audit of the June 30, 2005 actuarial valuation. The purpose of this audit is to conduct a review of the actuarial methods and procedures employed by the Arizona Elected Officials' Retirement Plan. This audit includes the following:

1. ***Report review*** – this report includes a review of the valuation results and how they comply with actuarial standards, and whether such valuation reflects appropriate disclosure information under any required reporting.
2. ***Methods and assumptions review*** – this audit provides an analysis and a review of the actuarial assumptions and methods utilized in determining the funded status and accrued liability as of June 30, 2005.
3. ***Assumptions and test lives review and reconciliation*** – this audit discusses the procedures used to validate the participant data and the test lives selected, with a detailed review of the findings.

This review was conducted under the supervision of Thomas D. Levy, a Fellow of the Society of Actuaries, Member of the American Academy of Actuaries and an Enrolled Actuary under ERISA. This review was conducted in accordance with the standards of practice prescribed by the Actuarial Standards Board.

Mr. Richard Stavneak
October 5, 2006
Page 2

The assistance of Rodwan Consulting Company, Public Safety Personnel Retirement System (PSPRS) and the Arizona Joint Legislative Budget Committee (JLBC) staff is gratefully acknowledged.

We appreciate the opportunity to be retained as the independent actuarial auditors for Arizona JLBC and we are available to answer any questions you may have on this report.

Sincerely,

Thomas D. Levy, FSA, FCIA, MAAA, EA
Senior Vice President and Chief Actuary

Susan M. Hogarth, MAAA, EA
Consulting Actuary

/dqm

cc: Brad Ramirez, FSA, MAAA, EA

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A **limited scope audit** (actuarial review) of any system is intended to provide an assurance that the liabilities and costs of the Plan are reasonable. The review is not a full replication of the actuarial valuation results, but is a review of the key components in the valuation process that encompass the derivation of the liabilities and costs for the Plan. These key components are the data, the benefits valued, the actuarial assumptions used in the funding, and the asset valuation method employed. The receipt of valuation output for a select group of test lives provides the detail necessary to validate each of these key components.

We reviewed all information supplied to us. We also requested and reviewed additional information provided by the retained actuary. Finally, we considered the reasonableness of the actuarial assumptions and methods in the context of the recently completed experience study and our own experience.

Conclusion:

We have discovered numerous areas of concern in the valuation of the liabilities. Some may be immaterial but some could have a larger impact. It is also possible that some adjustments will offset other ones. A limited scope audit may identify areas of concern, but it generally cannot provide information on the materiality of the consequences if there are shortcomings. Therefore, we recommend the performance of a full replication valuation. We understand that PSPRS is likely to have a second actuarial firm complete a parallel actuarial valuation as of June 30, 2006. This will provide the retained actuary with the opportunity to incorporate the recommendations of this report and give the Trustees comfort that the valuation has been performed correctly. We support this proposed process, and believe it is an appropriate response to our findings.

The enhancements we recommend are:

Liabilities/Benefits:

- Revise the liability under the active withdrawal benefit to include the early retirement reduction;
- Revise retiree liabilities to reflect the normal form of payment to 75% Joint and Survivor (actually being valued at 80% Joint and Survivor), and request actual payment form information for pay status participants if available;
- Revise vested termination (deferred retirement) normal retirement benefits to reflect average yearly salary instead of the final salary at termination; and
- Review the benefits and liability under the Health Insurance Premium Subsidy as part of the revised valuation review.

Valuation Process:

- Match timing of salary with timing of decrement.

Assumptions:

- Assumptions tend to be on the “high inflation” side when viewed in comparison with other similar systems. We recommend a review of these assumptions.
- Review the affect of term limits on withdrawal and retirement rates. The first impact of term limits occurred in the year 2000. As this was midway through the most recent experience study period (July 1, 1998 through June 30, 2003), that study would not fully reflect the impact of term limits.

Report:

- Make corrections to plan provisions and assumptions summarized in the actuarial valuation report;
- Add gain/loss by source to actuarial valuation report; and
- Revise valuation results incorporating the audit findings mentioned throughout this report.

The valuation data used by the retained actuary appears both accurate and complete when compared to the Plan records with minor exceptions. We also verified that certain data aspects of a select group of sample test life calculations are reasonable.

With respect to the other aspects of this limited scope actuarial audit, we found the following:

- Benefits projected in the sample test life group do not always match plan provisions as described in the actuarial valuation report;
- Assumptions tend to be on the “high inflation” side when viewed in comparison with other similar systems.
- Funding and asset valuation methods are consistent with those employed in other public sector plans.

PURPOSE, SCOPE AND METHODOLOGY OF THE AUDIT

Purpose of the Audit

The Arizona Joint Legislative Budget Committee (JLBC) retained consulting services to determine whether the actuarial procedures and methods used by Public Safety Personnel Retirement System (PSPRS) and the retained actuary are valid and appropriate to properly value the Arizona Elected Officials' Retirement Plan's retirement benefits. The Arizona JLBC requested a review of the reasonableness of the consulting actuary's conclusions and the conformance of their work with generally accepted actuarial standards and practices. Finally, the Arizona JLBC asked for recommendations of how the Plan can improve procedures for estimating the required level of funding.

Scope of the Audit

This actuarial audit has a specified, limited scope in its review. A full scope audit would include performing the 2005 actuarial valuation from start to finish - in essence, a parallel valuation. This limited scope audit reviews the valuation already performed, through reviewing the benefits, assumptions and methods, without a full replication of the actuarial valuation results. This review is conducted through analyzing detailed output of certain select test lives from the membership group.

In not performing a full parallel valuation, the following implicit assumptions are made:

- The actuary's valuation system is accurately applying each assumption as stated;
- The actuary's valuation system is properly allocating the present value of benefits between normal cost and actuarial accrued liability; and
- The actuary's valuation system is adding together liabilities appropriately for each decrement, for each member, and over the entire population (meaning no segment is being "dropped off" and no particular liabilities are being omitted).

What a limited scope audit can provide is:

- Assurance that appropriate benefits are being valued;
- Confirmation that the valuation system is accurately applying assumptions to the test lives;
- A measurement of actuarial assumptions against a peer group and hence an assessment of their reasonableness;
- Confirmation that the program is valuing benefits as stated in the valuation report;
- A review of the reasonableness of actuarial funding and asset valuation methods; and

- An understanding as to whether there are any indications that the liabilities and contribution rates shown are not reasonable or are incorrectly calculated. Note that a limited scope audit will generally not be sufficient to determine the materiality of any recommended modifications nor whether some adjustments offset other ones.

The purpose of this audit is to express an opinion regarding the reasonableness or accuracy of the actuarial assumptions, methods, valuation results, and contribution rates. The limited-scope review is not the same as an actuarial valuation, but represents a “second opinion” of the findings and processes included in the valuation.

Methodology of the Audit for the 2005 Actuarial Valuation

The overall objective of the valuation audit is to ascertain whether, on a long-term basis, the benefit promises can be supported by the existing assets and anticipated contributions to the Plan.

The measurement of the reasonableness of the funding levels encompasses three key analyses:

- A verification of the benefits being projected for future payment;
- A verification of the appropriateness of the actuarial assumptions that are used in calculating the liability; and
- A verification of the appropriateness of the funding and asset valuation methods.

Benefits Analysis

Critical to projecting accurate benefits is receiving complete and accurate data. We reviewed the process by which data is prepared for the actuarial valuation, including:

- An assessment of the completeness of the data; and
- A review of the data screening process employed.

We compared our benefit calculations and projections through the test life review with the retained actuary's and have noted the differences. We also tested that the benefits projected are consistent with governing provisions.

Assumptions Analysis

The second critical component in assessing the reasonableness of the funding levels is in the selection and the application of the actuarial assumptions. With respect to the selection of assumptions, we;

- Examined individual test life calculations; and
- Verified that the assumptions used in the calculations are accurately described in the valuation report.

Methods Analysis

The third component in assessing funding levels is the selection and application of the actuarial cost method (including the method for amortizing the unfunded actuarial accrued liability) and the asset valuation method (including smoothing techniques). We:

- Compared the methods against industry norms; and
- Provided an assessment of the appropriateness for the Plan.

VALIDATION OF BENEFITS VALUED

Data Used in the Valuation

The PSPRS staff supplies the participant data to the retained actuary. We obtained data from PSPRS and compared the counts of members to the counts used by the actuary in the valuation report. The counts for the active, retired members and survivors matched, but the count for the inactive members was three records lower in the valuation report. With 1,689 members as of June 30, 2005, three records represent less than 0.2% of the total and are therefore not significant.

The retained actuary receives near-complete data from PSPRS. The data reconciliation process completed by the retained actuary involves initial data checks to determine missing or inconsistent data. Questions regarding this data are addressed to the PSPRS staff. Once answered, the retained actuary produces age, service and payroll summaries for active members, and attained age and pension benefit summaries for retirees of each of the groups to confirm the totals are consistent with those provided by the PSPRS staff.

The salary data received by the retained actuary from the PSPRS staff is computed based on the most recent annual member contributions, since the employer groups do not furnish salary data. We understand that this is because salary data is not included in the System's records. In effect, the process used to generate salary generates the total pay in the year prior to the valuation date, not the rate of pay on the valuation date. We recommend that the retained actuary verify that the application of the salary projections is consistent with this fact.

The form of payment for pay status members (retired members and survivors) was not provided in the retained actuary's data or the PSPRS data. The retained actuary has indicated they are valuing all retired members, who have a survivor birth date provided in the data, as receiving a 75% Joint and Survivor benefit. The valuation report and summary of benefits stated in the EORP website confirm a 75% survivor pension. However, our test life review indicates that these benefits are being valued as an 80% Joint and Survivor benefit. If possible, we recommend that the PSPRS staff provide the actual elected forms of payment in the data submitted to the retained actuary so the liabilities may be more accurately determined. In addition, we recommend the retained actuary revise the valuation results to reflect the 75% Joint and Survivor normal form for married participants.

Data Risk Element

For married retired members, confirming form of payment and the percentage married assumption for Joint and Survivor elections should be completed. Confirming the data and correcting the liabilities to reflect the normal form of payment for married participants of 75% Joint and Survivor may result in lower liabilities and a cost savings to the Plan.

In testing the data between PSPRS and the retained actuary, the match would indicate the actuary is projecting liabilities and costs on PSPRS's set of complete data. Because some desirable data elements are not in the System's records, there is a possibility of distortion in the actuarial results. However, it seems unlikely that this issue can be addressed, and the consequences may be immaterial.

Projected Benefits in the Valuation

Benefits are projected for each potential benefit payable from the Plan. We tested the normal retirement, early retirement, withdrawal, death and disability benefits against the provisions as stated in the actuarial valuation report.

We reviewed the detailed calculations for a selected group of test lives to determine whether the valuation correctly projected plan benefits and whether the costs and liabilities were determined in accordance with the Plan's stated methods and assumptions. We requested specific test lives in order to compare the benefit amounts projected in the valuation against our understanding of the Plan's benefits summarized in the Summary of Benefits at www.psprs.com.

The following is a list of recommended analyses of the actuarial liabilities requiring a parallel type audit:

- *The valuation assumes all decrements occur at mid-year, while using a beginning of year final average yearly salary. The decrements and salary should occur at the same time. The liabilities could be more accurately valued by matching the timing of salary with the timing of each decrement. The current method assumes a member might terminate mid-year, but earn lower pay for that half year.*
- *The vested termination (deferred retirement) benefit is defined as the "amount of pension determined in the same manner as a normal or early pension, whichever is applicable." The Early Retirement definition states a reduced benefit is payable at any age with five or more years of credited service. Through our review, we found the withdrawal decrement in the active test life does not include a reduction to the benefit, which is overstating liabilities. We recommend correcting this calculation, which will result in a cost savings to the Plan.*
- *The accrued benefit for vested termination (deferred retirement) records is calculated using the salary at termination instead of the member's average yearly salary, which is defined as the highest average total salary over a period of three consecutive years within the last ten completed years of credited service. The current calculation overestimates the liabilities by using the salary at termination. We recommend revising the calculation to use a three-year average or request the actual accrued benefit amount from PSPRS.*

The following is a list of suggested changes/corrections to the actuarial valuation report:

- *The spouse age assumption that males are three years older than females should be stated in the actuarial valuation report.*
- *The married assumption of 90% should be stated in the actuarial valuation report.*
- *The present value of benefits for actives under the withdrawal decrement is loaded by 5.00% to account for pre-retirement death benefits, and should be stated in the actuarial valuation report.*
- *The actuarial valuation report should include the definition of the pre-retirement death benefit for vested terminated participants. We confirmed the death benefit for married vested terminated participants is being valued as a 50% Joint and Survivor benefit, under the 90% marriage assumption. The single life death benefit is not being valued, thus we recommend that this benefit be added (which would increase the costs to the Plan).*
- *The actuarial valuation report should state the ad-hoc Cost of Living Adjustments (COLA) being valued, under Post-Retirement Adjustments.*

The actuarial valuation report states that the “Future Benefit Increase Reserve” is an investment income reserve held for future pension increases pursuant to state statute. The Board may consider testing the adequacy of the reserve against an assumption for ad-hoc Cost-of-Living Adjustments (COLA) to the original retirement benefits.

We realize there is a liability accounted for under the Health Insurance Premium Subsidy and we recommend a thorough review of the health benefits during the valuation rerun.

The test life comparison exhibit on the next page summarizes the calculations performed by Segal and the retained actuary, and shows the differences by each decrement in the present value of benefits calculation.

ARIZONA ELECTED OFFICIALS' RETIREMENT PLAN

JUNE 30, 2005 VALUATION

TEST LIFE COMPARISON

(excluding health insurance premium subsidy and non-vested refund benefits)

ACTIVES:	Active (Youngest)		Active (Hired After Age 38)		Active (Hired After Age 56)	
	Rodwan	Segal	Rodwan	Segal	Rodwan	Segal
Present Value of Benefits						
CURRENT AGE:						
Death	\$275	\$284	N/A	N/A	N/A	N/A
Disability	200	206	N/A	N/A	N/A	N/A
Withdrawal	5,410	4,003	N/A	N/A	N/A	N/A
Retirement	10,456	10,920	\$271,874	\$284,823	\$40,333	\$42,746
Total PVB (Current Age)	\$16,341	\$15,413	\$271,874	\$284,823	\$40,333	\$42,746
ENTRY AGE:						
Death	\$200	\$216	N/A	N/A	N/A	N/A
Disability	145	158	N/A	N/A	N/A	N/A
Withdrawal	3,882	2,872	N/A	N/A	N/A	N/A
Retirement	7,502	7,835	\$194,200	\$203,449	\$28,126	\$29,809
Total PVB (Entry Age)	\$11,729	\$11,081	\$194,200	\$203,449	\$28,126	\$29,809
RATIO OF SEGAL/RODWAN						
Present Value of Benefits:						
CURRENT AGE:						
Death		103.27%		N/A		N/A
Disability		103.00%		N/A		N/A
Withdrawal		73.99%		N/A		N/A
Retirement		104.44%		104.76%		105.98%
Total PVB (Current Age)		94.32%		104.76%		105.98%
ENTRY AGE:						
Death		108.00%		N/A		N/A
Disability		108.97%		N/A		N/A
Withdrawal		73.98%		N/A		N/A
Retirement		104.44%		104.76%		105.98%
Total PVB (Entry Age)		94.48%		104.76%		105.98%

Inactives	Deferred Vested		Retiree 1		Retiree 2	
	Rodwan	Segal	Rodwan	Segal	Rodwan	Segal
Total PVB	\$82,554	\$82,771	\$258,543	\$258,581	\$690,431	\$681,679
RATIO OF SEGAL/RODWAN						
Total PVB		100.26%		100.01%		98.73%

Inactives	Disabled Retiree		Beneficiary	
	Rodwan	Segal	Rodwan	Segal
Total PVB	\$427,559	\$421,534	\$10,134	\$10,153
RATIO OF SEGAL/RODWAN				
Total PVB		98.59%		100.19%

VALIDATION OF ACTUARIAL ASSUMPTIONS EMPLOYED

As part of our review of the actuarial assumptions, we recommend the following be reviewed:

- The economic assumptions are all near the high end of the rates used by comparable systems. There should be a separate explicit assumption for administrative (i.e. non-investment) expenses.
- Mortality table for healthy and disabled participants is based on the 1971 Group Annuity Mortality Table projected to 1984 for males, and the same table set back six years for females. We recommend updating these tables to more recent mortality tables.
- Withdrawal and retirement - A review may be warranted in light of term limits and the higher rate of early retirement referenced in the June 30, 2005 valuation report.

We reviewed the economic and demographic actuarial assumptions adopted by the Plan against generally accepted actuarial standards and practices contained in Actuarial Standard of Practice No. 27 covering economic assumptions and Actuarial Standard of Practice No. 35 covering demographic and non-economic assumptions. Our concerns are noted above.

VALIDATION OF FUNDING AND ASSET VALUATION METHODS

Funding Method for Liabilities

The entry-age normal method is being used in this valuation. This is a common and appropriate method for this type of plan. The entry-age normal funding method is somewhat conservative and provides for a stable annual cost (as a percentage of payroll) throughout a participant's working career.

We spot-checked the liability calculation for three active members, one deferred vested participant, two retirees, one disabled, and one beneficiary to verify projected annual benefits. We did not run a "parallel" valuation, which is beyond the scope of this audit.

Asset Valuation Method

An actuarial asset valuation method is commonly used to smooth year-to-year fluctuations in the market value of assets, which helps stabilize the calculated contribution rate from year to year. The current method employed by the Plan in determining the actuarial value of assets is one that recognizes market gain and loss fluctuations over a seven-year period.

It is common to have gains and losses smoothed over a period of three to five years although some plans are moving to a longer period. Just as is done here, many Plans first calculate the assumed return based on the actuarial valuation interest rate (8.50%, net of expenses in this case) and then smooth any returns that differ from the assumed rate. Thus, if the Plan earns the assumed rate, no smoothing is needed. As of June 30, 2005, the smoothed value is 118% of the market value, hence the actuarial value of assets exceeds market value. Therefore, deferred losses must be made up as well as the actuarial assumed rate, in order to avoid further losses. This implies the Plan must earn well in excess of 8.50% in order to maintain a stable contribution rate.

It is unclear if there is a threshold corridor, which constrains actuarial value of asset volatility, limiting the difference between the actuarial value of assets and market value of assets. A typical corridor would guarantee that the actuarial value is always between 80% and 120% of the market value, regardless of the smoothing method calculation. We recommend reviewing the installation of a corridor and providing the corridor information in the actuarial valuation report, if applicable.

Amortization of the Unfunded Actuarial Accrued Liability (UAAL)

The overriding question for the Plan is "how adequate are the contribution rates for funding the promised benefits?" Since both benefits and contribution rates are established by state statute, one measure of the adequacy is in the period required to pay off the unfunded accrued liability of the Plan. GASB sets forth recommendations that the maximum acceptable amortization period should not exceed 40 years (30 years for actuarial valuations beginning June 15, 2006).

As of the June 30, 2005 actuarial valuation, the period required to pay the unfunded actuarial accrued liability is 20 years, using a 6.50% payroll growth assumption. The period for amortization is GASB compliant as of the June 30, 2005 valuation date. The funded ratio for the Plan as of June 30, 2005 was 96% on an actuarial value of asset (valuation assets) basis, which is above the average of public sector plans (on a market value basis the funded ratio is 86%).

CONCLUSIONS

This limited scope audit reviewed the data used, the benefits valued, and the actuarial methods and assumptions employed in the June 30, 2005 actuarial valuation. The sample lives provided by the actuary reflect the plan provisions of the Plan as stated in the 2005 actuarial valuation. These sample lives also demonstrate that application of the entry age normal funding method and the actuarial assumptions were applied as stated in the valuation. This audit raises concerns in the benefits being valued as well as the assumptions.

The Arizona JLBC has asked for suggestions to consider in the ongoing valuation of the Plan. We suggest:

Data

- Joint and Survivor percentage change: The normal form of payment for married retired participants is a 75% Joint and Survivor election. The valuation results indicate an 80% Joint and Survivor election has been made by married retired participants. We recommend properly reflecting the Joint and Survivor payment form and further analysis regarding the impact to Plan costs.

Benefits

- Timing review: The retained actuary assumes all decrements occur at mid-year, while using a beginning of year final average salary. We recommend a review of decrement timing versus salary to more accurately value the liabilities to match the timing of salary with the timing of each decrement.
- Active withdrawal liability revision: The Plan states the vested termination (deferred retirement) benefit is calculated in this same manner as normal and early retirement, including a reduction in benefits for early retirement. We discovered the withdrawal benefit is not being reduced for early retirement through our test life review, and recommend revising this calculation as it overstates liabilities.

Assumptions

- Corrections to Provisions and Assumptions in Actuarial Valuation Report: The actuarial valuation report should be corrected for the following provisions and assumptions:
 - The spouse age assumption of males are three years older than females should be disclosed;
 - The married assumption of 90% should be disclosed;
 - The 5.00% load for the present value of benefit for actives under the withdrawal decrement for the pre-retirement death should be disclosed;
 - The definition of the pre-retirement death benefit for married vested terminated participants as a 50% Joint and Survivor benefit should be disclosed;
 - The post-retirement adjustment definition should be disclosed; and
 - The economic assumptions are generally at the high end of the range for comparable plans.

Report

- Add gain/loss by source analysis to actuarial valuation report: We recommend an analysis of gain/loss by source be provided in the June 30, 2006 valuation report, summarizing the experience between actual decrements versus expected decrements as well as other sources of gains and losses.

- ❑ Vested termination (deferred retirement) benefits. The retained actuary to work with PSPRS to revise benefits based on average yearly salary.
- ❑ Joint and Survivor percentage change. The retained actuary to correct pay status participants to reflect the normal form of payment for married participants as 75% Joint and Survivor.
- ❑ Timing review. The retained actuary to review timing of decrements and salary.
- ❑ Active withdrawal liability revision. The retained actuary to correct this liability calculation to reflect an early retirement reduction.
- ❑ Review of Health Insurance Premium Subsidy during the rerun of the valuation.
- ❑ Make corrections to Plan provisions and assumptions summarized in the actuarial valuation report.
- ❑ Add gain/loss analysis by demographic source (retirement, withdrawal, death and disability) to the actuarial valuation report.
- ❑ Term limits review. The Board may wish to consider the extent to which term limits affect the rate of withdrawal and/or retirement and develop the appropriate rates.
- ❑ Rerun valuation to analyze actual benefits promised, liabilities and cost impacts to the Plan of anticipated revisions.

**PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM
CORRECTIONS OFFICER RETIREMENT PLAN
ELECTED OFFICIALS' RETIREMENT PLAN**

Carter Olson
Fund Manager Chairman

Billy Shields
Fund Manager Vice Chairman

Fritz Beesemyer **James Gentner**
Fund Manager Member Fund Manager Member

Brian Delfs
Fund Manager Advisor

3010 East Camelback Road, Suite 200
Phoenix, Arizona 85016-4416
www.psprs.com

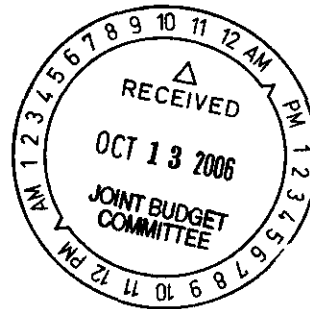
TELEPHONE: (602) 255-5575
FAX: (602) 255-5572

James M. Hacking
Administrator

James A. Nielsen **Tracey D. Peterson**
Assistant Administrator-CIO Assistant Administrator-COO

October 13, 2006

Mr. Richard Stavneak, Director
Joint Legislative Budget Committee
1716 West Adams
Phoenix, AZ 85007



Dear Mr. Stavneak:

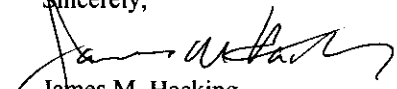
Thank you for the opportunity to provide comments on the results of the Segal Group's actuarial audits of the Public Safety Personnel Retirement System's five year experience study (for the five years ending June 30, 2003) and the FY'05 actuarial valuations for the three retirement plans that PSPRS administers – namely the Public Safety Personnel Retirement System Plan (PSPRS), the Corrections Officer Retirement Plan (CORP) and the Elected Officials Retirement Plan (EORP).

We have enclosed a copy of our comments with respect to each of the Segal Group's reports. Since this agency has never conducted parallel (i.e., "full replication") actuarial audits of past experience studies and actuarial valuations on the PSPRS-administered Plans and in view of the Segal Group's recommendations that we do so, the Fund Manager (PSPRS' governing Board of Trustees) has approved the funding for such audits of our FY'06 Plan valuations and of a five year experience study (for the five years ending June 30, 2006) that the PSPRS retained actuary is about to conduct. We have issued an RFP for these purposes.

We understand that the Segal Group's reports and our responses to them will be presented to a Subcommittee of the JLBC on October 24, 2006. Since I shall be out of the country at that time, I have asked Tracey Peterson, our Assistant Administrator, and Sandra Rodwan, the PSPRS retained actuary, to be present at that hearing and, if the Subcommittee so desires, to present the System's responses to the Segal Group's reports and respond to any questions that the members of the Subcommittee may have.

If, prior to the hearing, you have any questions, please feel free to contact me at (602) 296-2527.

Sincerely,


James M. Hacking
PSPRS Administrator

Encl.

Public Safety Personnel Retirement System Comments:

As fiduciaries for the PSPRS Plan, we had contemplated retaining an independent actuarial consulting firm to conduct a parallel (i.e., "full replication") audit of the FY'06 actuarial valuation. In light of the Segal report on its audit of the PSPRS FY'05 actuarial valuation and in view of the Segal recommendation that we undertake a parallel valuation, we have issued an RFP for actuarial consulting services. We shall conduct a parallel FY'06 valuation of the three retirement plans (including the PSPRS Plan) that PSPRS administers and a parallel five year experience study (for the five years ending June 30, 2006). We shall report the results of those parallel valuations and experience study to the JLBC when they are completed early next year.

With respect to the Segal report on the PSPRS Plan's FY'05 actuarial valuation, our comments are as follows:

Data:

Segal states "the valuation data used by the retained actuary appears both accurate and complete when compared to the Systems records with minor exceptions. We also verified that certain data aspects of a select group of sample test life calculations are reasonable."

Benefits Valued:

Segal states that they were unable to match the active benefits liability as shown on page 9 of the document. This is in large part due to the differences in the timing of the assumed salary increases and death, disability and withdrawals. We assume that the salary increases are at mid-year. Absent salary policies and data from the employer groups, we believe this is a reasonable assumption. Our actuary has made modifications in the June 30, 2006 valuation which should eliminate the differences in the death, disability and withdrawal liabilities. Segal was able to match the liabilities associated with the disability and retiree benefits.

Actuarial Assumptions:

Segal states "the assumptions tend to be on the high inflation side when viewed in comparison with other similar systems." We believe our assumptions taken as a whole are conservative and reasonable. Our governing board reviews and approves the actuarial assumptions on an annual basis.

Funding and asset valuation methods:

Segal states "funding and asset valuation methods are consistent with those employed in other public sector plans."

Based on these key components, it appears that Segal determined that the actuarial procedures and methods were valid and appropriate to properly value the PSPRS retirement benefits. However, the tone of the report and the conclusion stated on page 1 of their report would give the reader a different view.

We interpreted the Segal comments on pages 1 and 2 as the result of the JLBC request for recommendations of how PSPRS could improve procedures for estimating the required level of funding. Our responses to the Segal "recommendations" are as follows:

- Revise the liability under the active disability benefit to accurately reflect the Fire High versus Fire Low disability rates (We concur with the recommendation for correcting an error which was made and corrected in the June 30, 2006 valuation, results were immaterial);
- Review the liability under active benefits before normal retirement age as we (Segal) were unable to match these benefits (We disagree with the recommendation because there is no normal retirement age in PSPRS - 20 year retirement requirement);
- Review the benefits and liability under the Health Insurance Premium Subsidy as part of the revised valuation review (We concur with the recommendation for additional review; however, the subsidy is set by statute and the cost is factored into the employer's required contribution rates);
- Review rates of retirement since adoption of the current DROP provision and also review retirement experience with less than 20 years against current retirement rate assumptions and change if warranted (We concur with the recommendation for the review of DROP which will be done as part of the five year experience study for the five years ending June 30, 2006. This will provide sufficient data in order to review the DROP experience. We disagree with the recommendation for review of retirement experience with less than 20 years because PSPRS does not have "early retirement benefits." All normal retirements and vested deferred benefits are considered in the actuarial assumptions.)
- Review retired mortality experience (We concur with the recommendation. The governing board agreed to postpone updating the mortality tables because of potential impact on the employer contribution rates. But, mortality will be included in the experience study review and changes will be made if warranted.)
- Match timing of salary with timing of decrements (We assume all salary increases are at mid-year. The final average salary used in the valuation is the average salary calculated from the contributions to the system from the previous 26 pay periods ending on the valuation date. We will review this further with our actuary. We do not believe current practice is unreasonable.)
- Assumptions tend to be on the "high inflation" side when viewed in comparison with other similar systems. We (Segal) recommend a review of these assumptions. (We assume 8.5% investment return. The system over a twenty year period has earned, on average, over 9%. We assume 6% total payroll growth. The real rate of return is 2.5%. We do not believe these assumptions are unreasonable.)

- Make corrections to plan provisions and assumptions summarized in the actuarial valuation report (We are not aware of any "corrections" to the plan provisions and assumptions. We do concur with providing additional disclosures in the actuarial valuation report that identify the assumptions that are being used.)
- Add gain/loss by source to actuarial valuation report (We concur with this recommendation.)
- Revise valuation results incorporating the audit findings mentioned throughout this report (We incorporated some of the recommendations identified above in the current valuation. The results were immaterial. However, we are still unclear as to which of the recommendations are causing the heightened levels of concern as mentioned in the Executive Summary.
- Benefits projected in the sample test life group do not always match plan provisions as described in the actuarial valuation report (We will review this recommendation. We are concerned that Segal based their understanding of the System's benefits on the Summary of Benefits found on our website instead of using or at least referring to the complete statutes. The Summary of Benefits does not provide enough detail for anyone to conduct an audit or a review to determine if the projected plan benefits were determined correctly. The Summary of Benefits is used by members for a quick reference guide.)
- Funding and asset valuation methods are consistent with those employed in other public sector plans.
- The economic assumptions are all near the high end of the rates used by comparable systems. There should be a separate explicit assumption for administrative expenses. (We disagree with this recommendation. Segal lists this as a concern. However, the actuarial assumptions adopted by PSPRS are in compliance with generally accepted actuarial standards and practices.)

According to the Segal report, they were concerned with the benefits being valued as well as the assumptions used. However, Segal did not identify any assumptions that were not in compliance with generally accepted actuarial standards and practices. Segal did highlight an error in the retirement rates for the Fire High and Fire Low. We have subsequently corrected that item, as mentioned above. None of the recommendations identified by Segal should have resulted in their "concern" in the valuation of the systems' liabilities.

Thank you for your time and attention.

Elected Officials Retirement Plan Comments:

As fiduciaries for the EORP Plan, we had contemplated retaining an independent actuarial consulting firm to conduct a parallel (i.e., "full replication") audit of the FY'06 actuarial valuation. In light of the Segal report on its audit of the EORP FY'05 actuarial valuation and in view of the Segal recommendation that we undertake a parallel valuation, we have issued an RFP for actuarial consulting services. We shall conduct a parallel FY'06 valuation of the three retirement plans (including the EORP Plan) that EORP administers and a parallel five year experience study (for the five years ending June 30, 2006). We shall report the results of those parallel valuations and experience study to the JLBC when they are completed early next year.

With respect to the Segal report on the EORP Plan's FY'05 actuarial valuation, our comments are as follows:

Data:

Segal states "the valuation data used by the retained actuary appears both accurate and complete when compared to the Plans records with minor exceptions. We also verified that certain data aspects of a select group of sample test life calculations are reasonable."

Benefits Valued:

Segal states that they were unable to match the active benefits liability as shown on page 9 of the document. This is in large part due to the differences in the timing of the assumed salary increases and death, disability and withdrawals. We assume that the salary increases are at mid-year. Absent salary policies and data from the employer groups, we believe this is a reasonable assumption. Our actuary has made modifications in the June 30, 2006 valuation which should eliminate the differences in the death, disability and withdrawal liabilities. Segal was able to match the liabilities associated with the disability and retiree benefits.

Actuarial Assumptions:

Segal states "the assumptions tend to be on the high inflation side when viewed in comparison with other similar plans." We believe our assumptions taken as a whole are conservative and reasonable. Our governing board reviews and approves the actuarial assumptions on an annual basis.

Funding and asset valuation methods:

Segal states "funding and asset valuation methods are consistent with those employed in other public sector plans."

Based on these key components, it appears that Segal determined that the actuarial procedures and methods were valid and appropriate to properly value the EORP retirement benefits. However, the tone of the report and the conclusion stated on page 1 of their report would give the reader a different view.

We interpreted the Segal comments on pages 1 and 2 as the result of the JLBC request for recommendations of how EORP could improve procedures for estimating the required level of funding. Our responses to the Segal "recommendations" are as follows:

- Revise the liability under the active withdrawal benefit to include the early retirement reduction (We concur with the recommendation for correcting an error which was made and corrected in the June 30, 2006 valuation, results were immaterial);
- Revise retiree liabilities to reflect the normal form of payment to 75% Joint and Survivor (actually being valued at 80% Joint and Survivor), and request actual payment form information for pay status participants if available (We concur with the recommendation for correcting an error which was made and corrected in the June 30, 2006 valuation, results were very small. However, we disagree with the second part of the recommendation. Requesting actual payment form information for pay status participants is unnecessary. All survivor benefits are set by statute. Participants do not select a form of payment);
- Revise vested termination (deferred retirement) normal retirement benefits to reflect average yearly salary instead of the final salary at termination (We disagree with the recommendation because the majority of vested participants may be eligible for early retirement benefits under an old law where final average salary at termination was appropriately used. If Segal is referring to deferred retirement benefits as mentioned on page 12, EORP does not have deferred retirement benefits.);
- Review the benefits and liability under the Health Insurance Premium Subsidy as part of the revised valuation review (We concur with the recommendation for additional review; however, the subsidy is set by statute and the cost is factored into the employer's required contribution rates);
- Match timing of salary with timing of decrements (We assume all salary increases are at mid-year. The final average salary used in the valuation is the average salary calculated from the contributions to the plan from the previous 26 pay periods ending on the valuation date. We will review this further with our actuary. We do not believe current practice is unreasonable.)
- Assumptions tend to be on the "high inflation" side when viewed in comparison with other similar plans. We (Segal) recommend a review of these assumptions. (We assume 8.5% investment return. The plan over a twenty year period has earned, on average, over 9%. We assume 6% total payroll growth. The real rate of return is 2.5%. We do not believe these assumptions are unreasonable.)
- Review the affect of term limits on withdrawal and retirement rates. The first impact of term limits occurred in the year 2000. As this was midway through the most recent experience study period (July 1, 1998 through June 30, 2003) that study

would not fully reflect the impact of term limits (We concur with the recommendation. The impact of term limits on withdrawal and retirement rates will be included in the experience study review and changes will be made if warranted.)

- Make corrections to plan provisions and assumptions summarized in the actuarial valuation report (We are not aware of any "corrections" to the plan provisions and assumptions. We do concur with providing additional disclosures in the actuarial valuation report that identify the assumptions that are being used.)
- Add gain/loss by source to actuarial valuation report (We concur with this recommendation.)
- Revise valuation results incorporating the audit findings mentioned throughout this report (We incorporated some of the recommendations identified above in the current valuation. The results were immaterial. However, we are still unclear as to which of the recommendations are causing the heightened levels of concern as mentioned in the Executive Summary.
- Benefits projected in the sample test life group do not always match plan provisions as described in the actuarial valuation report (We will review this recommendation. We are concerned that Segal based their understanding of the Plan's benefits on the Summary of Benefits found on our website instead of using or at least referring to the complete statutes. The Summary of Benefits does not provide enough detail for anyone to conduct an audit or a review to determine if the projected plan benefits were determined correctly. The Summary of Benefits is used by members for a quick reference guide.)
- Funding and asset valuation methods are consistent with those employed in other public sector plans.
- The economic assumptions are all near the high end of the rates used by comparable plans. There should be a separate explicit assumption for administrative expenses. (We disagree with this recommendation. Segal lists this as a concern. However, the actuarial assumptions adopted by EORP are in compliance with generally accepted actuarial standards and practices.)
- Review retired mortality experience (We concur with the recommendation. The governing board agreed to postpone updating the mortality tables because of potential impact on the employer contribution rates. But, mortality will be included in the experience study review and changes will be made if warranted.)

According to the Segal report, they were concerned with the benefits being valued as well as the assumptions used. However, Segal did not identify any assumptions that were not in compliance with generally accepted actuarial standards and practices. Segal did highlight a couple of errors in the valuation report. We have subsequently corrected those items, as mentioned above. None of the

recommendations identified by Segal should have resulted in their "concern" in the valuation of the plans' liabilities.

Thank you for your time and attention.

Correction Officers Retirement Plan Comments:

As fiduciaries for the CORP Plan, we had contemplated retaining an independent actuarial consulting firm to conduct a parallel (i.e., "full replication") audit of the FY'06 actuarial valuation. In light of the Segal report on its audit of the CORP FY'05 actuarial valuation and in view of the Segal recommendation that we undertake a parallel valuation, we have issued an RFP for actuarial consulting services. We shall conduct a parallel FY'06 valuation of the three retirement plans (including the CORP Plan) that CORP administers and a parallel five year experience study (for the five years ending June 30, 2006). We shall report the results of those parallel valuations and experience study to the JLBC when they are completed early next year.

With respect to the Segal report on the CORP Plan's FY'05 actuarial valuation, our comments are as follows:

Data:

Segal states "the valuation data used by the retained actuary appears both accurate and complete when compared to the Plans records with minor exceptions. We also verified that certain data aspects of a select group of sample test life calculations are reasonable."

Benefits Valued:

Segal states that they were unable to match the active benefits liability as shown on page 9 of the document. This is in large part due to the differences in the timing of the assumed salary increases and death, disability and withdrawals. We assume that the salary increases are at mid-year. Absent salary policies and data from the employer groups, we believe this is a reasonable assumption. Our actuary has made modifications in the June 30, 2006 valuation which should eliminate the differences in the death, disability and withdrawal liabilities. Segal was able to match the liabilities associated with the disability and retiree benefits.

Actuarial Assumptions:

Segal states "the assumptions tend to be on the high inflation side when viewed in comparison with other similar plans." We believe our assumptions taken as a whole are conservative and reasonable. Our governing board reviews and approves the actuarial assumptions on an annual basis.

Funding and asset valuation methods:

Segal states "funding and asset valuation methods are consistent with those employed in other public sector plans."

Based on these key components, it appears that Segal determined that the actuarial procedures and methods were valid and appropriate to properly value the CORP retirement benefits. However, the tone of the report and the conclusion stated on page 1 of their report would give the reader a different view.

We interpreted the Segal comments on pages 1 and 2 as the result of the JLBC request for recommendations of how CORP could improve procedures for estimating the required level of funding. Our responses to the Segal "recommendations" are as follows:

- Revise the liability under the active retirement benefit to accurately reflect the benefit formula for all years (We concur with the recommendation for correcting an error which was made and corrected in the June 30, 2006 valuation, results were immaterial);
- Revise the liability under the active withdrawal benefit to accurately reflect the termination refund (We concur with the recommendation for correcting an error which was made and corrected in the June 30, 2006 valuation, results were immaterial. The withdrawal liability was only a small portion of the total active liabilities which includes death, disability, withdrawal and retirement);
- Perform further analysis of the pre-retirement death and disability benefits for actives (We concur with the recommendation. The impact of pre-retirement death and disability benefits for actives will be included in the experience study review and changes will be made if warranted. However, we are concerned that Segal based their understanding of the Plan's benefits on the Summary of Benefits found on our website instead of using or at least referring to the complete statutes. The Summary of Benefits does not provide enough detail for anyone to conduct an audit or a review to determine if the projected plan benefits were determined correctly. The Summary of Benefits is used by members for a quick reference guide.)
- Review the benefits and liability under the Health Insurance Premium Subsidy as part of the revised valuation review (We concur with the recommendation for additional review; however, the subsidy is set by statute and the cost is factored into the employer's required contribution rates);
- Perform an Experience Study on the effect of the type of disability occurrence (accidental versus duty-related) and mortality (normal versus duty related) (As mentioned throughout this response, we will be conducting an experience study to determine the impact of all the factors that determine liabilities. However, we must point out that an accidental disability is duty related. An accidental disability is the only disability available under CORP for detention and correction officers. As a result, studying the effects of the only type of disability occurrence would be moot.)
- Explicitly value vested termination (deferred retirement) benefits (We disagree with the recommendation. CORP does not have a deferred retirement benefit option. The only benefit available is the withdrawal benefit.);
- Match timing of salary with timing of decrements (We assume all salary increases are at mid-year. The final average salary used

in the valuation is the average salary calculated from the contributions to the plan from the previous 26 pay periods ending on the valuation date. We will review this further with our actuary. We do not believe current practice is unreasonable.)

- Assumptions tend to be on the "high inflation" side when viewed in comparison with other similar plans. We (Segal) recommend a review of these assumptions. (We assume 8.5% investment return. The plan over a twenty year period has earned, on average, over 9%. We assume 6% total payroll growth. The real rate of return is 2.5%. We do not believe these assumptions are unreasonable.)
- Make corrections to plan provisions and assumptions summarized in the actuarial valuation report (We are not aware of any "corrections" to the plan provisions and assumptions. We do concur with providing additional disclosures in the actuarial valuation report that identify the assumptions that are being used.)
- Add gain/loss by source to actuarial valuation report (We concur with this recommendation.)
- Revise valuation results incorporating the audit findings mentioned throughout this report (We incorporated some of the recommendations identified above in the current valuation. The results were immaterial. However, we are still unclear as to which of the recommendations are causing the heightened levels of concern as mentioned in the Executive Summary.)
- Benefits projected in the sample test life group do not always match plan provisions as described in the actuarial valuation report (We will review this recommendation. We are concerned that Segal based their understanding of the Plan's benefits on the Summary of Benefits found on our website instead of using or at least referring to the complete statutes. The Summary of Benefits does not provide enough detail for anyone to conduct an audit or a review to determine if the projected plan benefits were determined correctly. The Summary of Benefits is used by members for a quick reference guide.)
- Funding and asset valuation methods are consistent with those employed in other public sector plans.
- Review retired mortality experience (We concur with the recommendation. The governing board agreed to postpone updating the mortality tables because of potential impact on the employer contribution rates. But, mortality will be included in the experience study review and changes will be made if warranted.)

According to the Segal report, they were concerned with the benefits being valued as well as the assumptions used. However, Segal did not identify any assumptions that were not in compliance with generally accepted actuarial standards and practices. Segal did highlight a numbers of errors in the valuation report. We have subsequently corrected those errors, as mentioned above. None of

the recommendations identified by Segal should have resulted in their "concern" in the valuation of the plans' liabilities.

Thank you for your time and attention.

Public Safety Personnel Retirement System Comments:

As fiduciaries for the PSPRS Plan, we had contemplated retaining an independent actuarial consulting firm to conduct a parallel (i.e., "full replication") audit of the FY'06 actuarial valuation. In light of the Segal report on its audit of the PSPRS FY'05 actuarial valuation and in view of the Segal recommendation that we undertake a parallel valuation, we have issued an RFP for actuarial consulting services. We shall conduct a parallel FY'06 valuation of the three retirement plans (including the PSPRS Plan) that PSPRS administers and a parallel five year experience study (for the five years ending June 30, 2006). We shall report the results of those parallel valuations and experience study to the JLBC when they are completed early next year.

With respect to the Segal report on the PSPRS five year experience study, our comments are as follows:

- The period of study was on a calendar year basis, not a plan year basis as indicated in the report title. **(We disagree with this observation. The data used for the experience study was the same data submitted for the annual actuarial valuations and completely covers the period of the study.);**
- Service was rounded to the nearest whole year in the analysis of retirement and select period withdrawal, inconsistent with valuation methodology. This means the conclusions on assumptions could be misstated. **(We will review this observation, but the overall impact on the results due to rounding procedures is likely to be very small.);**
- Ages were rounded down to the greatest completed year, which is inconsistent with the rounding of service. This means the probabilities of decrement are being applied to members at "wrong" ages. **(We will review this observation, but the overall impact on the results due to rounding procedures is likely to be very small.);**
- Retirements were not split between those eligible for age/service-based retirement versus service-based retirement. **(Very few members retire with age/service based retirement. However, we will review this observation as part of the five year experience study for the five years ending June 30, 2006 and changes will be made if warranted.)**
- Mortality was not analyzed for retirees or beneficiaries. This is one of the most serious non-conformities of this study, since the primary group to receive death benefits is retirees and beneficiaries and their liabilities must be determined based on their own experience. **(We disagree with this observation. Mortality was analyzed for retirees and beneficiaries. However, the results were statistically insignificant. The majority of our retirees are married. As a result, the surviving spouse would be entitled to a benefit upon the member's death. These liabilities are factored into the assumptions at 80%. Death benefit payments to beneficiaries are not as common of an**

occurrence. Beneficiaries would not be entitled to any death benefits unless there were contributions remaining on account that exceeded any benefits paid out to the retiree prior to death.)

- Mortality was not analyzed on a gender-specific basis. (This analysis would be statistically insignificant due to the number of deaths, particularly females. However, we will review this observation as part of the five year experience study for the five years ending June 30, 2006 and changes will be made if warranted.)
- Retirement experience under past plan provisions has been mixed with experience under the current provision, thus obscuring any information related to the present provision. (We will review this observation as part of the five year experience study for the five years ending June 30, 2006 and changes will be made if warranted.)
- Retirement was not analyzed by age. Doing so might have yielded useful results. (Most PSPRS retirements are service related due to the 20 year eligibility, the formula and the maximum. However, we will review this observation as part of the five year experience study for the five years ending June 30, 2006 and changes will be made if warranted.)
- Disabilities were analyzed in total, not split by type of disability benefit. (Over 92% of PSPRS disability retirements are duty related. However we will review this observation as part of the five year experience study for the five years ending June 30, 2006 and changes will be made if warranted.)
- A more modern mortality table should be considered. (We concur with the observation. The governing board agreed to postpone updating the mortality tables because of potential impact on the employer contribution rates. But, mortality will be included in the experience study review and changes will be made if warranted.)
- The economic assumptions in total are on the edges of reasonable ranges. The inflation assumption is on the high end of the reasonable range. The real rate of return assumption is low based upon a normal asset allocation. All of the economic assumptions should be reevaluated to make sure that they are individually reasonable and consistent with each other. (We assume 8.5% investment return. The system over a twenty year period has earned, on average, over 9%. We assume 6% total payroll growth. The real rate of return is 2.5%. We do not believe these assumptions are unreasonable.)

Thank you for your time and attention.



A MILLIMAN GLOBAL FIRM

Milliman

Consultants and Actuaries

9255 Towne Centre Drive
Suite 900

San Diego, CA 92121

Tel (858) 558-8400 **Fax** (858) 597-0111

www.milliman.com

ARIZONA JOINT LEGISLATIVE BUDGET COMMITTEE

**ACTUARIAL AUDIT OF THE ARIZONA DEPARTMENT
OF ADMINISTRATION (ADOA) EMPLOYEE HEALTH
INSURANCE SYSTEM**

Submitted by

**Milliman, Inc.
Robert G. Cosway, FSA, MAAA**



A MILLIMAN GLOBAL FIRM

Milliman

Consultants and Actuaries

9255 Towne Centre Drive
Suite 900
San Diego, CA 92121
Tel (858) 558-8400 **Fax** (858) 597-0111
www.milliman.com

September 18, 2006

Mr. Richard Stavneak, Director
Arizona Joint Legislative Budget Committee
1716 West Adams Street
Phoenix, AZ 85007

RE: ACTUARIAL AUDIT OF ARIZONA DEPARTMENT OF ADMINISTRATION

Dear Mr. Stavneak:

Enclosed are the results of our actuarial audit of the Arizona Department of Administration (ADOA) Employee Health Insurance System.

We appreciate this opportunity to assist the Arizona Joint Budget Legislative Committee. Please call if you have any questions about this analysis.

Sincerely,

Robert Cosway, FSA, MAAA
Consulting Actuary

RGC:mb

Enclosure

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A. EXECUTIVE SUMMARY

Milliman Inc. (Milliman) was retained by the Arizona Joint Legislative Budget Committee (JLBC) to perform an actuarial audit of the Arizona Department of Administration (ADOA) employee health insurance system. Specifically, we reviewed:

- the Fiscal Year 2006-07 Preliminary Budget Projections, contained in Mercer's December 29, 2005 Report.
- the method used to set the State and Employee Premium Rates for the plan year October 1, 2005 to September 30, 2006. The premium rates for the following plan year, October 1, 2006 to September 30, 2007, were released during our analysis, and we also provide general comments on those rates.
- the methods and assumptions used to estimate the incurred but not paid (IBNP) liability as of March 31, 2006.

Arizona moved to a self-insured model, called Arizona Benefits Options, effective October 1, 2004. Employees can choose between Exclusive Provider Organizations (EPOs) and Preferred Provider Organization (PPOs).

While in all cases we find the assumptions and results to be within reasonable expected ranges, we have noted some areas that you may want to consider further. Below is a summary of our key recommendations:

1. The budget projection approach was generally reasonable, although we had some questions on the formulas used to project future paid claims. **We recommend that these questions be reviewed by ADOA. Also, we recommend that future projections of monthly paid claims reflect smoothed increases, so that large fluctuations are not projected from month to month. We conclude that the assumed medical trend assumptions were reasonable, although we recommend that the basis for this and other key assumptions be documented more completely in future reports.**
2. **We recommend that ADOA set explicit targets for *HITF Fund Balance*.**

State premiums for the 2005/2006 plan year were set to achieve a target HITF fund balance. Mercer's December 29, 2005 Report stated, "The HITF fund is one type of reserve balance reflecting the differences between revenue and expenses each month. HITF funds are available to cover at least a portion of the IBNR reserves."

We recommend that the target equal at least a conservative estimate of the Incurred But Not Paid (IBNP) liability. As of March 31, 2006 this would have been approximately \$50.9 million. If the plan were to terminate at any time, the revenue would stop coming in, but the State would still be liable to pay off the IBNP (the claims that were incurred prior to the termination date but not paid until after that date).



We also recommend that ADOA consider including an additional contingency fund in the HITF forecast. We would normally advise a self-funded health plan to maintain a contingency fund in addition to the IBNP reserve, equal to 10% to 25% of annual claims cost, with the largest plans (like Arizona Benefit Options) being at the lower end of that range. This contingency fund, at 10%, would be approximately \$46 million, based on Mercer's projected paid claims for FY2006.

The purpose of this contingency fund is to cover insufficiencies in funding for a given plan year. Insufficiencies could occur for a variety of reasons, including:

- Actual medical trend exceeding medical trend assumed in rate development.
- Shifts in membership between plan options.
- Random fluctuations in medical costs.

The need for a contingency reserve depends on several factors, including:

- The level of conservatism built into the budget (i.e. the likelihood that costs will exceed the budget).
 - The State's tolerance for having actual costs exceed the premium revenue in a year.
3. Mercer describes their IBNR reserve as "an estimate as of a specific date of the claims for services that has been incurred by plan members but have not yet been processed and paid by the plan." **We believe this amount is more accurately called IBNP (Incurred But not Paid), and we recommend that Mercer clarify this in future reports.** We assume ADOA had the same understanding of the reported IBNR number, so do not believe this would have caused a problem in the past.
4. A key element in the financial management of a self insured health plan is the estimation of incurred but not paid (IBNP) liabilities. Based on a review of Mercer's March 31, 2006 IBNP Analysis, we believe their methodology is generally consistent with actuarial standards. As part of our audit, we performed an independent estimate of the IBNP as of March 31, 2006. Our estimates, in total, were higher than Mercer's (\$47.1 million versus \$43.4 million). Much of the difference is attributable to how incurred claims are estimated for the months 2-5 months prior to the valuation date (November 2005 to January 2006 for the March 31, 2006 valuation).

While calculated completion factors for these lag months are sometimes credible, we recommend that Mercer consider blending in incurred claims estimates based on 6 or 12 month average incurred claims rates, as they now do for the most recent incurred months.

Mercer currently compares actual claims runout with previous IBNP reserve estimates. **If this is not already being done, we recommend this analysis be expanded to add the**



current estimate of remaining IBNP to the runout to date to produce a reestimated reserve. Continuously comparing these to the original reserve estimates can identify problems with the reserve methodology, and allow improved estimates of incurred claims for prior periods.

5. The method used to set the 2005/2006 plan year premium rates was based on achieving a target fund balance at the end of the projection period. This was done in aggregate for all plans options in all areas combined. While we did not review the details of the 2006/2007 plan year premium rate setting, it appears to be based on a similar aggregate projection method.

This method should produce reasonable results, especially given the level of uncertainty inherent in projecting health costs for a two-year period for a relatively new health program. **If this has not already been done, we recommend that ADOA and its actuary also use an alternative method, and estimate the per person premium revenue needed for the future plan year separately for each plan option (EPO versus PPO) and area.** Based on this analysis, ADOA can estimate the needed revenue to fund the best estimate of the costs for the plan year. Looking at this separately by plan option and area could allow ADOA to modify the State premium rates to reflect emerging differences in costs by plan option and area.

6. ADOA and Mercer rely on a variety of data in performing their analysis. Milliman did not perform an audit of this data. It is common practice for actuaries to rely on claims data, but also perform general reasonableness and consistency checks. **We recommend that future reports make an explicit statement about data reliance, so the reader can understand to what extent the data was audited. Further, if ADOA or Mercer have concerns about the raw data, a separate audit should be performed of the data suppliers.**
7. It is important to compare the total premium rates for Arizona Benefits Options to rates for other health plans to evaluate the reasonableness of the program's premiums. This comparison can be difficult, since no two employer-sponsored plans are the same. One tool for this type of comparison is the Milliman Group Health Insurance Survey. This survey is sent to HMOs and fully insured PPOs that serve the commercial large group employer market.

The PY 2006 total premium rates for Arizona Benefits Options are generally higher than the Milliman survey shows for HMOs and PPOs in Arizona. This is especially true for the PPO plan, although we believe this is mostly due to your PPO enrollees being much sicker than average.

We do not believe that this particular survey comparison requires action by ADOA, but we do recommend that ADOA and its consultant continue to compare Arizona



Benefit Option premiums to surveys of other employer's plan costs to make sure any differences are appropriate.

8. Setting the monthly employee premiums for the various options of a health plan depends more on the employer's philosophy and strategy than actuarial principles. Currently, employees pay a higher premium for the PPO options than the EPO options. On the surface this makes sense, since the total costs per employee are higher for the PPO plans than the EPO plans.

PPO enrollees tend to be sicker than EPO enrollees, a phenomenon known as adverse selection. Because of adverse selection, it is possible that even though the *average* total premium per person is higher for PPO plans, the expected cost for any specific individual employee could be lower for the PPO plan than the EPO plan. If this were the case, charging a higher employee premium for the PPO is actually counter to the State's interest, as it would be encouraging employees to sign up for the more expensive plan.

ADOA's analysis suggests that this is currently not the case: the EPO is the lowest cost plan even when adverse selection is considered. **We recommend that this issue be reviewed periodically in the future, and that changes to the employee premium strategy be considered when appropriate.**

Considering all the issues outlined above, and recognizing the uncertainty inherent in projecting expenses for an employee health benefit plan over a nearly two-year period, we have concluded that the results presented in the existing Mercer projections are appropriate to use by the ADOA as a tool in the budgeting and premium setting process. Having said that, we should point out that a financial projection for any entity is only an approximation of future financial results, and is entirely dependent on the data and assumptions which underlie it. Differences between Mercer projected amounts and the actual amounts will depend on the extent to which future experience conforms to the assumptions made for the projections. It is certain that actual experience will not conform exactly to the assumptions Mercer used in their analysis, or to an analysis with revised assumptions based on any of the comments that we have supplied. **We recommend that ADOA continue to monitor claims experience as it emerges, and make changes to premiums, plan designs, and/or vendor contracts as needed.**

The information contained in this report is intended for the sole use of the Arizona Joint Legislative Budget Committee. No portion of this report may be provided to any other party without Milliman's prior written consent. In the event such consent is given, the report must be provided in its entirety.



B. INTRODUCTION

Arizona moved to a self-insured model, called Arizona Benefits Options, effective October 1, 2004. Employees can choose between Exclusive Provider Organizations (EPOs) and Preferred Provider Organization (PPOs).

Milliman Inc. (Milliman) was retained by the Arizona Joint Legislative Budget Committee (JLBC) to perform an actuarial audit of ADOA's employee health insurance system. Specifically, we performed the following tasks:

1. Review and comment on the Fiscal Year 2006-07 Preliminary Budget Projections, contained in Mercer's December 29, 2005 Report.
2. Review and comment on the methods and assumptions used to estimate the incurred but not paid (IBNP) liability as of March 31, 2006.
3. Review and comment on the reasonableness and appropriateness of assumptions used in the development of contribution rates for the plan year 10/1/05 to 9/30/06.
4. Examine the validity of the data used by ADOA in determining liabilities, budgets and rates.
5. Review and comment on the contribution strategy for plan year 2006, including premium rates and reserve balances.
6. Determine whether the ADOA health plan is operating in accordance with principles and practices prescribed by the Actuarial Standards Board.



C. ANALYSIS

Review and Comment on the Fiscal Year 2006-07 Preliminary Budget Projections Contained in Mercer's December 29, 2005 Report

This report contained projected monthly revenue, medical claims, medical administrative expenses, dental premiums and fund balances through June 2007. The detailed baseline projection is reproduced in Appendix 1 of this report. JLBC provided Milliman with a copy of the Excel spreadsheet used to produce these projections, "FY 07 Revenue REVISED FROM MERCER UPDATED 12-23-05.xls."

Because this was an important spreadsheet for the annual analysis, we reviewed both the detailed formulas and more general structure of this spreadsheet. Most of our detailed comments are minor, and focus on the clarity and transparency of the spreadsheet. These detailed comments are listed in Appendix 2.

GENERAL COMMENTS ON PROJECTION DATA AND ASSUMPTIONS

1. The medical trend assumption is stated as 13%. The projected PY07 "Total Estimated Paid Claims," \$515,723,900, is only 10.8% greater than the projected PY06 value, \$465,611,000. We would expect this increase to be 13%.
2. The projected monthly values for "Total Estimated Paid Claims" do not show a steady pattern. For example, for the months August-November 2006, the values are \$46.8 million, \$37.8 million, \$46.9 million, and \$41.0 million. Since these are future months, it is unlikely that fluctuations of these types can be accurately projected. We presume these projections were based on patterns in paid claims for prior years, but suggest that monthly paid claim estimates reflect smooth patterns from month to month.
3. Page 5 of the report documents the trend assumptions used in the projection. No basis was given for the assumptions chosen. We recommend that future reports provide the basis for all key assumptions. One key assumption is the annual medical trend assumption of 13%. Since the baseline claims data was for the year ending September 2005, this assumed trend was applied to estimate claims in 2006 and 2007. There is a wide variety of factors that affect the actual health cost trends for a given plan. To test the reasonableness of the 13% assumption, we compared it to the results of the Milliman 2005 Group Health Insurance Survey, based on responses from about 270 HMOs and 400 PPOs in the United States. One of the questions asked was the expected rate increase effective January 1, 2006 for large employer groups.

The following table summarizes the results:

Expected Rate Increase Effective January 1, 2006



Plan Type	Nationwide	Arizona
HMO	10.1%	N/A
PPO	12.2%	12.6%

This table suggests that the 13% assumed trend was reasonable, although possibly conservative, compared to trends expected by carriers. Given the short claims history of the plan, we believe some conservatism is appropriate. The full survey pages containing the above results are in Appendix 4.

The trend assumptions for dental (8%) and administrative costs (6%) also appear reasonable compared to Milliman research.

4. An underlying assumption in the projection appears to be that the future distribution of enrollees by health plan will be the same as it is in the base year. Different plans cost the ADOA different amounts and it would be appropriate to do some sensitivity testing of the projection results under different enrollee distribution assumptions. However, the final enrollee distribution by plan will be influenced by several variables, and given the information available at the time, it appears reasonable to have assumed the status quo will hold for the projections.

COMMENTS ON TARGET HITF BALANCE (RESERVE)

The premiums are projected to result in an ending HITF balance (reserve) of about \$33.7 million at the end of FY07, down from the July 2005 level of \$48 million. The Mercer report states, "The HITF fund is one type of reserve balance reflecting the differences between revenue and expenses each month. HITF funds are available to cover at least a portion of the IBNR reserves." Table 5 of the report also estimated that the 6/30/05 HITF balance of \$48 million was equal to the estimated IBNR reserve as of that date. However, the projected HITF balances as of 6/30/06 and 6/30/07 were projected to be \$10 million and \$21 million, respectively, less than the estimated IBNR reserves as of those dates.

When asked about target HITF reserves, ADOA responded, "During its research, ADOA discovered there was a broad range of practices among states for their self-funded reserve balance. Due to the lack of claims data from the prior fully-insured carrier, ADOA set an initial target of a reserve balance equal to 3-months of paid claims. After some experience accrued, Mercer lowered their initial IBNR reserve due to the fact that claims are paid faster than was anticipated. As we continue with the program, we will be able to make better informed judgments on the IBNR amount and the necessary funding increases."

We would normally advise a self-funded health plan to maintain a reserve at least equal to a conservative estimate of their IBNP liability. If the plan were to be



terminated at any point in time, the revenue would stop coming in, but the State would still be liable to pay off the IBNP (the claims that were incurred prior to the termination date but not paid until after that date.) By conservative, we mean holding a best estimate, plus a margin of 5-10% to account for the uncertainty in estimating IBNP liabilities. In addition, many self funded plans hold an additional reserve, sometimes 3-5% of the IBNP, to pay for the administrative costs associated with paying the claims run out.

Based on Milliman's estimates as of March 31, 2006, the total target reserve described above would \$50.9 million (\$47.1 million best estimate IBNP, plus \$2.4 million margin at 5%, plus \$1.4 million claims run-out administration at 3%).

Finally, in addition to funding the IBNP, it is desirable to hold contingency fund of 10% to 25% of annual claims cost, with the largest plans (like the Arizona Benefit Options) being at the lower end of that range. The purpose of this contingency fund is to cover insufficiencies in funding for a given plan year. Insufficiencies could occur for a variety of reasons, including:

- Actual medical trend exceeding medical trend assumed in rate development.
- Shifts in membership between plan options.
- Random fluctuations in medical costs.

The need for a contingency reserve depends on several factors, including:

- The level of conservation built into the budget (i.e. the likelihood that costs will exceed the budget).
- The State's tolerance for having actual costs exceed the premium revenue in a year.

This contingency fund, at 10%, would be approximately \$46 million, based on Mercer's projected paid claims for FY2006.

Review of Incurred but Not Paid (IBNP) Liability.

A key element in the financial management of a self insured health plan is the estimation of incurred but not paid (IBNP) liabilities. We received two reports on estimated IBNP.

1. On Page 8 of their December 29, 2005 Report, Mercer estimates an "IBNR Reserve" of \$48 million as of June 30, 2005 and \$40-47 million as of September 30, 2005. Both appear to be based on claims experience through September 30, 2005, which we received separately.



2. We received updated claims lag data paid through March 31, 2006, along with Mercer's analysis.

We have the following comments on the IBNP analysis.

1. Mercer does not spell out the term IBNR, but it is an abbreviation for Incurred but Not Reported. The terms IBNP and IBNR are sometimes used interchangeably, but they are different:

$$\text{IBNP} = \text{IBNR} + (\text{Claims reported but not yet paid}).$$

Mercer describes their IBNR reserve as "an estimate as of a specific date of the claims for services that has been incurred by plan members but have not yet been processed and paid by the plan." We believe this amount is more accurately called IBNP, and we recommend that Mercer clarify this in future reports. We assume ADOA had the same understanding of the reported IBNR number, so do not believe this would have caused a problem in the past.

2. Based on a review of Mercer's March 31, 2006 IBNP Analysis, we believe their methodology is generally consistent with actuarial standards, specifically those in Actuarial Standard of Practice 5, "Incurred Health and Disability Claims." There is a variety of reserving methods defined in this standard. Mercer uses the Development Method. This is probably the most utilized method for estimating health IBNP liabilities.
3. As part of our audit, we performed an independent estimate of the IBNP as of March 31, 2006. Mercer's analysis is contained in Appendix 5 and Milliman's calculations are in Appendix 6. The following table summarizes our results. Both Milliman and Mercer estimates are before margins, and so can be thought of as best estimates.

3/31/06 IBNP Estimates Based on Paid Claims Through 3/31/06		
	Mercer	Milliman
HBS	\$26.1 Million	\$30.4 Million
United	\$17.3 Million	\$16.7 Million
Total:	\$43.4 Million	\$47.1 Million



Our estimate for HBS is higher than Mercer's. The primary source of the difference is for claims incurred in January, 2006. Mercer gives full credibility to the calculated completion factor. Milliman noted that the use of a calculated completion factor produces a PMPM incurred claim rate of \$500.20, much less than most previous months. While calculated completion factors for lags 2-5 are sometimes credible, we recommend that Mercer consider blending in values based on 6 or 12 month average incurred claims rates, as they now do for the most recent incurred months.

Our estimate for United is somewhat lower than Mercer's. Our estimates were lower for older and most recent incurred months, but higher for October – December, 2005. For these months, Mercer's calculated completion factors looked high, resulting in estimated reserves that were lower than preceding months. We recommend that Mercer review this pattern, and also consider the recommendation above regarding completion factors for lags 2-5.

While we recommend that Mercer review the 3/31/06 IBNP issues noted above, by now, claims run out will tell us how accurate the estimates were. An important part of the ongoing IBNP process is to look back and re-estimate prior reserves based on subsequent run out. Mercer appears to do this in their exhibit "Reserve Calculation Summary." In this exhibit they compare the original reserve estimate ("Reserve") with the actual run out to date related to that reserve ("Actual Runout"). If this is not already being done, we suggest this analysis be expanded to add the current estimate of remaining IBNP estimation to the run out to date to produce a re-estimated reserve. These can be continuously compared to the original reserve estimates. This process can identify problems with the reserve methodology, and allows improved estimates of incurred claims for prior periods.

Review and comment on the reasonableness and appropriateness of assumptions used in the development of contribution rates for the plan year 10/1/05 to 9/30/06.

Employee, employer and total premium rates for plan year 2006 (10/1/05 to 9/30/06) are contained in Appendix 7. Appendix 8 contains a summary of rates for the plan years 2005, 2006, and 2007.

Employee Premium Rates

For the least expensive plans, the monthly employee premiums have been fixed for these three years at \$25 for single coverage and \$125 for family coverage. Employee premiums for more expensive options have also been unchanged since PY2004. The only change noted for PY2007 was a \$10 reduction in employee premiums for the United Healthcare PPO.

The levels of employee premiums depend on the employer (the State) philosophy, and a variety of other factors. The absolute levels depend on what percentage of the total cost the State is willing to pay. By freezing employee premiums, the State is picking up the entire increases in health costs due to medical trend. The implication of this is that the observed trends in the State's cost will be higher than the overall trends in medical costs. In plan year 2005-2006, the budget



estimates showed that employee premiums were about 12.5% of total non-retiree costs. Based on a hypothetical starting total cost of \$700 per employee per month, the following table shows the State's share of the cost will increase by 1.7% per year more than the total cost trend in one year, if employee costs are fixed. Over 5 years, the excess trend in the State's share is about 1.4% per year. This "trend leveraging" must be considered when assessing the philosophy of setting employee contributions, and when setting the budget for future State premiums.

Costs for Annual Total Trend of 12% with Fixed Employee Cost

	Starting Cost	% of Total	1 Year			5 Years		
			Cost	% of Total	Annualized Trend	Cost	% of Total	Annualized Trend
State	\$612	87.5%	\$696	88.8%	13.7%	\$1,146	92.0%	13.4%
Employee	\$88	12.5%	\$88	11.2%	0.0%	\$88	7.1%	0.0%
Total	\$700	100.0%	784	100.0%	12.0%	\$1,234	100.0%	12.0%

The relative level of employee premium rates, between different plan types and geographic areas, depends largely on the employer's philosophy. In each geographic area, ADOA has set the employee contribution for a given plan type at the same level, despite the fact that actual costs are expected to vary by area within Arizona. This is a common approach.

The other key employer decision is how to set employee contributions for more expensive plan types. Options range from charging employees the same premiums as for less expensive options to charging employees the full difference in cost, or more. For the 2004/2005 plan year, the PPO employee contributions were set at \$140 for single coverage and \$390 for family coverage (\$10 more for United Healthcare). The effect of this premium structure was for employees selecting the more expensive PPO the State paid about 40% of the excess cost of the PPO in the South, 50% in Central, and 20% in the North. These percentages are higher for the 2005/2006 and the 2006/2007 plan year, since the employee contributions have been unchanged.

We recommend that the State monitor the emerging costs of the various plan types, and confirm that their employee premium strategy is consistent with those costs. In this analysis, the impact of adverse selection (higher cost employees electing certain plan types) should be identified and separated from the other sources of cost differences between plan types. This is discussed further in a later section.

State Premium Rates



State premium rates are designed to cover the difference between total costs and those funded by employee premiums. It is our understanding that rates for the first year of the program, the 2004/2005 plan year, were estimated based on claims experience under the prior insured program.

For the 2005/2006 plan year, State premium rates were set at 14% higher than 2004/2005, for both single and family, and for all plans and geographic areas. Since the employee contributions rate was left unchanged, combined State/employee premium rates increased by about 12%.

Since the new plan started in October 2004, and the State needed rates for the 2005/2006 plan year well in advance of October 2005, there was not much complete and credible data from the new carriers upon which to set premium rates. We assume that ADOA and Mercer reviewed this experience, and decided that either the experience was not credible, or that the 14% increase was consistent with emerging experience.

The recently published 2006/2007 State premium rates again appear to be consistent with the assumptions stated in the Fiscal Year 2006-07 Preliminary Budget Projections contained in Mercer's December 29, 2005 Report. That report assumed increases effective October 2006 of "a 14% rate increase for active employees," where this "rate" is referring to the total active premium, not just the State portion. The report also said, "The preliminary budget projection assumes no changes to employee contributions for 2006. This results in a 15.7% increase in State funding for the plan year beginning October 2006."

The actual premium increases for October 2006 varied somewhat by plan type, but were on the order of 14% for total rates and 15.7% for State rates. A detailed review of the rate setting for the 2006/2007 plan year was beyond the scope of this audit.

General Comments on Rate Setting

The method used to set the 2005/2006 plan year premium rates was based on achieving a target fund balance at the end of the projection period. As noted above, since available claims data was limited, this was a reasonable approach.

While we did not review the details of the 2006/2007 plan year premium rate setting, it appears to be based on a similar aggregate projection method. In particular, the rate increases for all of the plan options were the same, and the overall percentage increase was consistent with the estimated October 2006 rate increase in the December 2005 budget projection.

This method may produce reasonable results, especially given the level of uncertainty inherent in projecting health costs for a two-year period for a relatively new health program. If this has not already been done, we recommend that ADOA and its actuary also use an alternative method, similar to that used by many self insured employers. Separately for each plan option and area, we recommend that ADOA estimate the per person premium revenue needed for the future plan year based on the following:



1. Determine incurred claims per person for a recent 1 or 2-year period. Incurred claims would be obtained from the IBNP analysis already performed by Mercer. We believe the use of incurred claims experience, as opposed to paid claims, provides a better baseline for projections, as it removes the impact of changes in claims payment patterns, which should have no long term impacts on the true costs of the plans.
2. Project experience costs to the future plan year, reflecting expected differences due to medical inflation, utilization management, plan design changes, etc.
3. Add expected administrative costs, based on historical experience and expected trends.

Based on this analysis, ADOA can estimate the needed revenue to fund the best estimate of the costs for the plan year. Looking at this separately by plan option and area could allow ADOA to modify the State premium rates to reflect emerging differences in costs by plan option and area. This analysis would also allow ADOA to study cost trends by plan.

Examine the validity of the data used by ADOA in determining liabilities, budgets and rates.

ADOA and Mercer rely on a variety of data in performing their analysis. This data includes:

- monthly paid claim data from the integrated and non-integrated claims administrators.
- consistent claims lag data for incurred but not paid analysis.
- monthly plan enrollment data
- administrative fee data
- stop loss premium and claims data.

Milliman did not perform an audit of this data. It is common practice for actuaries to include in their reports the following discussion of data:

“We have relied on data provided by _____ in our analysis. We have not audited this data for accuracy, but have performed general reasonableness and consistency checks.”

Mercer’s report did not state this type of reliance, but we assume this was the approach they took to using the data. We recommend that future reports make an explicit statement about data reliance. Further, if ADOA or Mercer have concerns about the raw data, a separate audit should be performed of the data suppliers.

Review and comment on the contribution strategy for plan year 2006, (10/1/05 to 9/31/06) including premium rates and reserve balances.

Market Comparison of Total Premium Rates



In this section we first evaluate the reasonableness of final premium rates by comparing them to other market information. One tool for this type of comparison is the Milliman Group Health Insurance Survey. This survey is sent to HMOs and fully insured PPOs that serve the commercial large group employer market. HMOs and PPOs are asked to provide premium rates for given set of benefits and demographics for a specific employee group.

The following table compares the PY2006 Arizona Benefit Option Rates to the trended 2004 and 2005 Milliman Group Health Survey rates for Arizona:

Comparison of Arizona Benefit Options 2005/2006 Premiums to Milliman Group Health Insurance Survey				
	EPO		PPO	
	Single	Family	Single	Family
Total PY 2006 Premium - Southern (1)	\$369.28	\$913.88	\$568.64	\$1,369.26
Total PY 2006 Premium - Central (1)	\$380.68	\$943.52	\$617.66	\$1,507.20
Milliman Group Health Insurance Survey				
2004 Average	\$270.65	\$709.14	\$290.40	\$762.46
2005 Average	N/A (2)	N/A (2)	\$312.11	\$863.27
Estimated for PY 2006 (3)	\$311.84	\$817.06	\$321.08	\$888.08
Southern Premium as % of Milliman Survey	118%	112%	177%	154%

This table shows that the PY 2006 total premium rates are 12-18% higher than the Milliman survey values for EPO, and 54-77% higher than for PPOs. This does not necessarily mean that the premium rates are overstated. The Milliman survey gathers information for a standardized group of employees, and for standard benefit plans. The premium rates that surveyed carriers would charge for a particular group would differ from these rates due to the group's demographics, benefit design, and the actual claims experience of that group. By using the actual claims experience, ADOA is, in theory, capturing the characteristics of the State employees that cannot be estimated using traditional rating methods.

For the EPO plans, the standard benefit plan assumed in the survey is very close to the Arizona EPO plan, so this did not contribute to the difference. Insurance companies often charge more for a government employee group than for the average group; a 2.5% to 5% load is common. This is because government employees tend to be higher utilizers than average, in part due to a sense of benefit entitlement leading to increased awareness of available benefits. Thus, some of the observed difference may be due to the higher utilization of government employees. The demographics of state employees will also differ from the



Survey's standard, leading to a difference in expected costs. Finally, the average health status for EPO employees differs from the average employee in the survey.

For the PPO plans, we suspect the large observed difference is due to adverse selection. Specifically, the average health status for PPO employees is probably significantly higher than the average employee in the survey. Mercer's risk score analysis (Self-funded Health Plan - Additional Reporting Data Request - November 15, 2005) appears to confirm this. They estimated the average risk score for PPO members was about 153% of the average score for all members.

We recommend that ADOA and its consultant continue to compare Arizona Benefit Option premiums to surveys of other employer's plan costs to make sure any differences are appropriate.

Employee Premium Rate Strategy

The current total premium per employee estimates are higher for the PPO plans than the EPO plans. On the surface, charging a higher employee premium for the PPO makes sense: this gives employees an economic incentive to choose a plan that is least costly for the State.

It is possible, however, that even though the *average* total premium per person is higher for PPO plans, the expected cost for any specific individual employee could be lower for the PPO plan than the EPO plan. If this were the case, charging a higher employee premium for the PPO is actually counter to the State's interest, as it would be encouraging employees to sign up for the more expensive plan.

This apparent contradiction is due to selection. The difference in observed average costs between the PPO and EPO options is due to 5 main factors:

Factor	Cost Impact
EPO covers more services	EPO > PPO
EPO has lower member copays	EPO > PPO
EPO has better provider contracts	EPO < PPO
EPO has better medical management	EPO < PPO
EPO attracts healthier employees	EPO << PPO

The first four factors are the only ones that affect the State's cost for a specific individual. When EPOs/HMOs were introduced, they were designed to save money by negotiating lower reimbursement rates with a tighter provider network, and by managing health care more aggressively. To encourage employees to elect these plans, HMOs/EPOs covered additional benefits, such as preventive benefits, and featured much lower employee cost sharing. Deductibles and coinsurance were replaced by modest dollar copayments. The savings due to lower provider reimbursement and more aggressive medical management were more than the cost



of the additional benefits and lower copayments, so the HMO/EPO plans cost less than PPO plans.

It is worth considering whether this is still the case. In many markets, the difference between EPO and PPO provider contracts is much less than in prior years. Physicians and hospitals sometimes provide the same discounts to the EPO and PPO plans of a given carrier. Also, due to managed care pushback and other factors, the savings due to the HMO/EPO's medical management efforts have reached a plateau in recent years. At the same time, as physicians and hospitals have been treating patients under HMO/EPO plans, some of the increased efficiency has spilled over to their treatment of PPO patients.

In short, the financial advantage of covering employees in an HMO/EPO plan is less than it was 5-10 years ago, and may no longer be enough to pay for the richer benefits and lower copayments provided by the HMO. If this is the case, the EPO plan is actually the most expensive option for a given employee, and the State's employee premium structure is pushing employees to the most expensive plans.

Whether this is currently the case is masked because of the fifth factor, selection. Healthier employees tend to elect the EPO plans. This is primarily because the EPO plan has the lowest employee premiums, so that most employees with no known health issue will simply choose the plan with the lowest payroll deduction. Less-healthy employees, conversely, are more likely to have an existing physician relationship, and to place a higher value on the wider choice of providers in a PPO.

Mercer has already performed an analysis that can address this issue. In the ADOA Self-funded Health Plan – Additional Reporting Data Request, dated November 15, 2005, Mercer assigned a relative health risk score to all members, based on their prescription drug utilization. This analysis showed that the PPO members had a much higher average health risk than EPO members. Further, this analysis suggested that if this selection is removed from the comparison of the average EPO and PPO costs, the EPO plans would still be less expensive.

This suggests the current practice of setting PPO employee premiums higher than EPO premiums is appropriate, but we recommend that this be reviewed periodically.

Determine whether or not the health plan is operating in accordance with principles and practices prescribe by the Actuarial Standards Board.

The following Actuarial Standards of Practice (ASOPs) are potentially relevant to Arizona's self insured health plan:

1. Actuarial Standard of Practice Number 5, Incurred Health and Disability Claims
2. Actuarial Standard of Practice Number 16, Actuarial Practice Concerning Health Maintenance Organizations and Other Managed-Care Health Plans



3. Actuarial Standard of Practice Number 23, Data Quality
4. Actuarial Standard of Practice Number 31, Documentation in Health Benefit Plan Ratemaking
5. Actuarial Standard of Practice Number 42, Determining Health and Disability Liabilities Other Than Liabilities for Incurred Claims

In general, we believe Mercer's analysis is consistent with these ASOPs. ASOP Number 5 was addressed above in the discussion of incurred but not paid liability estimates. The other most important ASOP for this program is Number 31, Documentation in Health Benefit Plan Ratemaking. The December 29, 2005 report that Mercer provided to ADOA with respect to the FY2006-07 budget projections contained adequate documentation. However, based on discussions with JLBC staff, we believe prior to the December 29, 2005 report, documentation was lacking. In past years, the actual premium rates have been set defined by applying an across-the board trend increase to the rates for all options and geographic areas. The increase has been based on the needed revenue so that the projected HITF balance is above the target level. In the future, we expect premium rate setting will involve more refined analysis of claims trends by option and geographic area. If this occurs, more detailed documentation of the rate setting process will be required.

APPENDIX I

Preliminary FY07 Budget Projection HITF Revenue and Expenditure Projections Based on Enrollment as of October 1, 2006

FY06 & FY07 Total Medical and Dental Projections									
(\$'s in thousands)		Actual Yr 2004-05		Plan Yr 2005-06		Calendar Yr 2006		Calendar Yr 2007	
FY06		Jul-05		Aug-05		Sep-05		Oct-05	
Monthly Employee Medical Premiums		\$3,631.1		\$4,576.7		\$5,688.9		\$4,715.8	
Monthly State Medical Premiums		\$28,013.3		\$34,220.5		\$33,004.6		\$4,210.3	
Monthly State Dental Premiums		\$36,810.5		\$36,810.5		\$41,438.7		\$47,118.9	
Total Medical Premiums		\$67,455.4		\$75,607.7		\$79,503.8		\$56,136.4	
Monthly Employee Dental Premiums		\$3,229.9		\$3,229.9		\$3,408.0		\$3,408.0	
Monthly State Dental Premiums		\$3,229.9		\$3,229.9		\$3,408.0		\$3,408.0	
Total Dental Premiums		\$6,459.8		\$6,459.8		\$6,816.0		\$6,816.0	
Total Monthly Receipts		\$73,915.2		\$82,067.5		\$86,319.8		\$62,952.4	
Total Monthly Contribution Premiums (to cover admin & wellness costs)		\$42,427.0		\$42,427.0		\$44,847.7		\$44,847.7	
Fiscal Year Changes									
(\$'s in thousands)									
Monthly Employee Medical Premiums		\$3,631.1		\$4,576.7		\$5,688.9		\$4,715.8	
Monthly State Medical Premiums		\$28,013.3		\$34,220.5		\$33,004.6		\$4,210.3	
Total Medical Premiums		\$67,455.4		\$75,607.7		\$79,503.8		\$56,136.4	
Monthly Employee Dental Premiums		\$3,229.9		\$3,229.9		\$3,408.0		\$3,408.0	
Monthly State Dental Premiums		\$3,229.9		\$3,229.9		\$3,408.0		\$3,408.0	
Total Dental Premiums		\$6,459.8		\$6,459.8		\$6,816.0		\$6,816.0	
Total Monthly Receipts		\$73,915.2		\$82,067.5		\$86,319.8		\$62,952.4	

FY 2006 Cash Flow Projection

	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Totals
Beginning Balance	\$ 46,600.0	\$ 46,600.0	\$ 46,600.0	\$ 46,600.0	\$ 46,600.0	\$ 46,600.0	\$ 46,600.0	\$ 46,600.0	\$ 46,600.0	\$ 46,600.0	\$ 46,600.0	\$ 46,600.0	\$ 46,600.0
Estimated Monthly Medical Receipts	\$ 39,197.4	\$ 39,197.4	\$ 39,197.4	\$ 39,197.4	\$ 39,197.4	\$ 39,197.4	\$ 39,197.4	\$ 39,197.4	\$ 39,197.4	\$ 39,197.4	\$ 39,197.4	\$ 39,197.4	\$ 468,591.6
Less General Fund Sweep Buy-down	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Estimated Paid Claims	\$ 39,342.1	\$ 39,342.1	\$ 39,342.1	\$ 39,342.1	\$ 39,342.1	\$ 39,342.1	\$ 39,342.1	\$ 39,342.1	\$ 39,342.1	\$ 39,342.1	\$ 39,342.1	\$ 39,342.1	\$ 468,591.6
Total Premiums	\$ 625.0	\$ 625.0	\$ 625.0	\$ 625.0	\$ 625.0	\$ 625.0	\$ 625.0	\$ 625.0	\$ 625.0	\$ 625.0	\$ 625.0	\$ 625.0	\$ 7,500.0
Total Administrative Fees	\$ 1,630.0	\$ 1,630.0	\$ 1,630.0	\$ 1,630.0	\$ 1,630.0	\$ 1,630.0	\$ 1,630.0	\$ 1,630.0	\$ 1,630.0	\$ 1,630.0	\$ 1,630.0	\$ 1,630.0	\$ 19,560.0
FY 2006 Budget Appropriation	\$ 400.0	\$ 400.0	\$ 400.0	\$ 400.0	\$ 400.0	\$ 400.0	\$ 400.0	\$ 400.0	\$ 400.0	\$ 400.0	\$ 400.0	\$ 400.0	\$ 4,800.0
Total Medical Expenditures	\$ 30,997.1	\$ 30,997.1	\$ 30,997.1	\$ 30,997.1	\$ 30,997.1	\$ 30,997.1	\$ 30,997.1	\$ 30,997.1	\$ 30,997.1	\$ 30,997.1	\$ 30,997.1	\$ 30,997.1	\$ 376,851.6
Estimated Monthly Dental Receipts	\$ 3,229.9	\$ 3,229.9	\$ 3,229.9	\$ 3,229.9	\$ 3,229.9	\$ 3,229.9	\$ 3,229.9	\$ 3,229.9	\$ 3,229.9	\$ 3,229.9	\$ 3,229.9	\$ 3,229.9	\$ 38,758.8
Dental Plan Costs	\$ 3,229.9	\$ 3,229.9	\$ 3,229.9	\$ 3,229.9	\$ 3,229.9	\$ 3,229.9	\$ 3,229.9	\$ 3,229.9	\$ 3,229.9	\$ 3,229.9	\$ 3,229.9	\$ 3,229.9	\$ 38,758.8
Total Receipts	\$ 42,427.0	\$ 42,427.0	\$ 42,427.0	\$ 42,427.0	\$ 42,427.0	\$ 42,427.0	\$ 42,427.0	\$ 42,427.0	\$ 42,427.0	\$ 42,427.0	\$ 42,427.0	\$ 42,427.0	\$ 507,350.4
Total Expenditures	\$ 42,226.7	\$ 42,226.7	\$ 42,226.7	\$ 42,226.7	\$ 42,226.7	\$ 42,226.7	\$ 42,226.7	\$ 42,226.7	\$ 42,226.7	\$ 42,226.7	\$ 42,226.7	\$ 42,226.7	\$ 507,350.4
Difference	\$ 200.3	\$ 200.3	\$ 200.3	\$ 200.3	\$ 200.3	\$ 200.3	\$ 200.3	\$ 200.3	\$ 200.3	\$ 200.3	\$ 200.3	\$ 200.3	\$ 2,400.0
Ending Balance (HITF Reserve)	\$ 48,200.3	\$ 48,200.3	\$ 48,200.3	\$ 48,200.3	\$ 48,200.3	\$ 48,200.3	\$ 48,200.3	\$ 48,200.3	\$ 48,200.3	\$ 48,200.3	\$ 48,200.3	\$ 48,200.3	\$ 580,750.4

FY 2007 Cash Flow Projection

	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Totals
Beginning Balance	\$ 38,804.4	\$ 38,804.4	\$ 38,804.4	\$ 38,804.4	\$ 38,804.4	\$ 38,804.4	\$ 38,804.4	\$ 38,804.4	\$ 38,804.4	\$ 38,804.4	\$ 38,804.4	\$ 38,804.4	\$ 38,804.4
Estimated Monthly Medical Receipts	\$ 41,438.7	\$ 41,438.7	\$ 41,438.7	\$ 41,438.7	\$ 41,438.7	\$ 41,438.7	\$ 41,438.7	\$ 41,438.7	\$ 41,438.7	\$ 41,438.7	\$ 41,438.7	\$ 41,438.7	\$ 497,266.4
Medicare Part D Subsidy Payment	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Estimated Paid Claims	\$ 37,442.6	\$ 37,442.6	\$ 37,442.6	\$ 37,442.6	\$ 37,442.6	\$ 37,442.6	\$ 37,442.6	\$ 37,442.6	\$ 37,442.6	\$ 37,442.6	\$ 37,442.6	\$ 37,442.6	\$ 449,313.6
Total Premiums	\$ 645.9	\$ 645.9	\$ 645.9	\$ 645.9	\$ 645.9	\$ 645.9	\$ 645.9	\$ 645.9	\$ 645.9	\$ 645.9	\$ 645.9	\$ 645.9	\$ 7,750.8
Administrative Fees (TPA)	\$ 1,741.4	\$ 1,741.4	\$ 1,741.4	\$ 1,741.4	\$ 1,741.4	\$ 1,741.4	\$ 1,741.4	\$ 1,741.4	\$ 1,741.4	\$ 1,741.4	\$ 1,741.4	\$ 1,741.4	\$ 20,896.8
FY 2007 Budget Appropriation	\$ 400.0	\$ 400.0	\$ 400.0	\$ 400.0	\$ 400.0	\$ 400.0	\$ 400.0	\$ 400.0	\$ 400.0	\$ 400.0	\$ 400.0	\$ 400.0	\$ 4,800.0
Total Medical Expenditures	\$ 39,529.9	\$ 39,529.9	\$ 39,529.9	\$ 39,529.9	\$ 39,529.9	\$ 39,529.9	\$ 39,529.9	\$ 39,529.9	\$ 39,529.9	\$ 39,529.9	\$ 39,529.9	\$ 39,529.9	\$ 474,301.2
Estimated Monthly Dental Receipts	\$ 3,408.0	\$ 3,408.0	\$ 3,408.0	\$ 3,408.0	\$ 3,408.0	\$ 3,408.0	\$ 3,408.0	\$ 3,408.0	\$ 3,408.0	\$ 3,408.0	\$ 3,408.0	\$ 3,408.0	\$ 40,896.0
Dental Plan Costs	\$ 3,408.0	\$ 3,408.0	\$ 3,408.0	\$ 3,408.0	\$ 3,408.0	\$ 3,408.0	\$ 3,408.0	\$ 3,408.0	\$ 3,408.0	\$ 3,408.0	\$ 3,408.0	\$ 3,408.0	\$ 40,896.0
Total Receipts	\$ 42,837.7	\$ 42,837.7	\$ 42,837.7	\$ 42,837.7	\$ 42,837.7	\$ 42,837.7	\$ 42,837.7	\$ 42,837.7	\$ 42,837.7	\$ 42,837.7	\$ 42,837.7	\$ 42,837.7	\$ 515,162.4
Total Expenditures	\$ 42,937.9	\$ 42,937.9	\$ 42,937.9	\$ 42,937.9	\$ 42,937.9	\$ 42,937.9	\$ 42,937.9	\$ 42,937.9	\$ 42,937.9	\$ 42,937.9	\$ 42,937.9	\$ 42,937.9	\$ 515,192.0
Difference	\$ 99.8	\$ 99.8	\$ 99.8	\$ 99.8	\$ 99.8	\$ 99.8	\$ 99.8	\$ 99.8	\$ 99.8	\$ 99.8	\$ 99.8	\$ 99.8	\$ 30.4
Ending Balance (Reserve)	\$ 39,574.4	\$ 39,574.4	\$ 39,574.4	\$ 39,574.4	\$ 39,574.4	\$ 39,574.4	\$ 39,574.4	\$ 39,574.4	\$ 39,574.4	\$ 39,574.4	\$ 39,574.4	\$ 39,574.4	\$ 47,904.8

APPENDIX 2 - DETAILED COMMENTS ON PRELIMINARY BUDGET PROJECTION

This appendix comments on the Excel spreadsheet used to produce ADOA's detailed baseline projection, as reproduced in Appendix 1. The spreadsheet, "FY 07 Revenue REVISED FROM MERCER UPDATED 12-23-05.xls" was provided by JLBC.

The top part of the sheet contains projected *revenue* amounts for various plan years, calendar years, and fiscal years. The formulas for these values are summarized in Appendix 3

We have the following comments on this part of the spreadsheet:

1. Since the fiscal year 2005-06 ends on 6/30/06 and the plan years end on September 30, we might expect the formula for PY2005-06 to be a 3 month /9 month blending of the values for PY2004-05 and PY2005-06 respectively. Instead, the blending gives 3 ½ months weight to PY2004-05 and 8 ½ months to PY2005-06. We believe this adjustment reflects some lag in the effective date of plan year premium increases.
2. We recommend that the column "Actual Yr. 2004-05" be defined in a footnote, since the meaning of "actual" is unclear.
3. Some of the input values are for periods that were not complete when the projection was prepared, such as the PY2005-06 premiums. We assume they were calculated based on the data identified on Page 3, "Current medical plan enrollment, rates, and employee contribution of each plan as of October 1, 2005." **We recommend that the source for all hard coded input values be identified.**
4. In the top revenue section, columns are labeled "Actual Year", "Plan Year", and "Calendar Year". Based on how the amounts are used in the cells below the column labels, we recommend changing the labels to more accurately reflect the time periods for which the amounts apply. Specifically:
 - a. Change "Calendar Year 2006" to "Jan – Sep 2006". If the values below this column label were intended to reflect the entire calendar year, they would need to include the funding changes as of 10/2006, and adjust the average monthly amounts accordingly. However, we believe that the purpose of these cells' amounts is to estimate the annualized rates for only the period January through September of 2006, not the entire calendar year. Alternatively, the label could read "Calendar Year 2006 without 10/06 Changes."
 - b. Change "Calendar Year 2007" to "Jan – Jun 2006", or perhaps "Jan – Sep 2006". We believe that the purpose of these amounts is to estimate the annualized rate for only the period January through June of 2006, not the entire plan year.

The danger of leaving the columns as labeled is that another viewer may misinterpret these amounts and use them incorrectly in a different projection or report.

5. The increase of 1% to Monthly Employee Medical Premiums for PY2006-7 is not mentioned in the assumptions. In fact, page 5 states "The preliminary budget projection assumes no changes to employee contributions for 2006." Given the assumption that the State's employee contribution strategy will be unchanged, we assume this is due to increased premiums paid by employees choosing the PPO Plans, but recommend that this assumption be clarified.
6. The increase of 12% to Retiree Medical Premiums as of 01/2007 is not mentioned in the assumptions section of Exhibit 2. We recommend adding another line in the assumptions box that states "12% retiree rate increase effective 1/07".
7. On page 4 of the Mercer report, Table 2 shows amounts labeled as "Monthly Paid Claims and Administration Fees – Medical." The Table 2 amounts shown for July, August, and September 2005 appeared to differ from the amounts shown on page 13. It appeared that the Table 2 amounts agree with the "Total Medical Expenditures" less "FY2005 Budget Appropriation" less "Total Premiums" from page 13.

The bottom section of the exhibit contains monthly cash flow projections. We have the following comments.

1. Change "8% dental increase" in the Assumptions box to "8% dental increase effective 10/06".
2. Change "6% admin fee increase" in the Assumptions box to "6% admin fee increase effective 11/06" or "effective 10/06, with a one month lag applied." Also, we recommend stating in the assumptions that administration fees increased 6.8% as of 11/05 (or 10/05).
3. State in the Assumptions that Total Premiums increased 3.3% as of 11/05 (or 10/05 with 1 month lag), and that they increased 11.5% as of 11/06 (or 10/06).
4. In the "Assumptions" box on the worksheet, one of the assumptions is "20% increase in stop loss premiums effective 10/06". It wasn't clear whether this assumption used on this worksheet (perhaps part of Total Premiums)?
5. The source of the 1% assumed increase to Monthly Employee Medical Premiums in Plan Year 2006-07 should be documented.
6. We recommend documenting how the 13% medical trend assumption is applied in this worksheet.
7. Also, some changes are effective November 1st. For example, the Dental Plan Costs for November 2005 is taken from the "Plan Year 2005-2006" Dental Premiums. Similarly,

increases in premiums and administrative fees seem to take place November 1st. If a one-month payment lag is assumed, we suggest that this be documented.

APPENDIX 3

Source of Projection Values in Maricopa Preliminary Budget Projection Spreadsheet

	Plan Year		Actual Year (1)		Calendar Year		Fiscal Year	
	2004-5	2005-6	2004-5	2005-6	2005-07	2006-08	2005-6	2006-7
Monthly Employee Medical Premiums	Input	Input	Input	Input	PY 2005-07	PY 2005-08	3.5/0.5 Blending of PY 2004-05 and PY 2005-06	3.5/0.5 Blending of PY 2005-06 and CY 2007
Monthly Medical Premiums	Incl. with Ee	Input	Input	Input	PY 2005-07 * 112%	PY 2005-08	Incl. with Ee	Incl. with Ee
Monthly State Medical Premiums	Input	Input	Input	Input	CY 2006 * 115.7%	PY 2005-09	3.5/0.5 Blending of PY 2004-05 and PY 2005-06	3.5/0.5 Blending of PY 2005-06 and CY 2007
Monthly State Dental Premiums	Input	Input	Input	Input	CY 2006 * 108%	PY 2005-09	3.5/0.5 Blending of PY 2004-05 and PY 2005-06	3.5/0.5 Blending of PY 2005-06 and CY 2007

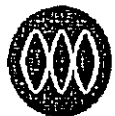
(1) Not defined. Assumed to be actual amounts for plan year 2004-5

2005

GROUP HEALTH INSURANCE SURVEY

HMO / PPO / CDH

October 17, 2005



A MILLIMAN GLOBAL FIRM

Milliman

Consultants and Actuaries

Exhibit 1 - HMO
HMO Results Nationwide
2005 Group Health Insurance Survey

	Number of Responses	Straight Average	25th Percentile	75th Percentile	Number of Responses	Straight Average	25th Percentile	75th Percentile
1. HMO Total Commercial Group Membership	161	116,257	NA	NA				
2. HMO Manual Premium Rates - New Account								
■ <i>Manual Premium Rates Per Member Per Month</i>								
Hospital (Inpatient and Outpatient Facility)	144	\$101.71	\$92.05	\$110.77				
Physician/Other Services	144	114.05	102.89	124.40				
Prescription Drugs	84	39.98	33.66	46.00				
Administrative Expenses	178	39.12	34.15	43.66				
Total Per Member	259	\$288.37	\$260.84	\$313.63				
■ <i>Two Tier Rates Per Month</i>								
Per Single Employee	273	\$344.38	\$307.46	\$379.16				
Per Employee with Family	274	917.47	821.08	999.04				
3. HMO Anticipated January 1, 2006 Renewal Rate Change								
■ <i>Large Group (> 50 Members)</i>	132	10.1 %	9.0 %	12.2 %				
■ <i>Small Group (2-50 Members)</i>	116	11.5 %	9.5 %	13.7 %				
4. HMO Trends in Rate Levels								
■ <i>Total Manual Premium</i>	122	11.3 %	9.6 %	13.0 %				
■ <i>Medical Trend Components</i>								
Hospital (Inpatient & Outpatient)	112	12.4 %	9.5 %	14.0 %				
Physician/Other Services	111	9.7 %	7.2 %	11.0 %				
Prescription Drugs	113	13.1 %	12.0 %	15.0 %				
5. HMO Commercial Inpatient Data								
■ <i>Utilization per 1,000</i>								
Medical/Surgical/Other	105	206.1	174.0	239.3	98	51.4	41.9	57.9
Maternity	103	36.1	29.0	40.7	98	13.8	10.9	15.6
MH / Subst. Abuse	78	24.9	19.2	27.8	70	4.4	3.3	5.3
Total	108	263.9	231.2	292.4	97	67.7	58.7	73.0
■ <i>Cost per Utilization</i>								
Medical/Surgical/Other	77	\$2,252	\$1,865	\$2,487	74	\$9,037	\$7,535	\$10,094
Maternity	60	1,330	1,018	1,550	55	3,624	2,598	4,204
MH / Subst. Abuse	55	725	529	861	46	3,821	2,454	5,058
Total	82	\$2,105	\$1,774	\$2,307	79	\$8,039	\$6,479	\$9,098
6. HMO Physician Reimbursement as a Percent of Medicare RBRVS	83	117 %	105 %	128 %				
7. HMO Medical Expense Ratio for 2004								
■ <i>Large Group (> 50 Members)</i>	125	86.8 %	82.4 %	89.7 %				
■ <i>Small Group (2-50 Members)</i>	96	83.2 %	77.0 %	87.9 %				
8. HMO Profitability (2004 Net Income / Premium Revenue)	110	4.3 %	1.4 %	7.3 %				
July 2005								

**Exhibit 1 - PPO
PPO Results Nationwide
2005 Group Health Insurance Survey**

	Number of Responses	Straight Average	25th Percentile	75th Percentile	Number of Responses	Straight Average	25th Percentile	75th Percentile
1. PPO Total Commercial Group Membership	339	37,987	NA	NA				
2. PPO Manual Premium Rates - New Account								
■ Total Manual Premium Rates Per Member Per Month	376	\$311.98	\$272.73	\$340.58				
■ Two Tier Rates Per Month								
Per Single Employee	402	\$358.37	\$323.19	\$391.82				
Per Employee with Family	402	958.09	839.89	1,051.25				
3. PPO Anticipated January 1, 2006 Renewal Rate Change								
■ Large Group (> 50 Members)	123	12.2 %	10.8 %	14.0 %				
■ Small Group (2-50 Members)	143	12.4 %	10.7 %	15.8 %				
4. PPO Trends in Rate Levels		7/1/05 over 7/1/04 (Annual Trend Rate)						
■ Total Manual Premium	124	12.6 %	12.0 %	13.8 %				
■ Medical Trend Components								
Hospital (Inpatient & Outpatient)	117	13.0 %	12.0 %	14.9 %				
Physician/Other Services	117	11.8 %	10.9 %	13.1 %				
Prescription Drugs	120	13.3 %	11.0 %	16.5 %				
5. PPO Commercial In-Network Inpatient Data								
■ Utilization per 1,000		Days per 1,000 Members				Admits per 1,000 Members		
Medical/Surgical/Other	37	203.2	178.0	229.6	36	50.9	44.8	54.9
Maternity	15	34.2	25.5	37.9	35	13.3	10.6	15.4
MH / Subst. Abuse	31	22.8	16.6	28.9	32	4.4	3.0	5.8
Total	44	267.5	234.4	299.1	43	70.0	61.1	78.1
■ Cost per Utilization		Cost per Day				Cost per Admit		
Medical/Surgical/Other	28	\$2,470	\$2,021	\$2,590	27	\$9,832	\$8,325	\$11,563
Maternity	29	1,587	1,199	1,866	28	4,274	3,071	4,865
MH / Subst. Abuse	30	652	475	776	29	4,166	2,780	5,001
Total	32	\$2,156	\$1,856	\$2,248	70	\$8,748	\$7,738	\$9,935
6. PPO In-Network Physician Reimbursement as a Percent of Medicare RBRVS	178	126 %	108 %	145 %				
7. PPO Out-of-Network Usage for 2004	210	17 %	9 %	22 %				
8. PPO Medical Expense Ratio for 2004								
■ Large Group (> 50 Members)	54	84.9 %	81.0 %	89.0 %				
■ Small Group (2-50 Members)	48	80.3 %	73.8 %	86.5 %				
9. PPO Profitability (2004 Net Income / Premium Revenue)	98	5.0 %	0.9 %	10.5 %				
10. PPO High Deductible Manual Premium Rates - New Account								
■ Total Manual Premium Rates Per Member Per Month	283	\$259.69	\$224.44	\$293.50				
■ Two Tier Rates Per Month								
Per Single Employee	298	\$294.46	\$254.07	\$333.47				
Per Employee with Family	298	775.61	651.41	892.98				
July 2005								

Exhibit 3 - PPO
PPO Results by State

2005 Group Health Insurance Survey

Arizona

	Number of Responses	Straight Average	25th Percentile	75th Percentile	Number of Responses	Straight Average	25th Percentile	75th Percentile
1. PPO Total Commercial Group Membership	5	23,128	NA	NA				
2. PPO Manual Premium Rates - New Account								
■ Total Manual Premium Rates Per Member Per Month	5	\$279.09	\$245.30	\$276.10				
■ Two Tier Rates Per Month								
Per Single Employee	5	\$312.11	\$296.12	\$318.82				
Per Employee with Family	5	863.27	766.27	844.99				
3. PPO Anticipated January 1, 2006 Renewal Rate Change								
■ Large Group (> 50 Members)	3	12.6 %	12.0 %	13.3 %				
■ Small Group (2-50 Members)	5	16.5 %	10.7 %	17.0 %				
4. PPO Trends in Rate Levels		7/1/05 over 7/1/04 (Annual Trend Rate)						
■ Total Manual Premium	3	12.9 %	12.7 %	13.3 %				
■ Medical Trend Components								
Hospital (Inpatient & Outpatient)	3	13.4 %	12.6 %	14.0 %				
Physician/Other Services	3	11.9 %	11.6 %	12.4 %				
Prescription Drugs	3	13.0 %	11.6 %	14.0 %				
5. PPO Commercial In-Network Inpatient Data								
■ Utilization per 1,000		Days per 1,000 Members				Admits per 1,000 Members		
Medical/Surgical/Other								
Maternity								
MH / Subst. Abuse								
Total								
■ Cost per Utilization		Cost per Day				Cost per Admit		
Medical/Surgical/Other								
Maternity								
MH / Subst. Abuse								
Total								
6. PPO In-Network Physician Reimbursement as a Percent of Medicare RBRVS			%	%			%	%
7. PPO Out-of-Network Usage for 2004	4	18 %	15 %	20 %				
8. PPO Medical Expense Ratio for 2004			%	%			%	%
■ Large Group (> 50 Members)			%	%			%	%
■ Small Group (2-50 Members)			%	%			%	%
10. PPO High Deductible Manual Premium Rates - New Account								
■ Total Manual Premium Rates Per Member Per Month	3	\$255.38	\$247.49	\$266.33				
■ Two Tier Rates Per Month								
Per Single Employee	3	\$270.37	\$254.28	\$279.96				
Per Employee with Family	3	695.64	643.56	760.38				
July 2005								

APPENDIX 5

State of Arizona

Reserve Calculation Summary

Claims Through	Harrington	UHC	State	Harrington	UHC	Total
Jul-05	\$27,000,000	\$18,000,000	\$45,000,000	\$27,000,000	\$17,000,000	\$44,000,000
Aug-05	\$27,000,000	\$17,000,000	\$44,000,000	\$26,000,000	\$17,000,000	\$43,000,000
Sep-05	\$22,000,000	\$22,000,000	\$44,000,000	\$29,000,000	\$16,000,000	\$45,000,000
Oct-05	\$28,000,000	\$25,000,000	\$53,000,000	\$22,000,000	\$16,000,000	\$38,000,000
Nov-05	\$29,000,000	\$24,000,000	\$53,000,000	\$22,000,000	\$17,000,000	\$39,000,000
Dec-05	\$28,000,000	\$22,000,000	\$50,000,000	\$23,000,000	\$17,000,000	\$40,000,000
Jan-06	\$31,000,000	\$20,000,000	\$51,000,000			
Feb-06	\$31,000,000	\$20,000,000	\$51,000,000			
Mar-06	\$27,000,000	\$18,000,000	\$45,000,000			
Apr-06						
May-06						
Jun-06						
Jul-06						
Aug-06						
Sep-06						

State of Arizona
United Healthcare IBNR Analysis

Date	Claims Paid in Given Month	Paid Claims Incurred in Given Month	Completion Factor	Valid Factor	Revised Completion Factor	Estimated Reserve	Estimated Incurred	Enrollment	Monthly Incurred Per Capita	Average per capita cost over 6 month look-back	Annual Trend
Oct-04	1,352,391	12,344,349	0.998	Y	0.998	28,871	12,373,220	28,007	441.79	#N/A	
Nov-04	10,688,113	12,658,419	0.997	Y	0.997	38,090	12,696,509	28,013	453.24	#N/A	
Dec-04	11,837,917	12,381,031	0.996	Y	0.996	45,564	12,426,595	28,268	439.60	459.66	
Jan-05	13,050,287	14,159,754	0.995	Y	0.995	66,389	14,226,143	28,534	498.57	479.43	
Feb-05	12,224,515	13,004,117	0.994	Y	0.994	74,110	13,078,227	27,506	475.47	489.32	
Mar-05	14,617,286	14,182,344	0.992	Y	0.992	109,571	14,291,915	28,076	509.04	503.82	
Apr-05	13,261,480	13,903,843	0.991	Y	0.991	130,992	14,034,835	28,041	500.51	500.27	
May-05	14,009,686	14,209,734	0.988	Y	0.988	177,442	14,387,176	28,064	512.66	511.69	
Jun-05	13,832,761	14,553,096	0.985	Y	0.985	221,621	14,774,717	28,079	526.18	510.13	
Jul-05	12,844,886	13,030,487	0.979	Y	0.979	284,043	13,314,530	27,906	477.12	506.32	
Aug-05	16,172,390	14,800,327	0.971	Y	0.971	447,253	15,247,590	28,005	544.46	498.35	
Sep-05	13,257,025	13,594,549	0.963	Y	0.963	522,324	14,116,873	28,246	499.78	489.01	
Oct-05	13,438,340	13,966,864	0.993	Y	0.993	93,808	14,050,672	29,358	478.94	496.30	
Nov-05	13,408,611	13,467,189	0.984	Y	0.984	212,204	13,678,393	29,359	465.94		
Dec-05	16,321,517	13,414,372	0.969	Y	0.969	428,259	13,842,631	29,438	470.23		
Jan-06	13,752,789	14,384,841	0.932	Y	0.932	1,042,087	15,426,928	29,629	520.67		
Feb-06	13,129,439	11,936,161	0.809	N	0.786	3,243,990	15,180,151	29,630	512.32		
Mar-06	18,002,085	5,210,041	0.275	N	0.340	10,096,839	15,306,880	29,641	516.41		
12 months set back 0	171,431,009	156,471,504				16,900,871	173,372,375	345,396	6,025	3,512	
12 months set back 12	-	-				362,595	79,092,609	-	2,818	-	
12 months set back 24	-	-				0	0	-	0	-	
Total	171,431,009	156,471,504				17,263,466	252,464,984	345,396		3,512	
Reserve with margin:						Reserve Date					
-- as percentage of previous 12 months' paid claims:				17,263,466		Margin		3/31/06			
Latest quarter paid claims:				10%		Valid Completion Factor >=		0.00%			
Latest quarter change in enrollments:				44,884,313		Look-back period		0.84			
				1%				6			

3 year summary

Wiser Human Resource Consulting

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State of Arizona
HBS IBNR Analysis

Date	Claims Paid in Given Month	Paid Claims Incurred in Given Month	Completion Factor	Valid Factor	Revised Completion Factor	Estimated Reserve	Estimated Incurred	Enrollment	Monthly Incurred Per Capita	Average per capita cost over 12 month look- back	Annual Trend
Oct-04	0	7,941,466	0.998	Y	0.998	18,573	7,960,040	30,239	283.24	#N/A	
Nov-04	1,298,292	14,339,873	0.997	Y	0.997	43,149	14,383,022	30,345	473.98	#N/A	
Dec-04	2,954,945	14,890,100	0.996	Y	0.996	54,798	14,944,898	30,564	487.38	#N/A	
Jan-05	10,740,709	14,588,685	0.995	Y	0.995	68,400	14,657,085	30,867	474.85	#N/A	
Feb-05	19,845,470	15,501,197	0.994	Y	0.994	88,341	15,589,537	31,260	498.71	#N/A	
Mar-05	13,806,374	15,661,076	0.992	Y	0.992	120,996	15,782,072	31,535	500.46	512.56	
Apr-05	21,551,842	15,323,555	0.991	Y	0.991	144,367	15,467,922	30,307	510.37	535.59	
May-05	18,153,037	18,583,549	0.988	Y	0.988	232,059	18,815,608	30,231	622.39	542.63	
Jun-05	18,428,084	16,416,470	0.985	Y	0.985	249,997	16,666,467	30,175	552.33	544.22	
Jul-05	17,525,543	16,673,356	0.979	Y	0.979	363,452	17,036,808	29,971	568.44	546.53	
Aug-05	16,978,701	19,500,869	0.988	Y	0.988	245,555	19,746,424	29,971	658.85		
Sep-05	22,348,372	15,901,912	0.971	Y	0.971	478,140	16,380,052	30,112	543.97		
Oct-05	15,632,772	15,401,758	0.953	Y	0.953	767,134	16,168,892	29,839	541.87		
Nov-05	13,975,943	15,449,787	0.926	Y	0.926	1,230,819	16,680,606	29,838	559.04		
Dec-05	19,105,760	13,231,586	0.875	Y	0.875	1,883,357	15,114,943	29,910	505.35		
Jan-06	15,179,632	11,991,632	0.810	Y	0.810	2,820,402	14,812,034	29,612	500.20		
Feb-06	13,979,027	11,586,295	0.686	N	0.679	5,483,088	17,069,383	29,543	577.78		
Mar-06	16,984,033	5,506,268	0.342	N	0.318	11,791,247	17,297,514	29,701	582.39		
12 months set back 0	209,843,744	175,567,037				25,689,617	201,256,653	359,210	6,723	2,169	
12 months set back 12	-	-				394,257	83,316,654	-	2,699	-	
12 months set back 24	-	-				0	0	-	0	-	
Total	209,843,744	175,567,037				25,083,873	284,573,308	359,210		2,169	
Reserve with margin:						Reserve Date					
- as percentage of previous 12 months' paid claims:				26,083,873		Margin		3/31/06			
Latest quarter paid claims:				12%		Valid Completion Factor >=		0.00%			
Latest quarter change in enrollments:				46,142,691		Look-back period		0.80			
				-1%				12			

Inputs

Mercer Human Resource Consulting

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APPENDIX 6

HBS

Arizona Benefit Options Claim Reserve Analysis Based on Claims Paid During Oct-04 To Mar-06 Method: Multiplicative with 6 Month Averaging

Log Month	Incurred Month	Exposure	Paid Claims	Completion Factors	Estimated Incurred Claims	Claim Liability	Pure Premium
17	Oct-04	30,239	7,941,465	0.9989	7,950,210	8,745	262.91
16	Nov-04	30,345	14,339,873	0.9964	14,391,643	51,770	474.27
15	Dec-04	30,664	14,890,100	0.9945	14,972,304	82,204	488.27
14	Jan-05	30,867	14,588,685	0.9946	14,667,758	79,073	475.19
13	Feb-05	31,260	15,501,196	0.9933	15,605,502	104,306	499.22
12	Mar-05	31,535	15,661,075	0.9870	15,868,013	206,938	503.19
11	Apr-05	30,307	15,323,555	0.9853	15,552,472	228,917	513.16
10	May-05	30,231	18,583,548	0.9826	18,912,229	328,681	625.59
9	Jun-05	30,175	16,416,470	0.9785	16,777,287	360,817	556.00
8	Jul-05	29,971	16,673,356	0.9738	17,122,005	448,649	571.29
7	Aug-05	29,971	19,500,870	0.9680	20,146,481	645,611	672.20
6	Sep-05	30,112	15,901,913	0.9567	16,621,179	719,266	551.98
5	Oct-05	29,839	15,401,758	0.9399	16,386,810	985,052	549.17
4	Nov-05	29,838	15,449,788	0.9162	16,862,855	1,413,067	565.15
3	Dec-05	29,910	13,231,586	0.8742	15,134,953	1,903,367	506.02
2	Jan-06	29,612	11,991,633	0.6936	17,290,203	5,298,570	583.89
1	Feb-06	29,543	11,586,295	0.6717	17,249,914	5,663,619	583.89
0	Mar-06	29,701	5,506,268	0.3175	17,342,169	11,835,901	583.89
Totals			258,489,434		288,853,987	30,364,553	

UHC

Arizona Benefit Options
Claim Reserve Analysis
Based on Claims Paid During Oct-04 To Mar-06
Method: Multiplicative with 6 Month Averaging

<u>Lag</u> <u>Month</u>	<u>Incurred</u> <u>Month</u>	<u>Exposure</u>	<u>Paid</u> <u>Claims</u>	<u>Completion</u> <u>Factors</u>	<u>Estimated</u> <u>Incurred</u> <u>Claims</u>	<u>Claim</u> <u>Liability</u>	<u>Pure</u> <u>Premium</u>
17	Oct-04	28,007	12,344,349	0.9990	12,356,706	12,357	441.20
16	Nov-04	28,013	12,658,419	0.9990	12,671,090	12,671	452.33
15	Dec-04	28,268	12,381,031	0.9980	12,405,843	24,812	438.87
14	Jan-05	28,534	14,159,754	0.9980	14,188,130	28,376	497.24
13	Feb-05	27,506	13,004,117	0.9962	13,053,626	49,509	474.57
12	Mar-05	28,076	14,182,344	0.9954	14,247,737	65,393	507.47
11	Apr-05	28,041	13,903,843	0.9919	14,017,011	113,168	499.88
10	May-05	28,064	14,209,734	0.9896	14,358,416	148,682	511.63
9	Jun-05	28,079	14,553,096	0.9880	14,730,413	177,317	524.61
8	Jul-05	27,906	13,030,487	0.9855	13,222,308	191,821	473.82
7	Aug-05	28,005	14,800,327	0.9829	15,057,351	257,024	537.67
6	Sep-05	28,246	13,594,549	0.9795	13,879,210	284,661	491.37
5	Oct-05	29,358	13,966,864	0.9728	14,356,948	390,084	489.03
4	Nov-05	29,359	13,467,189	0.9653	13,950,739	483,550	475.18
3	Dec-05	29,438	13,414,372	0.9530	14,076,200	661,828	478.16
2	Jan-06	29,629	14,384,841	0.9521	15,108,402	723,561	509.92
1	Feb-06	29,630	11,936,161	0.7900	15,108,912	3,172,751	509.92
0	Mar-06	29,641	5,210,041	0.3447	15,114,521	9,904,480	509.92
Totals			235,201,518		251,903,563	16,702,045	

APPENDIX 7

ACTIVE EMPLOYEE - MONTHLY PREMIUMS – October 1, 2005 through September 30, 2006

Arizona Benefit Options HEALTH INSURANCE

Your available medical plan options and their costs will be based on your primary residence. Seasonal or secondary addresses cannot be used.

PLAN TYPE	SINGLE			FAMILY		
Southern Region: Pima, Santa Cruz Counties						
	Employee	State	Total	Employee	State	Total
RAN+AMN (HMA) EPO	\$25.00	\$344.28	\$369.28	\$125.00	\$788.88	\$913.88
Scholler Anderson (SA) EPO	\$25.00	\$344.28	\$369.28	\$125.00	\$788.88	\$913.88
United Healthcare (UHC) EPO	\$35.00	\$344.28	\$379.28	\$135.00	\$788.88	\$923.88
Arizona Foundation (AZF) PPO	\$140.00	\$428.64	\$568.64	\$390.00	\$979.26	\$1,369.26
United Healthcare (UHC) PPO	\$150.00	\$428.64	\$578.64	\$400.00	\$979.26	\$1,379.26
Central Region: Maricopa, Gila, Pinal Counties						
	Employee	State	Total	Employee	State	Total
RAN+AMN (HMA) EPO	\$25.00	\$355.68	\$380.68	\$125.00	\$818.52	\$943.52
Scholler Anderson (SA) EPO	\$25.00	\$355.68	\$380.68	\$125.00	\$818.52	\$943.52
United Healthcare (UHC) EPO	\$35.00	\$355.68	\$390.68	\$135.00	\$818.52	\$953.52
Arizona Foundation (AZF) PPO	\$140.00	\$477.66	\$617.66	\$390.00	\$1,117.20	\$1,507.20
United Healthcare (UHC) PPO	\$150.00	\$477.66	\$627.66	\$400.00	\$1,117.20	\$1,517.20
Northern, Southeastern and Western Regions: Yavapai, Coconino, Navajo, Apache, Graham, Greenlee, Cochise, Mohave, La Paz and Yuma Counties						
	Employee	State	Total	Employee	State	Total
RAN+AMN (HMA) EPO	\$25.00	\$478.80	\$503.80	\$125.00	\$1,126.32	\$1,251.32
Arizona Foundation (AZF) PPO	\$140.00	\$505.02	\$645.02	\$390.00	\$1,217.52	\$1,607.52
Out-of-State						
	Employee	State	Total	Employee	State	Total
Beech Street PPO	\$25.00	\$636.12	\$661.12	\$125.00	\$1,519.62	\$1,644.62

Arizona Benefit Options DENTAL PLANS

PLAN	SINGLE			FAMILY		
	Employee	State	Total	Employee	State	Total
Delta Dental	\$14.56	\$15.40	\$29.96	\$54.14	\$43.50	\$97.64
MetLife Dental	\$12.90	\$15.40	\$28.30	\$45.00	\$43.50	\$88.50
Employers Dental Services (EDS)	\$4.02	\$6.18	\$10.20	\$18.16	\$11.50	\$29.66
Fortis Dental	\$4.68	\$6.18	\$10.86	\$18.02	\$11.50	\$29.52

Arizona Benefit Options AVESIS, INC. VISION PLAN

SINGLE \$6.34	FAMILY \$17.18
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SHORT TERM DISABILITY (STD) PLANS

PLAN	COST	FORMULA TO CALCULATE MONTHLY PREMIUM	MAXIMUM ANNUAL SALARY FOR PREMIUM COMPUTATION PURPOSES
Standard	\$0.89 per \$100 of base salary	Annual salary ÷ 12 x .0089	\$60,000
UnumProvident	\$0.84 per \$100 of base salary	Annual salary ÷ 12 x .0084	\$53,857

SUPPLEMENTAL LIFE INSURANCE (per \$1000 of coverage)

PLAN	AGE	UNDER 30	30-35	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
Standard		\$0.10	\$0.12	\$0.14	\$0.24	\$0.32	\$0.52	\$0.74	\$1.34	\$1.34	\$2.12
Aetna		\$0.08	\$0.08	\$0.12	\$0.20	\$0.32	\$0.38	\$0.60	\$0.92	\$1.38	*

* Contact Human Resources for rate

DEPENDENT LIFE INSURANCE

Standard		Aetna (supplemental life enrollment required)	
LEVEL OF COVERAGE	COST	LEVEL OF COVERAGE	COST
\$2,000	\$0.94	Spouse \$5,000 and Child(ren) \$5,000	\$0.66
\$ 4,000	\$1.88		
\$ 6,000	\$2.82		
\$12,000	\$5.64		
\$15,000	\$7.06		

ACTIVE EMPLOYEE – PER PAY PERIOD PREMIUMS – October 1, 2005 through September 30, 2006

Arizona Benefit Options HEALTH INSURANCE

Your available medical plan options and their costs will be based on your primary residence. Seasonal or secondary addresses cannot be used.

*Please note: Health plan options and their costs will be based on your primary residence. Seasonal or secondary addresses cannot be used.

PLAN TYPE	SINGLE			FAMILY		
Southern Region: Pima, Santa Cruz Counties						
	Employee	State	Total	Employee	State	Total
RAN+AMN (HMA) EPO	\$12.50	\$172.14	\$184.64	\$62.50	\$394.44	\$408.50
Schuller Anderson (SA) EPO	\$12.50	\$172.14	\$184.64	\$62.50	\$394.44	\$408.50
United Healthcare (UHC) EPO	\$17.50	\$172.14	\$189.64	\$67.50	\$394.44	\$413.50
Arizona Foundation (AZF) PPO	\$70.00	\$214.32	\$284.32	\$195.00	\$489.63	\$624.50
United Healthcare (UHC) PPO	\$75.00	\$214.32	\$289.32	\$200.00	\$489.63	\$629.50
Central Region: Maricopa, Gila, Pinal Counties						
	Employee	State	Total	Employee	State	Total
RAN+AMN (HMA) EPO	\$12.50	\$177.84	\$190.34	\$62.50	\$409.26	\$471.76
Schuller Anderson (SA) EPO	\$12.50	\$177.84	\$190.34	\$62.50	\$409.26	\$471.76
United Healthcare (UHC) EPO	\$17.50	\$177.84	\$195.34	\$67.50	\$409.26	\$476.76
Arizona Foundation (AZF) PPO	\$70.00	\$238.83	\$308.83	\$195.00	\$558.60	\$753.60
United Healthcare (UHC) PPO	\$75.00	\$238.83	\$313.83	\$200.00	\$558.60	\$758.60
Northern, Southeastern and Western Regions: Yavapai, Coconino, Navajo, Apache, Graham, Greenlee, Cochise, Mohave, La Paz and Yuma Counties						
	Employee	State	Total	Employee	State	Total
RAN+AMN (HMA) EPO	\$12.50	\$239.40	\$251.90	\$62.50	\$563.16	\$625.66
Arizona Foundation (AZF) PPO	\$70.00	\$221.50	\$291.50	\$195.00	\$608.76	\$803.76
Out-of-State						
	Employee	State	Total	Employee	State	Total
Beech Street PPO	\$12.50	\$318.06	\$330.56	\$62.50	\$759.81	\$822.31

Arizona Benefit Options DENTAL PLANS

PLAN	SINGLE			FAMILY		
	Employee	State	Total	Employee	State	Total
Delta Dental	\$7.28	\$7.70	\$14.98	\$27.07	\$21.75	\$48.82
MetLife Dental	\$6.45	\$7.70	\$14.15	\$22.50	\$21.75	\$44.25
Employers Dental Services (EDS)	\$2.01	\$3.09	\$5.10	\$9.08	\$5.75	\$14.83
Fortis Dental	\$2.34	\$3.09	\$5.43	\$9.01	\$5.75	\$14.76

Arizona Benefit Options AVESIS, INC. VISION PLAN

SINGLE \$3.17	FAMILY \$8.59
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SHORT TERM DISABILITY (STD) PLANS

PLAN	COST	FORMULA TO CALCULATE MONTHLY PREMIUM	MAXIMUM ANNUAL SALARY FOR PREMIUM COMPUTATION PURPOSES
Standard	\$0.89 per \$100 of base salary	Annual salary ÷ 12 x .0089	\$60,000
UnumProvident	\$0.84 per \$100 of base salary	Annual salary ÷ 12 x .0084	\$53,857

SUPPLEMENTAL LIFE INSURANCE (per \$1000 of coverage)

PLAN	AGE	UNDER 30	30-35	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
Standard		\$0.05	\$0.06	\$0.07	\$0.12	\$0.16	\$0.26	\$0.37	\$0.67	\$0.67	\$1.06
Aetna		\$0.04	\$0.04	\$0.06	\$0.10	\$0.16	\$0.19	\$0.30	\$0.46	\$0.69	*

* Contact Human Resources for rate

DEPENDENT LIFE INSURANCE

Standard		Aetna (supplemental life enrollment required)	
LEVEL OF COVERAGE	COST	LEVEL OF COVERAGE	COST
\$2,000	\$0.47	Spouse \$5,000 and Child(ren) \$5,000	\$0.33
\$ 4,000	\$0.94		
\$ 6,000	\$1.41		
\$12,000	\$2.82		
\$15,000	\$3.53		

JANET NAPOLITANO
Governor

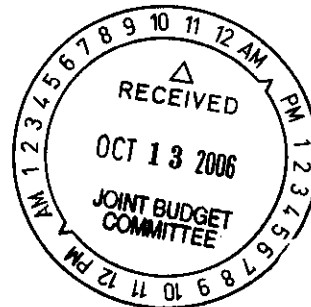


WILLIAM BELL
Director

ARIZONA DEPARTMENT OF ADMINISTRATION

100 N 15TH AVE, SUITE 103
PHOENIX, ARIZONA 85007
(602) 542-5008

October 13, 2006



Richard Stavneak, Director
Joint Legislative Budget Committee
1716 West Adams
Phoenix, AZ 85007

Re: Actuarial Review of Employee Health Insurance Program

Dear Mr. Stavneak:

Thank you for the opportunity to respond to the review of our Employee Health Insurance Program by your actuary, Milliman. Each of the major recommendations is paraphrased and addressed separately below:

Milliman Recommendation: Recommend that future projections of monthly paid claims reflect smoothed increases. Recommend that the basis for the assumed medical trend assumptions be documented more completely in future reports.

Agency Response: Monthly paid claim projections reflect timing of the funding requests (with funds transferred primarily on Tuesdays and Thursdays), so the fluctuations are the result of the number of funding requests expected during the month, not based on fluctuations of claims. Our actuary, Mercer, presents the projections in this way for consistency with the way ADOA accounting tracks paid claims.

Milliman Recommendation: Recommend that ADOA set explicit targets for HITF fund balance. Recommend that the target equal at least a conservative estimate of IBNP liability. Recommend that ADOA consider including an additional contingency fund in the HITF forecast equal to 10 – 25% of the annual claims cost.

Agency response: Until funding for HITF is developed on a cost basis and the General Fund sweep is eliminated, it is extraordinarily difficult to forecast an ending balance for the fund. It is not clear that Milliman took this practice into account in their review. As noted by Milliman, ADOA has refined its reserve needs over the relatively short period of self insurance to cover the IBNR requirements. Through the budget process, ADOA has sought to at least cover this reserve level. With stop loss coverage in place, and adequate fiscal reserves at the State level, it is not clear that a dedicated additional contingency such as the 10% minimum suggested by Milliman is necessary. ADOA will

continue to request the minimum fiscally prudent dedicated level of additional funding needed each year, given a recognition that the obligations created by self funding will be met outside the program should the need arise.

Milliman Recommendation: Recommend that we stop using the IBNR Incurred But Not Reported) label in favor of the INBP (Incurred But Not Paid) term.

Agency response: While the INBP term may truly be more descriptive of the claims we are trying to describe, IBNR is a term of art in the insurance business. In fact, “IBNR Weekly” is a popular trade publication. A Google search of the INBP term yields no results in the English language and IBNR yields the insurance references associated with this term of art. Therefore, ADOA prefers the term IBNR until such time as another label becomes the standard in our industry.

Milliman Recommendation: Recommend that Mercer consider blending incurred claims estimates based on 6 or 12 month average incurred claims rates. Recommend that analysis be expanded to include surveys of other employer’s plan costs and premiums to make sure any differences are appropriate. Recommend we expand our IBNP reserve estimates to include adding the current estimate of remaining IBNP to the runout to date to produce a reestimated reserve.

Agency response: We will certainly recommend this to Mercer or any other actuaries working on our rates. We further agree that we should monitor other plans and weigh their benefit costs, member profiles, and coverage with our plan. Regarding the runout and the remaining IBNP, we concur this is a logical suggestion.

Milliman Recommendation: Recommend ADOA estimate the per person premium revenue needed for future plan year separately for each plan option and area.

Agency response: We believe we are currently doing this.

Milliman Recommendation: Recommend that future reports make an explicit statement about data reliance. Further, if we have concerns about the raw data, ADOA should perform a separate audit of the data suppliers.

Agency response: ADOA agrees and has hired an internal actuary to assist in making this work possible.

Milliman Recommendation: Recommend that ADOA continue to compare Benefit Option premiums to surveys of other employer’s plan costs to make sure differences are appropriate.

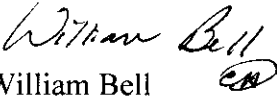
Agency response: ADOA will continue to make these comparisons.

Milliman Recommendation: Recommend that ADOA review and monitor premiums to measure the enrollment of higher claims enrollees in one plan versus another (PPO v. EPO). We should be watching for rate setting and claims costs comparisons that indicates adverse selection to a particular plan to the detriment of the HITF.

Agency response: ADOA recognizes this possibility and agrees it should be carefully measured. Milliman also discusses the employee premium strategy. ADOA agrees that the premium costs should be monitored and will continue the current practice to analyze the actual costs by plan type. The internal actuary will allow the agency to make such comparisons.

ADOA appreciates the closing language of the report acknowledging the differences in approaches and assumptions may differ. The “recommendation that ADOA continue to monitor claims experience as it emerges, and make changes to premiums, plan designs, and/or vendor contracts as needed,” is well taken and is critical to the long term success of the self insurance program. If you have any questions related to our response to your findings, please contact me at (602) 542-1500, or Deputy Director Charlotte Hosseini at (602) 364-2710.

Sincerely,


William Bell
Director

xc: Charlotte Hosseini, Deputy Director, Department of Administration
Paul Shannon, Budget Manager, Department of Administration
Ray Di Ciccio, Risk Manager, Department of Administration
Gary Yaquinto, Director, OSPB
Matt Gottheiner, Budget Analyst, OSPB
Tyler Palmer, Budget Analyst, JLBC

**REPORT ON THE ACTUARIAL AUDIT OF
THE ARIZONA HEALTH CARE COST CONTAINMENT SYSTEM
ARIZONA ACUTE CARE SYSTEM
FOR CONTRACT YEAR 2006**

**PRESENTED TO
ARIZONA JOINT LEGISLATIVE BUDGET COMMITTEE**

**Prepared by:
Lewis & Ellis, Inc.
Actuaries & Consultants
Overland Park, Kansas**

October 5, 2006

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INTRODUCTION

Lewis & Ellis, Inc. was engaged by the Arizona Joint Legislative Budget Committee (the “Committee”) to conduct an actuarial study of capitation rates in the Arizona Health Care Cost Containment System’s (AHCCCS) Acute Care Services Program (the “Program”).

Our review was to:

- a) Determine the validity of the data used by the actuary in setting the capitation rates;
- b) Determine whether or not the department is operating in accordance with principles and practices prescribed by the Actuarial Standards Board;
- c) Determine whether or not the department is operating within the Federal requirements for an actuarially sound system;
- d) Determine the reasonableness and appropriateness of plan assumptions;
- e) Provide an analysis of the consistency of assumptions and methods for contract years 2005 and 2006.

This report presents our findings and describes the methodology used in our review. Observations are included.

This report has been prepared in conformity with consideration of appropriate actuarial standards of practice for the express purpose to which it was intended. The purpose of this report is to communicate our review of the capitation rate development for the Arizona Acute Care System. Judgments made as to the assumptions, data, methodologies, results and recommendations found in the report should only be made after careful consideration of the report in its entirety. The use of

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this report by parties outside of the Arizona Joint Legislative Budget Committee is not recommended. Outside parties rely on this report at their own risk.

Our conclusions are based on information supplied in the Acute Care Actuarial Memorandum prepared by AHCCCS, the Contract Year Ending 2005 Capitation Rate Methodology Letter for acute care prepared by Mercer Health & Benefits LLC (Mercer), and answers, files and work papers provided by AHCCCS in response to our questions. If any information was inaccurate, it may require us to revise our conclusions and opinions.

Lewis & Ellis, Inc. is available to answer any questions that may be raised by this report. Please direct any inquiries to Tom Handley or Tony Proulx in our Overland Park office.

By:

Tom Handley, FSA, MAAA
LEWIS & ELLIS, INC.
Actuaries & Consultants
10561 Barkley, Suite 470
Overland Park, KS 66212
Telephone: (913) 491-3388
THandley@LewisEllis.co

Anthony G. Proulx, FSA, MAAA
LEWIS & ELLIS, INC.
Actuaries & Consultants
10561 Barkley, Suite 470
Overland Park, KS 66212
Telephone: (913) 491-3388
TProulx@LewisEllis.com

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EXECUTIVE SUMMARY

This report presents the results of the basic examination steps performed by Lewis & Ellis, Inc. during an audit of the Arizona Health Care Cost Containment System's Acute Care Services Program. We were provided detailed information from the Program regarding the development of the capitation rates. We reviewed and analyzed the information and data. In certain instances we applied our own estimates to determine overall capitation rates appropriate for the Contract Year 2006 (CY2006 covers the period October 1, 2005 through September 30, 2006). It is our opinion that the overall methodology used in developing the statewide capitation rates is reasonable.

We have four recommendations:

- The first is regarding the development of the provider administration expense factor used in developing the gross capitation rates. Provider administration expense is calculated as a flat 9% of the net expected claims. The percentage has remained unchanged since at least State Fiscal Year 2004. This implies that provider administration expenses will increase at the same level as the acute care claims trend. We do not believe it is appropriate to have the provider administration expenses inflate at the same rate as the claim costs. We recommend that the level of provider administration expenses be revised each year to better reflect the actual level of expected expenses, possibly using a method based on per member per month (PMPM), rather than percent of capitation method.
- The second recommendation is that a baseline repricing effort be conducted at least every three years. The contract's renewal years' repricing involves an update of the prior year's

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estimated claim costs. The process does not include a re-stating of the starting point. So deviations of actual experience from expected experience will accumulate over the years. This is not desirable as the capitation rates could get out of sync with the true cost of providing the services.

- The third recommendation is regarding the encounter data reporting. We believe that there is additional information that cannot currently be accessed due to systems issues which would assist in better managing this Program. If the month and year of service were captured, we believe that trend analysis could be enhanced. At a minimum, the data could still be summarized by year of service. We would recommend that when the systems for this Program are updated, month of service be included in the encounter data reports.
- Finally, we would recommend that in the future, the actuary identify separately the cost for mandated benefits and the cost for additional non-mandated benefits (if any) covered by the Program.

The first two recommendations are discussed further in the Methodology section.

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BACKGROUND

The capitation rates were developed by the Arizona Health Care Cost Containment System (AHCCCS). There are eight Acute Care programs in the 15 Arizona counties as summarized in Appendix A.

Within each plan there are capitation rates for 25 rate code groupings. These are shown in Appendix B. Appendix B also shows the statewide trend factors for each of these categories, as explained in the Methodology section.

Finally, Appendix C shows all the capitation rates for each service category for each plan. The Medicare Modernization Act was effective on January 1, 2006, requiring an adjustment to the capitation rates. Thus every plan has two sets of rates for CY2006 – from October 1, 2005 to December 31, 2005 and from January 1, 2006 to September 30, 2006.

GENERAL DESCRIPTION OF REVIEW PROCEDURES

The first step in conducting our audit was to gain familiarity with the Program. This included a review of the Arizona Acute Care Actuarial Memorandum for the contract year 2006, Contract Year Ending 2005 Capitation Rate Methodology Letter prepared by Mercer for Acute Care, the Health Practice Council of the American Academy of Actuaries Practice Note on the Actuarial Certification of Rates for Medicaid Managed Care Programs, the applicable Actuarial Standards of Practice as promulgated by the Actuarial Standards Board and the federal Medicaid Managed Care regulation. Preliminary discussions were held with the Arizona Joint Legislative Budget Committee as well.

We requested information from AHCCCS including, but not limited to the encounter data, financial data, historical enrollment data and workpapers showing the development of trend factors and other program changes. We corresponded with AHCCCS personnel to gain a better understanding of the Program's practices and procedures.

The actuarial methods and assumptions underlying the significant actuarial items were reviewed for reasonableness and consistency. We corresponded with AHCCCS personnel who then provided additional information.

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VALIDITY OF DATA

The data used in the development of the Contract Year 2006 (CY2006) capitation rates is based on encounter data for incurred dates September 2001 through June 2004. This period covers two full contract years plus nine months of a third contract year. Because of the timing of when the capitation rates were developed, the data for the third full year was not available. The data is tabulated by the key parameters of record type (prospective or prior period coverage), geographic service area, county, age category, service categories and rate category groupings. These parameters were used to assign the data to the 25 pricing categories shown in Appendix B. The data is on a gross basis, before reinsurance. The encounter data excluded the Maricopa Health Plan due to claim payment problems with that plan.

For a number of reasons, we did not attempt to reconcile the encounter data to the financial data. First, the encounter data for contract year 2004 contained only 9 months of claim, while the financial data has a full year. Second, the encounter data was not split by Program Contractors so individual reconciliations were not possible. Third, and most importantly, the capitation rates were updated, not rebased, that is not recalculated from the currently available encounter data. As such, we are only interested in the trends from year to year.

Based on our examination of the data available at the time that the pricing was performed, the base data used, the floors and ceilings placed on the trends, and the actuarial judgment used to set the final trend factors are reasonable.

METHODOLOGY

The capitation rates have four components. The first component is the expected claim costs. The expected claims are developed by calculating a trend factor and applying it to the prior year's claims. The second component is the provider administration expense. The third component is the risk charge. The risk charge allows for a margin of error in setting the capitation rate and includes the expected profit for the provider. The final component is the premium tax.

The rate development for CY2006 was performed by AHCCCS, whereas Mercer did the work for CY2005. We reviewed the Actuarial Memorandum for CY2006 and the Rate Methodology letter from Mercer for CY2005. Both documents outline the approach used. They are very similar. The underlying experience data contains only expenses which are eligible for Acute Care Medicaid. For both years, rates were developed as an update to the prior year. Thus CY2005 trend was based on the trend observed in 2004 and CY2006 was based on the trend observed in 2005. In both years, trends are developed for utilization and unit costs. These trend factors are then checked for reasonableness, capped with a floor and ceiling, and then combined into a PMPM trend. The trend is then applied to the prior year's net claim costs. Within each of the 25 rate code groupings, there are eight categories of service, each with its own trend calculation. These are then weighted to arrive at the final trend for that rate code grouping. It is customary and appropriate for trend to be calculated at such a detailed level.

The trend rates include adjustments for any program changes that are expected to affect them. In CY2006 these program changes and their expected effect are:

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- Outpatient and Emergency Room Payment – The effect is a 6.4% increase to outpatient and emergency room costs. We requested and received additional documentation that supported this adjustment.
- Parents Evaluation of Developmental Status – The effect is an increase of 0.2% to utilization by primary care physicians for TANF/KidsCare <1 rate cell. (See Appendix B for the definition of service categories.)
- Newborn Screenings – There is a second screening at 1-2 weeks at a statutory rate of \$20-\$40 and an auditory screen at approximately \$75. The overall impact is a 13.5% increase for the TANF/KidsCare<1 rate cell.
- Increase in Ambulance Rates – The effect is a 0.07% across all rate cells.
- Medicare Modernization Act – For dual eligibles, there was a shift of prescription costs from Medicaid to Medicare, effective January 1, 2006. AHCCCS developed new capitation rates to be effective January 1, 2006. The capitation rates adjustments remove the drug costs as well as the drug processing fees. We reviewed the actuarial memorandum that supported this change.
- Increase in Cesarean Sections – The effect is a 1% increase on the Maternity Delivery Payment and a 0.7% increase on the TANF/KidsCare <1 rate cell.

Other than the adjustments for the Outpatient and Emergency Room Payment and the Medicare Modernization Act, these program changes were small and reasonable and we did not investigate them further.

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For CY2006, the provider administration charges are set equal to 9% of the net claim costs. We agree that this is a relatively low level, reflective of a very efficient delivery system. Data that we have on other Medicaid plans show their provider administrative levels are more in the range of 11.5% to 15.0% of net claim costs. However, the pricing methodology inherently assumes that provider administrative expenses increase at the same rate as the net claim costs. The inflation rate for health care exceeds the general level of inflation, so inflating the provider administrative expense at the same rate is inappropriate. We recommend that a more traditional approach be used, possibly using per member per month (PMPM) as the basis rather than a percent of the net claim costs.

The risk / contingency charge for each service category is set at 2.5% of gross claim costs (before reinsurance). The exceptions are the Prior Period Coverage and Title XIX Waiver Group (SSI with Medicare and SSI without Medicare) which are both set at 2.0%. These categories are reconciled to a maximum gain or loss of 2.0%. We believe this is an appropriate approach and an appropriate level. The risk charge should be directly related to the claim levels and, unlike the provider administration expense, it should increase at the same rate as the claim costs. Finally, the premium tax is set equal to 2% of the capitation rate.

The net claim costs are the largest part of the capitation rate (approximately 87%) and this is where we focused our attention. AHCCCS employed an approach that trends forward the prior year's claim costs. The development of the trend factor is the key component. It is based on historical encounter data, which AHCCCS shared with us. We reviewed the development of the

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trend factors as calculated in a series of Excel workbooks. The following paragraphs discuss our findings.

The actuarial memorandum states that “Acute Care has a large membership base, which allowed for the experience to be analyzed by the different rate cells, which are comprised of members with similar risk characteristics”. We focused on the reasonableness of the assumptions and the results. We note that the data covers a period of 33 months. Contract year 2002 has more than \$2.75 billion in claims. Contract year 2003 has \$3.42 billion in claims and the nine months of contract year 2004 has \$2.76 billion in claims. We did not expressly address the issue of the credibility of the data. The greater the volume of data, the more statistically credible it is. This is a very large database and we believe it is appropriate to treat it as 100% credible.

As is usually done, the trend analysis is split by the various rate category groupings. The development of trend is split between change in utilization and change in unit cost. Again, this is the customary approach. The two components are then combined to calculate a PMPM trend. Not surprisingly the raw data produced trend factors which varied significantly by rate category grouping, category of service and fiscal year. There are several instances where a large increase in utilization is accompanied by a large drop in the unit cost (or vice versa). This suggests that there was a change in the way the information was coded or extracted. However, in these instances, the trend in the overall level of claims PMPM is reasonable. Again, we chose to focus on the reasonableness of the overall aggregate result, rather than individual cells.

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We performed a simplified analysis in which we developed our own set of trend factors. We used the data as is. We did not adjust for completion factors or for large claims, nor did we address credibility issues for any of the subsets. We did apply considerable actuarial judgment in smoothing the results to produce reasonable trend factors. The purpose of our calculations was to provide a benchmark for comparison. In addition, we emphasize that there is wide latitude in applying actuarial judgment, reflecting differences of opinion. Appendix B shows both the AHCCCS trend factors and the L&E trend factors. This analysis is on a statewide basis and is not necessarily reflective of any single plan. Finally, the L&E and the AHCCCS trend factors reflect the program changes described earlier.

We note that the trend rates for the KidsCare Parents (HIFA) programs were very difficult to develop. KidsCare Parents was instituted in January 2003 and therefore has only 18 months of data. The number and amount of claims is relatively small. The calculated KidsCare Parents trends are not reasonable and it appears there was a staggered approach in implementing the KidsCare Parents program. It would have been helpful here to see claim data summarized by month rather than by year. As such, both AHCCCS and L&E used weightings and trend information available from the corresponding TANF categories. This is an area requiring much actuarial judgment.

The categories of SSI with Medicare and SSI without Medicare are so small that we would have just trended them forward at the total TANF trend rate, which we calculated as 5.6%.

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Overall our simplified analysis generated trend factors that were very similar to those developed in the capitation pricing. The largest differences are in the KidsCare Parents category, which was small and had little credibility. We believe that the trend factors used by AHCCCS in the development of the capitation rates are reasonable.

A second consideration in the projection of claim costs is the amount to which the trend factor is applied. It is our understanding that a Request For Proposal is issued every five years. At that time, the baseline claim costs are recalculated. For renewal years within a contract, the baseline claim costs from the prior year are just updated via the trend factor. This avoids a major repricing effort every year. But the weakness is that each year there will be a difference between the estimated and actual claim costs. These differences will accumulate until the baseline costs are recalibrated. The expectation is that the total differences will be small and that there will be a series of oscillating positive and negative differences. This way, the cumulative difference remains small. If not, then the cumulative difference can be great and the current year estimate is skewed. We recommend that the baseline claim costs be recalculated at least every three years to avoid any large cumulative skewness.

COMPLIANCE WITH REGULATIONS AND ACCEPTED PRACTICE

Actuarial Standards of Practice (ASOPs) emphasize process over outcome. They are intended to provide actuaries with a framework for performing professional assignments and to offer guidance on relevant issues, recommended practices, documentation, and disclosure. The ASOPs intentionally leave significant room for the actuary to use professional judgment when selecting methods and assumptions, conducting an analysis, and reaching a conclusion.

Currently, no ASOP applies specifically to actuarial work performed to comply with CMS requirements for rate certification. Some health-related ASOPs have scopes that apply specifically to actuarial work performed on behalf of health plans. Other health-related ASOPs are general, so they apply both to health actuarial work performed for health plans or to health actuarial work performed for purchasers for health plan services. We believe the main ASOPs (shown in Appendix D) applicable to the development of capitation rates for this program are the following:

ASOP 8	Regulatory Filings for Health Plan Entities
ASOP 23	Data Quality
ASOP 25	Credibility Procedures Applicable to Accident and Health, Group Term Life, and Property/Casualty Coverages
ASOP 31	Documentation in Health Benefit Plan Ratemaking
ASOP 41	Actuarial Communications

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These ASOPs should be applied in conjunction with the Medicaid managed care regulation 42 CFR 438.6. Regulation 42 CFR 438.6 defines actuarially sound capitation rates as capitation rates that:

- a) have been developed in accordance with generally accepted actuarial principles and practices
- b) are appropriate for the populations to be covered, and the services to be furnished under the contract; and
- c) have been certified by actuaries who meet the qualification standards established by the American Academy of Actuaries and follow the practice standards established by the Actuarial Standards Board.

Benefits to be included in these actuarially sound rates are only those required to be covered by the Federal regulations. Extraneous benefits which may be provided by the program should be excluded from the capitation rate calculation. Thus, program changes should only reflect those which are required by federal regulation. Funding for extraneous benefits should be obtained from other sources unless agreed upon by the state legislature. We did not receive enough information to verify whether non-mandated benefits were included in the capitation rates developed for the Program. We would recommend that in the future, the actuary identify separately the cost for mandated benefits and the cost for additional non-mandated benefits (if any) covered by the Program.

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A checklist was developed based on these regulations as a tool for Regional CMS Offices for use in approving rates. This checklist is often followed by actuaries in outlining the steps taken to determine the actuarial sound rates. The checklist suggests that the following items be addressed in filings:

- Overview of rate setting methodology
- Actuarial certification
- Projected expenditures
- Procurement, Prior approval and rate setting
- Risk contracts
- Limit on payment to other providers
- Rate modifications

We did verify that all applicable items on the checklist were covered in the AHCCCS Actuarial Memorandum. Based on our review, we believe the Program is operating within the Federal requirements for an actuarially sound system.

CONCLUSION

We believe the overall methodology used in developing the statewide capitation rates is reasonable. We do, however, have four recommendations for improvement.

- The first is regarding the development of the provider administration expense factor used in developing the gross capitation rates. Provider administration expense is calculated as a flat 9% of the net expected claims. The percentage has remained unchanged since at least State Fiscal Year 2004. This implies that provider administration expenses will increase at the same level as the acute care claims trend. We do not believe it is appropriate to have the provider administration expenses inflate at the same rate as the claim costs. We recommend that the level of provider administration expenses be revised each year to better reflect the actual level of expected expenses, possibly using a method based on per member per month (PMPM), rather than a percent of capitation method.
- The second recommendation is that a baseline repricing effort be conducted at least every three years. The contract's renewal years' repricing involves an update of the prior year's estimated claim costs. The process does not include a re-stating of the starting point. So deviations of actual experience from expected experience will accumulate over the years. This is not desirable as the capitation rates could get out of sync with the true cost of providing the services.

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- The third recommendation is regarding the encounter data reporting. We believe that there is additional information that cannot currently be accessed due to systems issues which would assist in better managing this Program. If the month and year of service were captured, we believe that trend analysis could be enhanced. At a minimum, the data could still be summarized by year of service. We would recommend that when the systems for this Program are updated, month of service be included in the encounter data reports.
- Finally, we would recommend that in the future, the actuary identify separately the cost for mandated benefits and the cost for additional non-mandated benefits (if any) covered by the Program.

APPENDIX A

APPENDIX A

Acute Care Programs and Counties Served by Each

Program	GSA	County
APIPA	2	Yuma / La Paz
	4	Apache / Coconino / Mojave / Navajo
	6	Yavapai
	10	Pima / Santa Cruz
	12	Maricopa
	14	Cochise / Graham / Greenlee
Care 1 st Arizona	12	Maricopa
Health Choice Arizona	4	Apache / Coconino / Mojave / Navajo
	8	Gila / Pinal
	10	Pima
	12	Maricopa
Maricopa Health Plan	12	Maricopa
Mercy Care Plan	2	Yuma / La Paz
	6	Yavapai
	10	Pima
	12	Maricopa
	14	Cochise / Graham / Greenlee
Phoenix Health Plan	8	Gila / Pinal
	12	Maricopa
Pima Health Plan	10	Pima / Santa Cruz
University Family Care	10	Pima

APPENDIX B

APPENDIX B

Capitation Categories and Trend Factors

<u>Category</u>	<u>Pricing</u>	<u>L&E</u>
TANF Age <1 M,F	10.9%	10.5%
TANF Ages 1-13 M,F	8.8%	6.9%
TANF Ages 14-44 M	7.1%	7.1%
TANF Ages 14-44 F	7.7%	6.5%
TANF Ages 45+ M,F	7.4%	7.5%
SSI with Medicaid	7.3%	7.3%
SSI without Medicaid	7.0%	9.0%
Family Planning Services	6.0%	5.6%
Maternity Delivery Supplement	5.8%	4.8%
Medical Expense Deduction	3.7%	5.0%
Non – Medical Expense Deduction	2.5%	1.6%
Medical Hospital Supplement	3.5%	5.6%
TANF Age <1 M,F – Prior Period Coverage	3.4%	3.8%
TANF Ages 1-13 M,F – Prior Period Coverage	4.1%	3.3%
TANF Ages 14-44 M – Prior Period Coverage	0.1%	-1.3%
TANF Ages 14-44 F – Prior Period Coverage	-0.4%	0.0%
TANF Ages 45+ M,F – Prior Period Coverage	0.5%	4.3%
SSI with Medicaid – Prior Period Coverage	6.2%	5.6%
SSI without Medicaid – Prior Period Coverage	5.2%	5.6%
Medical Expense Deduction – Prior Period Coverage	-1.6%	-1.8%
Non – Medical Expense Deduction – Prior Period Cov	6.5%	6.4%
KidsCare Parents (HIFA) Ages 14-44 M	9.2%	7.8%
KidsCare Parents Ages 14-44 F	5.4%	7.1%
KidsCare Parents Ages 45+ M,F	5.6%	7.9%
HIV / AIDS Supplement	0.0%	0.0%

TANF – Temporary Assistance for Needy Families

SSI – Supplemental Security Income

HIFA – Health Insurance Flexibility and Accountability

PRIOR PERIOD COVERAGE – Prior Period Coverage

APPENDIX C

Acute Care Capitation Rates

APPENDIX C

APIPA Capitation Rates CY2006 (October 1, 2005 – December 31, 2005)

	Yuma <u>La Paz</u>	Apache Coconino Mohave <u>Navajo</u>	<u>Yavapai</u>	Pima <u>Santa Cruz</u>	<u>Maricopa</u>	Cochise Graham <u>Greenlee</u>
Title XIX						
TANF <1 M,F	429.50	455.18	455.94	451.50	444.38	452.59
TANF 1-13 M,F	100.30	99.90	100.60	101.13	109.36	104.98
TANF 14-44 F	183.65	206.46	190.47	179.57	187.93	188.65
TANF 14-44 M	123.15	145.23	124.77	120.93	130.07	127.92
TANF 45+ M,F	370.65	388.02	370.67	353.93	378.28	376.22
SSI w/ Med	315.92	320.21	312.74	308.65	271.33	272.65
SSI w/o Med	630.81	668.51	633.16	616.94	556.66	566.27
SFP	12.65	15.06	12.49	12.88	17.68	15.70
Mat Del Supp	5,931.42	5,955.17	6,332.18	6,237.36	6,016.36	6,054.05
Non-MED	387.52	463.07	371.79	377.69	441.95	427.50
MED	1,030.03	829.25	824.02	824.02	841.02	838.19
MED Hosp Supp	10,765.92	11,298.83	10,337.26	10,319.82	9,902.59	9,981.20
Prior Period Coverage						
TANF <1 M,F	762.80	762.80	762.80	1,236.65	1,236.65	762.80
TANF 1-13 M,F	41.29	41.29	41.29	41.29	41.29	41.29
TANF 14-44 F	150.39	150.39	150.39	156.42	156.42	150.39
TANF 14-44 M	122.52	122.52	122.52	127.43	127.43	122.52
TANF 45+ M,F	283.36	283.36	283.36	294.68	294.68	283.36
SSI w/ Med	40.89	40.89	40.89	32.08	32.08	40.89
SSI w/o Med	90.61	90.61	90.61	85.48	85.48	90.61
Non-MED	641.60	629.38	640.02	636.95	573.80	589.06
MED	1,703.54	1,575.24	1,589.04	1,589.04	1,546.92	1,554.23
Other Rates						
HIFA 14-44 F	205.81	231.77	214.09	201.29	211.21	212.22
HIFA 14-44 M	131.92	156.22	133.94	129.81	140.02	137.54
HIFA 45+ M,F	397.67	416.04	398.02	378.98	406.35	404.31
HIV/AIDS Supp	755.46	755.46	755.46	755.46	755.46	755.46

APPENDIX C

APIPA Capitation Rates CY2006 (January 1, 2006 – September 30, 2006)

	Yuma <u>La Paz</u>	Apache Coconino Mohave <u>Navajo</u>	<u>Yavapai</u>	Pima <u>Santa Cruz</u>	<u>Maricopa</u>	Cochise Graham <u>Greenlee</u>
Title XIX						
TANF <1 M,F	429.50	455.18	455.94	451.50	444.38	452.59
TANF 1-13 M,F	100.30	99.90	100.60	101.13	109.36	104.98
TANF 14-44 F	182.35	205.16	189.17	178.27	186.63	187.35
TANF 14-44 M	121.51	143.59	123.14	119.29	128.43	126.28
TANF 45+ M,F	359.28	376.65	359.30	342.56	366.91	364.85
SSI w/ Med	214.18	216.88	211.37	220.82	169.96	180.67
SSI w/o Med	630.81	668.51	633.16	616.94	556.66	566.27
SFP	12.65	15.06	12.49	12.88	17.68	15.70
Mat Del Supp	5,931.42	5,955.17	6,332.18	6,237.36	6,016.36	6,054.05
Non-MED	386.47	462.01	370.73	376.64	440.90	426.45
MED	1,014.42	813.64	808.41	808.41	825.41	822.58
MED Hosp Supp	10,765.92	11,298.83	10,337.26	10,319.82	9,902.59	9,981.20
Prior Period Coverage						
TANF <1 M,F	762.80	762.80	762.80	1,236.65	1,236.65	762.80
TANF 1-13 M,F	41.29	41.29	41.29	41.29	41.29	41.29
TANF 14-44 F	150.39	150.39	150.39	156.42	156.42	150.39
TANF 14-44 M	122.52	122.52	122.52	127.43	127.43	122.52
TANF 45+ M,F	283.36	283.36	283.36	294.68	294.68	283.36
SSI w/ Med	40.89	40.89	40.89	32.08	32.08	40.89
SSI w/o Med	90.61	90.61	90.61	85.48	85.48	90.61
Non-MED	641.60	629.38	640.02	636.95	573.80	589.06
MED	1,703.54	1,575.24	1,589.04	1,589.04	1,546.92	1,554.23
Other Rates						
HIFA 14-44 F	205.81	231.77	214.09	201.29	211.21	212.22
HIFA 14-44 M	131.92	156.22	133.94	129.81	140.02	137.54
HIFA 45+ M,F	397.67	416.04	398.02	378.98	406.35	404.31
HIV/AIDS Supp	755.46	755.46	755.46	755.46	755.46	755.46

APPENDIX C

Care 1st Arizona Capitation Rates CY2006

	Oct 05 - Dec 05	Jan 06 - Sep 06
	<u>Maricopa</u>	<u>Maricopa</u>
TANF <1 M,F	423.08	423.08
TANF 1-13 M,F	107.94	107.94
TANF 14-44 F	184.26	182.97
TANF 14-44 M	129.65	128.01
TANF 45+ M,F	364.10	352.72
SSI w/ Med	272.03	170.65
SSI w/o Med	543.95	543.95
SFP	17.68	17.68
Mat Del Supp	6,059.65	6,059.65
Non-MED	446.87	445.81
MED	841.02	825.41
MED Hosp Supp	9,902.59	9,902.59
TANF <1 M,F	1236.65	1236.65
TANF 1-13 M,F	41.29	41.29
TANF 14-44 F	156.42	156.42
TANF 14-44 M	127.43	127.43
TANF 45+ M,F	294.68	294.68
SSI w/ Med	32.08	32.08
SSI w/o Med	85.48	85.48
Non-MED	573.80	573.80
MED	1,546.92	1,546.92
HIFA 14-44 F	207.43	207.43
HIFA 14-44 M	139.75	139.75
HIFA 45+ M,F	391.05	391.05
HIV/AIDS Supp	755.46	755.46

APPENDIX C

Health Choice Arizona Capitation Rates CY2006 (October 1, 2005 – December 31, 2005)

	Apache Coconino Mohave <u>Navajo</u>	Gila <u>Pinal</u>	<u>Pima</u>	<u>Maricopa</u>
Title XIX				
TANF <1 M,F	437.59	433.76	428.12	430.16
TANF 1-13 M,F	105.41	105.05	102.00	102.38
TANF 14-44 F	204.32	181.64	181.78	182.41
TANF 14-44 M	150.69	128.81	123.11	127.06
TANF 45+ M,F	368.46	362.34	389.09	369.46
SSI w/ Med	310.74	279.42	297.21	273.14
SSI w/o Med	636.53	564.65	615.92	553.40
SFP	15.92	17.67	14.16	18.63
Mat Del Supp	5,707.51	6,038.29	5,911.62	6,089.86
Non-MED	463.07	426.60	381.27	429.89
MED	829.25	836.23	831.66	841.02
MED Hosp Supp	11,298.83	10,021.35	10,415.89	9,902.59
Prior Period Coverage				
TANF <1 M,F	762.80	762.80	1,241.25	1,236.65
TANF 1-13 M,F	41.29	41.29	41.29	41.29
TANF 14-44 F	150.39	150.39	156.42	156.42
TANF 14-44 M	122.52	122.52	127.43	127.43
TANF 45+ M,F	283.36	283.36	294.68	294.68
SSI w/ Med	40.89	40.89	31.96	32.08
SSI w/o Med	90.61	90.61	85.48	85.48
Non-MED	629.38	590.91	640.46	573.80
MED	1,575.24	1,558.69	1,597.79	1,546.92
Other Rates				
HIFA 14-44 F	229.49	204.22	203.74	205.19
HIFA 14-44 M	162.29	138.74	131.93	136.91
HIFA 45+ M,F	394.63	388.55	418.75	396.73
HIV/AIDS Supp	755.46	755.46	755.46	755.46

APPENDIX C

Health Choice Arizona Capitation Rates CY2006 (January 1, 2006 – September 30, 2006)

	Apache Coconino Mohave <u>Navajo</u>	Gila <u>Pinal</u>	<u>Pima</u>	<u>Maricopa</u>
Title XIX				
TANF <1 M,F	437.59	433.76	428.12	430.16
TANF 1-13 M,F	105.41	105.05	102.00	102.38
TANF 14-44 F	203.02	180.34	180.48	181.11
TANF 14-44 M	149.05	127.17	121.47	125.43
TANF 45+ M,F	357.09	350.96	377.71	358.09
SSI w/ Med	207.42	182.57	191.20	171.76
SSI w/o Med	636.53	564.65	615.92	553.40
SFP	15.92	17.67	14.16	18.63
Mat Del Supp	5,707.51	6,038.29	5,911.62	6,089.86
Non-MED	462.01	425.54	380.22	428.84
MED	813.64	820.62	816.05	825.41
MED Hosp Supp	11,298.83	10,021.35	10,415.89	9,902.59
Prior Period Coverage				
TANF <1 M,F	762.80	762.80	1,241.25	1,236.65
TANF 1-13 M,F	41.29	41.29	41.29	41.29
TANF 14-44 F	150.39	150.39	156.42	156.42
TANF 14-44 M	122.52	122.52	127.43	127.43
TANF 45+ M,F	283.36	283.36	294.68	294.68
SSI w/ Med	40.89	40.89	31.96	32.08
SSI w/o Med	90.61	90.61	85.48	85.48
Non-MED	629.38	590.91	640.46	573.80
MED	1,575.24	1,558.69	1,597.79	1,546.92
Other Rates				
HIFA 14-44 F	229.49	204.22	203.74	205.19
HIFA 14-44 M	162.29	138.74	131.93	136.91
HIFA 45+ M,F	394.63	388.55	418.75	396.73
HIV/AIDS Supp	755.46	755.46	755.46	755.46

APPENDIX C

Maricopa Health Plan Capitation Rates CY2006

	Oct 05 - Dec 05	Jan 06 - Sep 06
	<u>Maricopa</u>	<u>Maricopa</u>
Title XIX		
TANF <1 M,F	416.14	416.14
TANF 1-13 M,F	106.43	106.43
TANF 14-44 F	184.59	183.30
TANF 14-44 M	124.66	123.02
TANF 45+ M,F	366.88	355.50
SSI w/ Med	273.65	172.27
SSI w/o Med	544.61	544.61
SFP	17.68	17.68
Mat Del Supp	6,106.71	6,106.71
Non-MED	446.87	445.81
MED	841.02	825.41
MED Hosp Supp	9,902.59	9,902.59
Prior Period Coverage		
TANF <1 M,F	1,236.65	1,236.65
TANF 1-13 M,F	41.29	41.29
TANF 14-44 F	156.42	156.42
TANF 14-44 M	127.43	127.43
TANF 45+ M,F	294.68	294.68
SSI w/ Med	32.08	32.08
SSI w/o Med	85.48	85.48
Non-MED	573.80	573.80
MED	1,546.92	1,546.92
Other Rates		
HIFA 14-44 F	207.79	207.79
HIFA 14-44 M	134.26	134.26
HIFA 45+ M,F	394.11	394.11
HIV/AIDS Supp	755.46	755.46

APPENDIX C

Mercy Care Plan Capitation Rates CY2006 (October 1, 2005 – December 31, 2005)

	Yuma <u>La Paz</u>	Yavapai	Pima	Maricopa	Cochise Graham <u>Greenlee</u>
Title XIX					
TANF <1 M,F	404.35	427.28	412.71	410.74	413.43
TANF 1-13 M,F	99.68	103.94	101.59	108.26	104.41
TANF 14-44 F	183.33	184.85	180.00	189.07	184.75
TANF 14-44 M	121.41	120.62	116.01	131.11	122.38
TANF 45+ M,F	361.20	365.76	372.24	371.04	372.18
SSI w/ Med	294.32	304.59	296.67	271.58	272.07
SSI w/o Med	608.42	607.17	601.58	547.11	545.50
SFP	12.65	12.49	14.16	17.68	15.70
Mat Del Supp	5,970.41	6,242.59	5,925.84	6,134.83	6,184.62
Non-MED	387.52	371.79	381.27	461.17	427.50
MED	1,030.03	824.02	831.66	841.02	838.19
MED Hosp Supp	10,765.92	10,337.26	10,415.89	9,902.59	9,981.20
Prior Period Coverage					
TANF <1 M,F	762.80	762.80	1,241.25	1,236.65	762.80
TANF 1-13 M,F	41.29	41.29	41.29	41.29	41.29
TANF 14-44 F	150.39	150.39	156.42	156.42	150.39
TANF 14-44 M	122.52	122.52	127.43	127.43	122.52
TANF 45+ M,F	283.36	283.36	294.68	294.68	283.36
SSI w/ Med	40.89	40.89	31.96	32.08	40.89
SSI w/o Med	90.61	90.61	85.48	85.48	90.61
Non-MED	641.60	640.02	640.46	573.80	589.06
MED	1,703.54	1,589.04	1,597.79	1,546.92	1,554.23
Other Rates					
HIFA 14-44 F	205.70	208.16	201.96	212.74	208.17
HIFA 14-44 M	130.18	129.54	124.23	141.30	131.61
HIFA 45+ M,F	387.61	392.95	400.45	398.68	400.18
HIV/AIDS Supp	755.46	755.46	755.46	755.46	755.46

APPENDIX C

Mercy Care Plan Capitation Rates CY2006 (January 1, 2006 – September 30, 2006)

	Yuma <u>La Paz</u>	Yavapai	Pima	Maricopa	Cochise Graham <u>Greenlee</u>
Title XIX					
TANF <1 M,F	404.35	427.28	412.71	410.74	413.43
TANF 1-13 M,F	99.68	103.94	101.59	108.26	104.41
TANF 14-44 F	182.03	183.55	178.70	187.77	183.45
TANF 14-44 M	119.77	118.98	114.37	129.47	120.74
TANF 45+ M,F	349.83	354.39	360.87	359.66	360.80
SSI w/ Med	192.58	203.22	190.66	170.21	180.08
SSI w/o Med	608.42	607.17	601.58	547.11	545.50
SFP	12.65	12.49	14.16	17.68	15.70
Mat Del Supp	5,970.41	6,242.59	5,925.84	6,134.83	6,184.62
Non-MED	386.47	370.73	380.22	460.11	426.45
MED	1,014.42	808.41	816.05	825.41	822.58
MED Hosp Supp	10,765.92	10,337.26	10,415.89	9,902.59	9,981.20
Prior Period Coverage					
TANF <1 M,F	762.80	762.80	1,241.25	1,236.65	762.80
TANF 1-13 M,F	41.29	41.29	41.29	41.29	41.29
TANF 14-44 F	150.39	150.39	156.42	156.42	150.39
TANF 14-44 M	122.52	122.52	127.43	127.43	122.52
TANF 45+ M,F	283.36	283.36	294.68	294.68	283.36
SSI w/ Med	40.89	40.89	31.96	32.08	40.89
SSI w/o Med	90.61	90.61	85.48	85.48	90.61
Non-MED	641.60	640.02	640.46	573.80	589.06
MED	1,703.54	1,589.04	1,597.79	1,546.92	1,554.23
Other Rates					
HIFA 14-44 F	205.70	208.16	201.96	212.74	208.17
HIFA 14-44 M	130.18	129.54	124.23	141.30	131.61
HIFA 45+ M,F	387.61	392.95	400.45	398.68	400.18
HIV/AIDS Supp	755.46	755.46	755.46	755.46	755.46

APPENDIX C

Phoenix Health Plan Capitation Rates CY2006

	Oct 05 - Dec 05		Jan 06 - Sep 06	
	Gila <u>Pinal</u>	<u>Maricopa</u>	Gila <u>Pinal</u>	<u>Maricopa</u>
Title XIX				
TANF <1 M,F	443.79	429.35	443.79	429.35
TANF 1-13 M,F	107.10	102.56	107.10	102.56
TANF 14-44 F	186.93	183.64	185.63	182.34
TANF 14-44 M	129.38	125.25	127.74	123.61
TANF 45+ M,F	366.41	378.07	355.04	366.70
SSI w/ Med	279.66	272.44	182.81	171.07
SSI w/o Med	576.64	564.50	576.64	564.50
SFP	16.85	18.08	16.85	18.08
Mat Del Supp	6,102.18	6,074.03	6,102.18	6,074.03
Non-MED	426.60	429.89	425.54	428.84
MED	836.23	841.02	820.62	825.41
MED Hosp Supp	10,021.35	9,902.59	10,021.35	9,902.59
Prior Period Coverage				
TANF <1 M,F	762.80	1,236.65	762.80	1,236.65
TANF 1-13 M,F	41.29	41.29	41.29	41.29
TANF 14-44 F	150.39	156.42	150.39	156.42
TANF 14-44 M	122.52	127.43	122.52	127.43
TANF 45+ M,F	283.36	294.68	283.36	294.68
SSI w/ Med	40.89	32.08	40.89	32.08
SSI w/o Med	90.61	85.48	90.61	85.48
Non-MED	590.91	573.80	590.91	573.80
MED	1,558.69	1,546.92	1,558.69	1,546.92
Other Rates				
HIFA 14-44 F	209.97	206.52	209.97	206.52
HIFA 14-44 M	139.32	134.86	139.32	134.86
HIFA 45+ M,F	392.94	406.12	392.94	406.12
HIV/AIDS Supp	755.46	755.46	755.46	755.46

APPENDIX C

Pima Health Plan Capitation Rates CY2006

	Oct 05 - Dec 05	Jan 06 - Sep 06
	Pima <u>Santa Cruz</u>	Pima <u>Santa Cruz</u>
Title XIX		
TANF <1 M,F	417.95	417.95
TANF 1-13 M,F	100.53	100.53
TANF 14-44 F	180.98	179.68
TANF 14-44 M	128.57	126.93
TANF 45+ M,F	360.73	349.35
SSI w/ Med	289.26	201.43
SSI w/o Med	595.00	595.00
SFP	12.88	12.88
Mat Del Supp	5,903.44	5,903.44
Non-MED	377.69	376.64
MED	824.02	808.41
MED Hosp Supp	10,319.82	10,319.82
Prior Period Coverage		
TANF <1 M,F	1,236.65	1,236.65
TANF 1-13 M,F	41.29	41.29
TANF 14-44 F	156.42	156.42
TANF 14-44 M	127.43	127.43
TANF 45+ M,F	294.68	294.68
SSI w/ Med	32.08	32.08
SSI w/o Med	85.48	85.48
Non-MED	636.95	636.95
MED	1,589.04	1,589.04
Other Rates		
HIFA 14-44 F	203.08	203.08
HIFA 14-44 M	138.39	138.39
HIFA 45+ M,F	386.78	386.78
HIV/AIDS Supp	755.46	755.46

APPENDIX C

University Family Care Capitation Rates CY2006

	Oct 05 - Dec 05	Jan 06 - Sep 06
Title XIX	<u>Pima</u>	<u>Pima</u>
TANF <1 M,F	427.80	427.80
TANF 1-13 M,F	99.32	99.32
TANF 14-44 F	176.03	174.73
TANF 14-44 M	113.40	111.76
TANF 45+ M,F	363.73	352.36
SSI w/ Med	290.40	184.39
SSI w/o Med	615.49	615.49
SFP	13.86	13.86
Mat Del Supp	6,119.47	6,119.47
Non-MED	381.28	380.22
MED	831.66	816.05
MED Hosp Supp	10,415.89	10,415.89
Prior Period Coverage		
TANF <1 M,F	1,241.25	1,241.25
TANF 1-13 M,F	41.29	41.29
TANF 14-44 F	156.42	156.42
TANF 14-44 M	127.43	127.43
TANF 45+ M,F	294.68	294.68
SSI w/ Med	31.96	31.96
SSI w/o Med	85.48	85.48
Non-MED	640.46	640.46
MED	1,597.79	1,597.79
Other Rates		
HIFA 14-44 F	197.59	197.59
HIFA 14-44 M	121.37	121.37
HIFA 45+ M,F	391.09	391.09
HIV/AIDS Supp	755.46	755.46

APPENDIX D

Actuarial Standards of Practice

**REPORT ON THE ACTUARIAL AUDIT OF
THE ARIZONA HEALTH CARE COST CONTAINMENT SYSTEM
ARIZONA LONG TERM CARE SYSTEM
FOR CONTRACT YEAR 2006**

**PRESENTED TO
ARIZONA JOINT LEGISLATIVE BUDGET COMMITTEE**

**Prepared by:
Lewis & Ellis, Inc.
Actuaries & Consultants
Overland Park, Kansas**

October 5, 2006

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ARIZONA LONG TERM CARE SERVICES Program

INTRODUCTION

Lewis & Ellis, Inc. was engaged by the Arizona Joint Legislative Budget Committee (the “Committee”) to conduct an actuarial study of capitation rates in the Arizona Health Care Cost Containment System’s (AHCCCS) Long Term Care Services Program (the “Program”).

Our review was to:

- a) Determine the validity of the data used by the actuary in setting the capitation rates;
- b) Determine whether or not the department is operating in accordance with principles and practices prescribed by the Actuarial Standards Board;
- c) Determine whether or not the department is operating within the Federal requirements for an actuarially sound system;
- d) Determine the reasonableness and appropriateness of plan assumptions;
- e) Provide an analysis of the consistency of assumptions and methods for contract years 2005 and 2006.

This report presents our findings and describes the methodology used in our review. Observations are included.

This report has been prepared in conformity with consideration of appropriate actuarial standards of practice for the express purpose to which it was intended. The purpose of this report is to communicate our review of the capitation rate development for the Arizona Long Term Care System. Judgments made as to the assumptions, data, methodologies, results and recommendations found in the report should only be made after careful consideration of the report in its entirety. The

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use of this report by parties outside of the Arizona Joint Legislative Budget Committee is not recommended. Outside parties rely on this report at their own risk.

Our conclusions are based on information supplied by AHCCCS, especially the Arizona Long Term Care System (ALCTS) Actuarial Memorandum and answers, files and work papers provided by AHCCCS in response to our questions. If any information was inaccurate, it may require us to revise our conclusions and opinions.

Lewis & Ellis, Inc. is available to answer any questions that may be raised by this report. Please direct any inquiries to Tom Handley or Tony Proulx in our Overland Park office.

By:

Tom Handley, FSA, MAAA
LEWIS & ELLIS, INC.
Actuaries & Consultants
10561 Barkley, Suite 470
Overland Park, KS 66212
Telephone: (913) 491-3388
THandley@LewisEllis.co

Anthony G. Proulx, FSA, MAAA
LEWIS & ELLIS, INC.
Actuaries & Consultants
10561 Barkley, Suite 470
Overland Park, KS 66212
Telephone: (913) 491-3388
TProulx@LewisEllis.com

October 5, 2006

ARIZONA LONG TERM CARE SERVICES Program

EXECUTIVE SUMMARY

This report presents the results of the basic examination steps performed by Lewis & Ellis, Inc. during audit of the Arizona Health Care Cost Containment Services' Long Term Care Services Program. We were provided detailed information from the Program regarding the development of the capitation rates. We reviewed and analyzed the information and data. It is our opinion that the overall methodology used in developing the statewide capitation rates is reasonable.

We have four recommendations.

- The first is regarding the development of the provider administration expense factor used in developing the gross capitation rates. Provider administration expense was trended forward at a flat 5%. This is significantly lower than the claims trend and reflects the actuary's judgment that it is not reasonable to have provider administrative expenses trend at such a high rate. However, we recommend that the level of provider administration expenses be revised each year to better reflect the actual level of expected expenses, possibly using a method based on per member per month (PMPM), rather than a flat across-the-board increase.
- The second recommendation is in the development of the trend factor. Currently the approach is to develop an overall claim trend factor which encompasses both the change in utilization and change in unit cost. Customarily, these are developed separately and then combined into trend PMPM. In our correspondence with AHCCCS they indicated that their process is not currently set up to handle the pieces separately but it is their desire to do so in the future.

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- The third recommendation is regarding the encounter data reporting. We believe that there is additional information that cannot currently be accessed due to systems issues which would assist in better managing this Program. If the month and year of service were captured, we believe that trend analysis could be enhanced. At a minimum, the data could still be summarized by year of service. We would recommend that when the systems for this Program are updated, month of service be included in the encounter data reports.
- Finally, we would recommend that in the future, the actuary identify separately the cost for mandated benefits and the cost for additional non-mandated benefits (if any) covered by the Program.

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BACKGROUND

The capitation rates were developed by the Arizona Health Care Cost Containment System (AHCCCS). There are seven Program Contractors providing services under the ALTCS program in the 15 Arizona counties as summarized in Appendix A.

For each plan there are capitation rates for the categories of:

Acute Care Only

Non-Ventilator Elderly and Physically Disabled

Ventilator Dependent Institutional Care

Ventilator Dependent Home and Community Based Services

Prior Period Coverage

Appendix C shows all the capitation rates for each service category for each plan. The Medicare Modernization Act was effective on January 1, 2006, requiring an adjustment to the capitation rates. Thus every plan has two sets of rates for CY2006 – from October 1, 2005 to December 31, 2005 and from January 1, 2006 to September 30, 2006.

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GENERAL DESCRIPTION OF REVIEW PROCEDURES

The first step in conducting our audit was to gain familiarity with the Program. This included a review of the Arizona Long Term Care System (ALTCS) Actuarial Memorandum for the current year, Arizona Long Term Care System – Contract Year Ending 2005 Capitation Rate Methodology Letter prepared by Mercer Health & Benefits LLC (Mercer), the Health Practice Council of the American Academy of Actuaries Practice Note on the Actuarial Certification of Rates for Medicaid Managed Care Programs, the applicable Actuarial Standards of Practice as promulgated by the Actuarial Standards Board and the federal Medicaid Managed Care regulation. Preliminary discussions were held with the Arizona Joint Legislative Budget Committee as well.

We requested information from AHCCCS including, but not limited to the encounter data, financial data, historical enrollment data and workpapers showing the development of trend factors and other program changes. We corresponded with AHCCCS personnel to gain a better understanding of the Program's practices and procedures.

The actuarial methods and assumptions underlying the significant actuarial items were reviewed for reasonableness and consistency. We corresponded with AHCCCS personnel who then provided additional information.

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VALIDITY OF DATA

The data used in the development of the Contract Year 2006 (CY2006) capitation rates is based on encounter data for incurred dates October 2000 through September 2004. This period covers four full contract years. The data is tabulated by the key parameters of record type (prospective or prior period coverage), provider plan, acute care vs. long term care services, and service categories. These parameters were used to assign the data to the 364 experience cells (4 contract years x 7 plans x 13 service categories). The data is on a gross basis, before reinsurance. The encounter data excluded benefits provided by the Division of Developmental Disabilities.

We did not attempt to reconcile the encounter data to the financial data. The encounter data was used for trend calculation of the acute care piece only. The Nursing Facility and Home Care pieces were rebased, so trend data was not used. The financial statements did not split out the acute care, so comparisons could not be performed. Because we were only interested in the trend, there was little to gain from a reconciliation of the encounter data to the financial data.

Based on our examination of the data available at the time that the pricing was performed, the base data used, the floors and ceilings place on the trends, and the actuarial judgment used to set the final trend factors are reasonable.

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METHODOLOGY

The rate development for CY2006 was performed by AHCCCS, whereas Mercer did the work for CY2005. We reviewed the Actuarial Memorandum for CY2006 and the Rate Methodology letter from Mercer for CY2005. Both documents outline the approach used. They are very similar. The underlying experience data contains only expenses which are eligible for Long Term Care Medicaid. For both years, rates were developed as an update to the prior year. In both analyses, trends are developed for the combined effect of utilization and unit costs. Utilization refers to the concept of intensity or frequency of services. Unit cost refers to the concept of the price of the services. Usually trend factors are calculated for utilization and unit costs, separately. In our conversations with AHCCCS, they indicated that they would like to break trend into its components in the future. These trend factors are then checked for reasonableness and capped with a floor and ceiling. The trend is then applied to the prior years' net claim costs. Finally, provider administration expenses, risk/contingency charge and premium tax are added to arrive at the capitation rates. Within each provider grouping, there are five categories of service, each with its own trend calculation. These are then weighted to arrive at the final trend for the provider. It is appropriate for trend to be calculated for each of the categories of service separately.

We note that the methodology is different from last year in several places. First, the Fee For Service (FFS) rebased amounts are used as a floor for the Nursing Facility component. Similarly, the FFS rebasing produced new amounts for each of the home services and community services and these were also used as floors for the Home and Community Based Services component. We

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feel this is appropriate and it resulted in only a small adjustment in the rates of several provider plans. Also, the trend calculation for the acute care component now relies on four different methods. The final trend is a weighted average, where a 50% weight is given to the single method that was in place the prior year and a combined 50% weight is given to several new methods introduced this year. These differences are discussed later in this section.

The trend rates include adjustments for any program changes that are expected to affect them. In CY2006 there are three program changes:

- Program Contractor Pass Through Requirement – Beginning in contract year 2006, program contractors are required to pass through 7.2% in aggregate, with at least a 6% pass through, per rate, to each nursing facility.
- Medicare Modernization Act – For dual eligibles, there will be a shift of prescription costs from Medicaid to Medicare, effective January 1, 2006. AHCCCS developed new capitation rates to be effective January 1. We reviewed the actuarial memorandum that supported this change and we are comfortable that the change is appropriate.
- The Maricopa LTC Program ceased on October 1, 2005. The goal was to have the members of that plan be split 50/50 between Mercy Care Plan and Evercare. The Behavioral Health members were to be only placed in the Mercy Care Plan, so an additional \$30 PMPM was added to their rates. In addition there is a one time risk corridor (maximum 2% gain or loss) on these members for CY2006.

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For CY2006, the provider administration charges were trended upward by 5%. This resulted in provider administrative expenses that range from approximately 5.5% to 9.5% of the capitation rate. We agree that this is a relatively low level, reflective of a very efficient delivery system. Data that we have on other Medicaid plans show their provider administrative levels are more in the range of 11.5% to 15.0% of net claim costs. However, the choice of the 5% trend increase was somewhat arbitrary, based on reasoning that provider administrative expenses should not increase at the same high rate that the net claim costs are increasing. However, we recommend that the level of provider administration expenses be revised each year to better reflect the actual level of expected expenses, possibly using per member per month (PMPM) as the basis rather than a flat across-the-board increase

The actuarial memorandum states that the risk / contingency charge is set at 2.0% of gross claim costs (before cost sharing and reinsurance). We were not able to exactly duplicate these results, but we did come close. Our calculations yielded 1.92% which we felt were close enough to not warrant any further research. We believe this is an appropriate approach and an appropriate level. The risk charge should be directly related to the claim levels. Finally, the premium tax is set equal to 2% of the capitation rate.

The claim costs for five categories of service make up approximately 90% of the total capitation rate and this is where we focused our attention. AHCCCS employed an approach that trends forward the prior year's claim costs. However, as was appropriate, the method for developing trend varied for each of the five categories.

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The first category is Nursing Facilities. For AHCCCS it was a rebase year for the Fee For Service (FFS) rates. The rebase process is a pricing process where the components of the capitation fee are developed from first principles. This is in contrast to updates to the pricing which is an adjustment to the prior years' capitation rates. In addition, there was the new pass through requirement, as described earlier. For these reasons AHCCCS decided to rebase the Nursing Facility component of the ALTCS Program also, even though it was a renewal year. The results of the FFS rebasing were compared with the actual contracted fees for each provider, to develop new baseline expected claim costs. The FFS rebase rates resulted in a 7.6% Nursing Facilities trend factor on a statewide basis, before the application of the pass through requirement. AHCCCS decided to use the 7.6% statewide trend as a floor in their trends by provider.

Similarly, it was a repricing year for the Fee For Service, Home and Community Based Services (HCBS) rates. This encompasses both the Home services and the Community services, which are two separate service categories in their analyses. The result of that rebasing effort was a 6.6% trend increase for HCBS. Again, AHCCCS decided to use 6.6% as a floor in their trends by provider. We agree that this is reasonable and appropriate.

We did not review the development of the increase in the Fee For Service rates. But, a study by MetLife titled "The MetLife Market Survey of Nursing Home and Home Care Costs" (May

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2005) cites a national increase in Nursing Home care of 5.7% and an increase in Home Care costs of 5.5%. These are national averages and we used them as a guideline for reasonableness.

For each of Nursing Facility, HCBS-Home and HCBS-Community, new capitation rates were developed for CY2005 based on the FFS analyses. The CY2005 rates were then trended forward to CY2006. The projected CY2006 rates were then compared to the CY2005 rates, in order to back into an implicit trend assumption. The result is a trend assumption that, on the surface, appears relatively high. However, we emphasize that it is an artificial measure. The key is that there was a rebasing of the rates. We recommend that rebasing be performed every three years, even though we understand that the life of the contract is 5 years. Rebasing requires a greater effort than calculating and applying a trend to the prior year's claim costs. However, the rebasing is more accurate. With the trending approach, it is possible for the projected claim costs to get out of sync with the actual claim costs.

The fourth category is acute care. The acute care claim cost trend was calculated as the weighted average of four different methods. The first method was to derive trends from the available historical encounter data. The approach was the same for each provider plan. A PMPM claim cost was calculated for each of the following categories, for each of the last four years:

- Dental
- Durable Medical Equipment
- Emergency – Facility
- Hospital Inpatient

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- Lab & Radiology
- Other Professional
- Outpatient Facility
- Pharmacy
- Physical Therapy
- Primary Care
- Referral Physician
- Transportation

The categories were summed to get a total claim cost. Because the data was sliced so finely (contract year, provider and the above 12 categories), there were some large deviations. To help smooth the fluctuations, a floor of 0.80 and a cap of 1.20 were placed on the calculated trends. When the data is scant, the trend factors can be unusually small or large, but they are not fully credible. The use of a corridor keeps the trend rates within an acceptable range. Using the 4 years of data, three annual trends were calculated and the arithmetic average of the three was used. We believe this is a reasonable approach for calculating trend. We note that trend was not broken into the components of utilization and unit costs, which would have been a preferred approach. We were able to reproduce the PMPM claim costs from the encounter data.

The second trend method for the Acute Care component was an identical approach, only using the unaudited quarterly financial data from FSAS. We did not have access to the detailed data, but we did review the work based on summary level data.

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The third method is quite different. Again it uses the financial data from FSAS. Claims are grouped into quarterly cohorts. An average and standard deviation of the quarters is calculated. Each quarter's PMPM claims are capped (above and below) by 1.5 standard deviations from the mean. These caps smooth the claim experience. Then quarterly, 6-month and annual moving averages of PMPM claims are calculated. Trend is calculated using regression analysis (assumes a constant force of trend) for each of the 3 measures. Finally the average of the three measures is used. Our review of this method shows that the 3 measures are all very close – not a surprising result as they are all based on the same underlying data. This approach is more statistically-based, but also more difficult to understand.

The fourth and final method uses the Mercer model that was employed in prior years. This model is more sophisticated. It recognizes that the historical trend is influenced by changes in the Medicare mix and the Home Care mix. The trends calculated for each provider contract are adjusted to limit deviations from the statewide measure. Again, though more theoretically correct, the model is difficult to understand.

The four methods yield different trend values. The final trend is a weighted average of:

- 25.0% of method one which relies on the encounter data
- 12.5% of method two which uses financial data and the same process as method one
- 12.5% of method three which uses financial data and performs regression analysis

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- 50% of method four which uses the Mercer model with adjustments for changes in the mix of Medicare mix and the Home and Community Bases Services mix.

The weights were chosen such that 50% was based on the method used in prior years and 50% was based on methods introduced this year. Within the new methods, the trends are based on either the encounter data or the financial data. Again, these were equally weighted. Finally, within the financial data, there were two different approaches and these were equally weighted. This results in the weights shown above.

The results of these various methods are shown in Appendix B. It illustrates the range of values and consequently the amount of judgment required to select a final trend rate. We believe that it is always better to have several methods for calculating trend. This gives a range of values. Taking a weighted average is an appropriate method for choosing a final trend number.

The fifth category of service is case management. The development of the “claim cost” for this piece is very different from the previous four categories. Case management is more like an expense item; the concept of measuring and applying trend does not apply. The case management model relies on assumptions for caseloads, HCBS case mix, salaries, supervisory salaries, and vehicle related costs. The model is very straightforward and uses current information on these parameters as the starting point for the projections. The inputs vary for each provider plan and reflect the actual caseloads, salaries, case mix, etc. for that plan. We are satisfied that the model is a good tool for projecting case management costs and that it produces

ARIZONA LONG TERM CARE SERVICES Program

a reasonable cost structure. We note that the case management piece accounts for only about 3% of the total capitation rate.

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COMPLIANCE WITH REGULATIONS AND ACCEPTED PRACTICE

Actuarial Standards of Practice (ASOPs) emphasize process over outcome. They are intended to provide actuaries with a framework for performing professional assignments and to offer guidance on relevant issues, recommended practices, documentation, and disclosure. The ASOPs intentionally leave significant room for the actuary to use professional judgment when selecting methods and assumptions, conducting an analysis, and reaching a conclusion.

Currently, no ASOP applies specifically to actuarial work performed to comply with CMS requirements for rate certification. Some health-related ASOPs have scopes that apply specifically to actuarial work performed on behalf of health plans. Other health-related ASOPs are general, so they apply both to health actuarial work performed for health plans or to health actuarial work performed for purchasers for health plan services. We believe the main ASOPs (shown in Appendix D) applicable to the development of capitation rates for this program are the following:

ASOP 8	Regulatory Filings for Health Plan Entities
ASOP 23	Data Quality
ASOP 25	Credibility Procedures Applicable to Accident and Health, Group Term Life, and Property/Casualty Coverages
ASOP 31	Documentation in Health Benefit Plan Ratemaking
ASOP 41	Actuarial Communications

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These ASOPs should be applied in conjunction with the Medicaid managed care regulation 42 CFR 438.6. Regulation 42 CFR 438.6 defines actuarially sound capitation rates as capitation rates that:

- a) have been developed in accordance with generally accepted actuarial principles and practices
- b) are appropriate for the populations to be covered, and the services to be furnished under the contract; and
- c) have been certified by actuaries who meet the qualification standards established by the American Academy of Actuaries and follow the practice standards established by the Actuarial Standards Board.

Benefits to be included in these actuarially sound rates are only those required to be covered by the Federal regulations. Extraneous benefits which may be provided by the program should be excluded from the capitation rate calculation. Thus, program changes should only reflect those which are required by Federal regulation. Funding for extraneous benefits should be obtained from other sources unless agreed upon by the state legislature. We did not receive enough information to verify whether non-mandated benefits were included in the capitation rates developed for the Program. We would recommend that in the future, the actuary identify separately the cost for mandated benefits and the cost for additional non-mandated benefits (if any) covered by the Program.

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A checklist was developed based on these regulations as a tool for Regional CMS Offices for use in approving rates. This checklist is often followed by actuaries in outlining the steps taken to determine the actuarial sound rates. The checklist suggests that the following items be addressed in filings:

- Overview of rate setting methodology
- Actuarial certification
- Projected expenditures
- Procurement, Prior approval and rate setting
- Risk contracts
- Limit on payment to other providers
- Rate modifications

We did verify that all applicable items on the checklist were covered in the AHCCCS Actuarial Memorandum. Based on our review, we believe the Program is operating within the Federal requirements for an actuarially sound system.

ARIZONA LONG TERM CARE SERVICES Program

CONCLUSION

We believe the overall methodology used in developing the statewide capitation rates is reasonable.

We have four areas where we feel improvements can be made.

- Provider administration expense was trended forward at a flat 5%. This is significantly lower than the claims trend and reflects the actuary's judgment that it is not reasonable to have provider administrative expenses trend at such a high rate. However, we recommend that the level of provider administration expenses be revised each year to better reflect the actual level of expected expenses, possibly using a method based on per member per month (PMPM), rather than a flat across-the-board increase.
- In the development of the trend factor, trend is not split between increase in utilization and increase in unit cost. Customarily, these are developed separately and then combined into trend PMPM. In our correspondence with AHCCCS they indicated that their process is not currently set up to handle the pieces separately but it is their desire to do so in the future.
- The third recommendation is regarding the encounter data reporting. We believe that there is additional information that cannot currently be accessed due to systems issues which would assist in better managing this Program. If the month and year of service were captured, we believe that trend analysis could be enhanced. At a minimum, the data could still be summarized by year of service. We would recommend that when the systems for this Program are updated, month of service be included in the encounter data reports.

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- Finally, we would recommend that in the future, the actuary identify separately the cost for mandated benefits and the cost for additional non-mandated benefits (if any) covered by the Program.

APPENDIX A

APPENDIX A

Acute Care Programs and Counties Served by Each

PC Name	PC ID		County
Cochise Health Systems	110003	03	Cochise
		09	Graham
		11	Greenlee
Pima Health Plan	110015	19	Pima
		23	Santa Cruz
Yavapai LTC	110025	25	Yavapai
Evercare Select	110049	01	Apache
		05	Coconino
		13	Maricopa
		15	Mohave
		17	Navajo
		27	Yuma
		29	La Paz
Pinal County LTC	110065	07	Gila
		21	Pinal
Mercy Care Plan	110306	13	Maricopa

APPENDIX B

APPENDIX B

Trend Factors for the Acute Care Component of the ALTCS Programs

	<u>Method 1</u>	<u>Method 2</u>	<u>Method 3</u>	<u>Method 4</u>	<u>Weighted Average</u>
Cochise Health Systems	16.1%	15.9%	21.7%	16.8%	17.2%
Evercare Select	0.0%	10.8%	11.3%	3.4%	4.5%
Mercy Care Plan	1.8%	3.1%	3.9%	8.5%	5.6%
Pima Health Plan	14.6%	17.5%	16.2%	15.1%	15.4%
Pinal County LTC	10.5%	8.9%	9.7%	10.0%	10.0%
Yavapai LTC	12.9%	14.7%	13.0%	9.7%	11.5%

APPENDIX C

Long Term Care Capitation Rates

APPENDIX C

Cochise Health Systems Capitation Rates CY2006

	<u>Cochise</u>	<u>Graham</u>	<u>Greenlee</u>
October 2005 - December 2005			
Acute Care Only	905.68	770.92	887.69
Total Long Term Care	2,966.07	3,323.72	2,849.81
Ventilator Dependent			
Institutional	20,553.80	20,553.80	20,553.80
Home and Community	8,695.02	8,695.02	8,695.02
Prior Period Coverage	691.30	691.30	691.30
January 2006 - September 2006			
Acute Care Only	726.07	597.77	695.43
Total Long Term Care	2,782.86	3,147.11	2,653.70
Ventilator Dependent			
Institutional	20,553.80	20,553.80	20,553.80
Home and Community	8,695.02	8,695.02	8,695.02
Prior Period Coverage	691.30	691.30	691.30

APPENDIX C

Pima Health Systems Capitation Rates CY2006

	<u>Pima</u>	<u>Santa Cruz</u>
October 2005 - December 2005		
Acute Care Only	842.11	682.14
Total Long Term Care Ventilator Dependent	3,167.12	2,729.86
	15,770.1	
Institutional	8	20,553.80
Home and Community	8,695.02	8,695.02
Prior Period Coverage	784.23	691.30
January 2006 - September 2006		
Acute Care Only	671.78	499.84
Total Long Term Care Ventilator Dependent	2,993.40	2,543.92
	15,770.1	
Institutional	8	20,553.80
Home and Community	8,695.02	8,695.02
Prior Period Coverage	784.23	691.30

APPENDIX C

Pinal County Long Term Care CY2006

	<u>Pinal</u>	<u>Gila</u>
October 2005 - December 2005		
Acute Care Only	844.60	771.10
Total Long Term Care Ventilator Dependent	2,900.41	3,519.52
	15,986.2	
Institutional	9	20,553.80
Home and Community	8,695.02	8,695.02
Prior Period Coverage	691.30	691.30
January 2006 - September 2006		
Acute Care Only	668.99	584.45
Total Long Term Care Ventilator Dependent	2,721.28	3,329.14
	15,986.2	
Institutional	9	20,553.80
Home and Community	8,695.02	8,695.02
Prior Period Coverage	691.30	691.30

APPENDIX C

Yavapai Long Term Care CY2006

Yavapai

October 2005 - December 2005

Acute Care Only	772.08
Total Long Term Care	3,009.89
Ventilator Dependent	
Institutional	20,553.80
Home and Community	8,695.02
Prior Period Coverage	691.30

January 2006 - September 2006

Acute Care Only	585.83
Total Long Term Care	2,819.91
Ventilator Dependent	
Institutional	20,553.80
Home and Community	8,695.02
Prior Period Coverage	691.30

APPENDIX C

Evercare Select CY2006

	<u>Apache</u>	<u>Coconino</u>	<u>La Paz</u>	<u>Mohave</u>	<u>Navajo</u>	<u>Yuma</u>	<u>Maricopa</u>
October 2005 - December 2005							
Acute Care Only	971.88	878.80	764.43	785.89	887.90	841.38	890.03
Total Long Term Care Ventilator Dependent	2,001.53	2,825.26	3,146.97	3,009.99	2,346.16	3,173.20	3,295.20
	20,553.80	20,553.80	20,553.80	20,553.80	20,553.80	20,553.80	19,411.92
Institutional Home and Community	8,695.02	8,695.02	8,695.02	8,695.02	8,695.02	8,695.02	9,216.72
Prior Period Coverage	691.30	691.30	691.30	691.30	691.30	691.30	941.09
January 2006 - September 2006							
Acute Care Only	807.30	706.80	574.42	606.03	722.87	663.91	707.34
Total Long Term Care Ventilator Dependent	1,833.66	2,649.82	2,953.16	2,826.53	2,177.83	2,992.22	3,108.86
	20,553.80	20,553.80	20,553.80	20,553.80	20,553.80	20,553.80	19,411.92
Institutional Home and Community	8,695.02	8,695.02	8,695.02	8,695.02	8,695.02	8,695.02	9,216.72
Prior Period Coverage	691.30	691.30	691.30	691.30	691.30	691.30	941.09

APPENDIX C

Mercy Care Plan CY2006

Maricopa

October 2005 - December 2005

Acute Care Only	846.02
Total Long Term Care	3,228.34
Ventilator Dependent	
Institutional	19,411.92
Home and Community	8,695.02
Prior Period Coverage	941.09

January 2006 - September 2006

Acute Care Only	\$ 681.07
Total Long Term Care	3,060.10
Ventilator Dependent	
Institutional	\$ 19,411.92
Home and Community	\$ 8,695.02
Prior Period Coverage	941.09

APPENDIX D

Actuarial Standards of Practice

**REPORT ON THE ACTUARIAL AUDIT OF
THE ARIZONA HEALTH CARE COST CONTAINMENT SYSTEM
COMPREHENSIVE MEDICAL AND DENTAL PROGRAM
FOR CONTRACT YEAR 2006**

**PRESENTED TO
ARIZONA JOINT LEGISLATIVE BUDGET COMMITTEE**

**Prepared by:
Lewis & Ellis, Inc.
Actuaries & Consultants
Overland Park, Kansas**

September 18, 2006

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AHCCCS Comprehensive Medical and Dental Program

INTRODUCTION

Lewis & Ellis, Inc. was engaged by the Arizona Joint Legislative Budget Committee (the Committee) to conduct an actuarial study of capitation rates in the Arizona Health Care Cost Containment System Comprehensive Medical and Dental Program (the Program).

Our review was to:

- a) Determine the validity of the data used by the actuary in setting the capitation rates;
- b) Determine whether or not the department is operating in accordance with principles and practices prescribed by the Actuarial Standards Board;
- c) Determine whether or not the department is operating within the Federal requirements for an actuarially sound system;
- d) Determine the reasonableness and appropriateness of plan assumptions;
- e) Provide an analysis of the consistency of assumptions and methods for contract years 2005 and 2006.

This report presents our findings and describes the methodology used in our review. Observations are included.

This report has been prepared in conformity with consideration of appropriate actuarial standards of practice for the express purpose to which it was intended. The purpose of this report is to communicate our review of the capitation rate development for the Arizona Health Care Cost Containment System (AHCCCS). Judgments made as to the assumptions, data, methodologies, results and recommendations found in the report should only be made after careful consideration of the report in its entirety. The use of this report by parties outside of the Committee is not recommended. Outside parties use this report at their own risk.

AHCCCS Comprehensive Medical and Dental Program

Our conclusions are based on information supplied by AHCCCS, especially the Comprehensive Medical and Dental Program actuarial memoranda, files, workpapers and correspondence provided by AHCCCS in response to our questions. If any information was inaccurate, it may require us to revise our conclusions and opinions.

Lewis & Ellis, Inc. is available to answer any questions that may be raised by this report. Please direct any inquiries to Tom Handley or Karen Elsom in our Overland Park office.

By:

Tom Handley, FSA, MAAA
LEWIS & ELLIS, INC.
Actuaries & Consultants
10561 Barkley, Suite 470
Overland Park, KS 66212
Telephone: (913) 491-3388
THandley@LewisEllis.com

Karen E. Elsom, FSA, MAAA
LEWIS & ELLIS, INC.
Actuaries & Consultants
10561 Barkley, Suite 470
Overland Park, KS 66212
Telephone: (913) 491-3388
KElsom@LewisEllis.com

September 18, 2006

AHCCCS Comprehensive Medical and Dental Program

EXECUTIVE SUMMARY

This report presents the results of the basic examination steps performed by Lewis & Ellis, Inc. during audit of the Arizona Health Care Cost Containment System Comprehensive Medical and Dental Program. We were provided detailed information from the Program on the development of the capitation rates. We reviewed and analyzed the information and data. We found the assumptions and methodology used to develop the capitation rates reasonable. We did make the following observations and recommendations:

- The Program has experienced encounter submission errors whereby some of the provider files could not get through to AHCCCS. Most of these issues have now been corrected, however, some problems persist. There is language in the contract which does help to encourage accurate encounter submissions. Sanctions can be applied when encounter data submission problems are not resolved in a timely manner. This should encourage providers to resolve the submissions issues more quickly. Because of the encounter data problems, capitation rates have been developed using a weighted average of financial data and encounter data. Once all encounter submission issues are corrected, the goal is to base capitation rates solely on encounter data.
- We did make one recommendation regarding the encounter data reporting. We believe that there is a wealth of data that cannot currently be accessed due to systems issues which would assist in better managing this Program as well as others. With the use of month and year of service trends by COS may be identified which could be hidden when only COS by contract

AHCCCS Comprehensive Medical and Dental Program

year are reviewed. We would recommend that when the systems for this Program are updated, month of service be included in the encounter data reports.

- We would recommend that in the future, the actuary identify separately the cost for mandated benefits and the cost for additional non-mandated benefits (if any) covered by the Program.

AHCCCS Comprehensive Medical and Dental Program

BACKGROUND

Windy Marks of the Arizona Health Care Cost Containment System assisted in developing the capitation rates for the various Program components for Contract Year 2005 (CY2005) and Contract Year 2006 (CY2006). Ms. Marks provided an actuarial memorandum to AHCCCS which outlined her methodology in developing the proposed Capitation Rates.

GENERAL DESCRIPTION OF REVIEW PROCEDURES

The first step in conducting our audit was to gain familiarity with the Program. This included a review of the CY2006 actuarial memorandum developed by Ms. Marks, the Health Practice Council of the American Academy of Actuaries Practice Note on the Actuarial Certification of Rates for Medicaid Managed Care Programs, the applicable Actuarial Standards of Practice as promulgated by the Actuarial Standards Board and the federal Medicaid Managed Care regulation. Preliminary discussions were held with the Arizona Joint Legislative Budget Committee as well.

We requested information from AHCCCS including, but not limited to historical enrollment data and workpapers showing the development of trend factors and other program changes. We corresponded with AHCCCS personnel to gain a better understanding of the Program's practices and procedures.

The actuarial methods and assumptions underlying the significant actuarial items were reviewed for reasonableness and consistency. We corresponded with AHCCCS personnel who then provided additional information.

AHCCCS Comprehensive Medical and Dental Program

VALIDITY OF DATA

The CY2006 rates are effective for twelve months for the period January 1, 2006 through December 31, 2006. Because of the small membership base, multiple sources of data were used in the capitation rate development. The base data includes the Fiscal Year 2004 (FY2004) audited financial statement, the Fiscal Year 2005 (FY2005) unaudited financial statement and the Contract Year 2004 (CY2004) encounter data. The audited FY2005 financial statement was not available at the time of the capitation rate development. Base experience per member per month (PMPM) is developed for both Prospective members and Prior Period Coverage (PPC) members. PPC covers services provided between the effective date of member eligibility and the date a member is enrolled with a specific contractor. Because of the small membership base rates by other risk categories could not be developed. The integrity of the results would be compromised if data were segregated into very fine groupings. The data for a small program can vary considerably from year to year and may not always be credible.

Windy Marks, the actuary for AHCCCS, reviewed both financial data and encounter data by category of service (COS). For Other Medical Expenses, it was noted that the encounter data was missing. For this COS, only the financial data was used. For all other COS, a weighted average of the three sources was used to determine the claims PMPM. The CY2004 encounter data was weighted at 50% of the total. The weights for the FY2005 and FY2004 financial data were 35% and 15% respectively. The majority of the weight is given to the CY2004 encounter data and the FY2005 data which have fairly close overall projected costs for CY2006. The projected 2006 levels for the FY2005 financial data and CY2004 encounter data are within \$5.00 of each other in total. Appendix A shows the development of the CY2006 claims PMPM based

AHCCCS Comprehensive Medical and Dental Program

on the three data sources. As the encounter data becomes more reliable, AHCCCS hopes to eventually rely solely on the encounter data for the capitation rate development.

The Program has experienced encounter submission errors whereby some of their files could not get through to AHCCCS. According to Ms. Marks, most of these issues have now been corrected. More recently, AHCCCS has been experiencing problems with the pharmacy claims. The pharmacy benefit manager (PBM) has not been transmitting and formatting the data correctly so that it can be received by AHCCCS. They are working on resolving the problems. There is language in the contract which does help to encourage accurate encounter submissions. Sanctions can be applied when encounter data submission problems are not resolved in a timely manner. According to Ms. Marks, the Program is passing on any sanctions due to the pharmacy claim submission problems to the PBM. They believe this will encourage them to resolve the issues more quickly.

We did also note that in some cases there were significant differences in amounts reported by COS between the financials and the encounter data. This is due to a difference in how the COS are defined between the financials and the encounter data. AHCCCS is currently working on a “crosswalk” for all programs which will tell the Contractors how to define their COS. A crosswalk is essentially a reference table which in this case will tell the Contractor exactly how a claim is to be categorized based on a specified set of parameters based on items such as procedure codes and revenue codes. Once this is in place and being applied consistently, the financial data and encounter data split by COS should tie very closely.

AHCCCS Comprehensive Medical and Dental Program

We were able to tie the FY2004 and FY2005 financial data used in the capitation rate development for both Prospective and PPC with the financial statements for the Program. We also received a database of the encounter data and were able to tie that to the encounter data used. We did note that the encounter data files we received only identified data by contract year. No month of service was listed. AHCCCS stated that the month of service is captured in their records, however, the current reporting formats cannot easily be converted to segregate the data by month of service as well as contract year. Their system is approximately 20 years old and they are restricted by its limits. AHCCCS has estimated that it would take a significant number of hours to revise the report programs to reflect the additional detail by month. Because of the limitations, we utilized the data in the available format by contract year. We do believe, however, that there is a wealth of data that cannot currently be accessed which would assist in better managing this Program as well as others. With the use of month and year of service trends by COS may be identified which could be hidden when only COS by contract year are reviewed. We would recommend that when the systems for this Program are updated, month of service be included in the reported data.

Based on our examination of the data available at the time of the original review, the base data used and the methodology applied to adjust it to expected levels are reasonable.

ASSUMPTIONS

AHCCCS provided us with the spreadsheet used as the basis for the trend factors applied to the base data. For each category of service (Hospital Inpatient, Physician, Emergency Services, Pharmacy, Lab and X-ray, Outpatient Facility, Durable Medical Equipment, Dental,

AHCCCS Comprehensive Medical and Dental Program

Transportation, Nursing Facility/Home Care, Physical Therapy and Miscellaneous), trends were developed using the quarterly unaudited financial statements. Adjustments were made to the quarterly data only when PMPM claims for a quarter were more than one and one half standard deviations from the average of all quarterly PMPM claims. The adjustments will keep trends from being severely impacted by large aberrations in a particular quarter. Quarterly, semiannual, and annual PMPMs are developed from this adjusted data. Regression analysis is performed on each of the quarterly, semiannual and annual PMPM data to determine annual trends. The median of the 3 calculated trends, which is the middle value in a string of numbers, is selected as the projected trend value to be used. These trends were compared to trends from other sources such as the AHCCCS Acute Care data and the National Health Expenditures Report. In two instances, the financial data calculated trends were reduced. The Pharmacy projected trend was 20.1%. This was reduced to 17.9% based on the review of the other sources in combination with the financial trends experienced. The actual Nursing Facility and Home Health Care trend was projected to be 89.2%. This is based on a very small volume of claims, thus we would not expect the trend results developed using this data to be credible. The Nursing Facility and Home Health Care trend was capped at 15%. Trends for the Prior Period Coverage by COS were calculated in a similar manner with trends capped at 20% maximum. Based on the data at the time of the review, we believe the methodology employed to develop the trend factors by COS is reasonable.

The data was trended from the midpoint of the base period to the midpoint of the capitation rate effective period. The period for application of the trend factors was 30 months, 18 months and

AHCCCS Comprehensive Medical and Dental Program

27 months for FY2004, FY2005 and CY2004 respectively. We verified that this is the time from the midpoint of each of FY2004, FY2005 and CY2004 to the midpoint of CY2006.

A program change was included in the capitation rates to account for the increase in the emergency transportation rates. The increases went into effect May 1, 2005 and were based on existing statutes. The impact was estimated by repricing the historical utilization data using the mandated increases and comparing this to the actual data. The change was estimated to increase the transportation PMPM by 0.3%. Given the size of the transportation PMPM we noted that the adjustment for this program change was negligible. We did note that in the spreadsheet outlining the capitation rate development by COS, a factor of 0.15% was used for this change. An increase in this factor to the full 0.3% would only change the transportation PMPM cost by \$0.01. We believe that the development of the adjustment for this change is reasonable.

A second program change was identified to reflect a revision in the outpatient reimbursement methodology. The goal of this change is to control unit cost inflation. The actuarial memorandum states that the impact of this program change was built into the trend rates for outpatient hospital and emergency services. We noted in our review of the trend analysis for both the hospital outpatient and emergency services that no adjustment was made. The AHCCCS actuary has stated that the wording in the actuarial memorandum was in error. Due to the Program's disagreement with the impact study results for this change, AHCCCS elected to use the historical trends without this program change reflected. AHCCCS plans to reevaluate this change in the future.

AHCCCS Comprehensive Medical and Dental Program

The total capitation rates PMPM are reduced for reinsurance in the amounts of \$7.97 for Prospective and \$0.01 for PPC. The reinsurance only covers the hospital portion of any claims. These amounts were based on the FY2004 audited financial statement and FY2005 unaudited financial statement. The reinsurance amounts PMPM were trended from the base period to the rate effective period using the hospital inpatient trend of 15%. A weighted average of these amounts is determined using 70% of the FY2005 data and 30% of the FY2004 data. An adjustment was also made to the Prospective rates for Third Party Liability (TPL). The adjustment is calculated in a manner similar to that for the reinsurance adjustment. We verified the calculations in the rate development spreadsheet. The methodology appears reasonable.

Administrative expenses of \$30.17 PMPM were included to develop the gross CY2006 capitation rate. AHCCCS stated that compensation which is the largest component of the administrative expense would increase significantly from the prior year due to state mandated salary increases and new positions being added. AHCCCS assumed 4 new positions would be added at \$50,000 per position. The salary adjustments provided for in House Bill 2661 included an increase in salary of \$1,650 and a performance pay of 2.5% of salary. The Program estimated that they would need \$31 PMPM for administration expenses for CY2006. AHCCCS projected the expenses needed at \$29.26 PMPM. The average of the two estimates is \$30.13 PMPM which is very close to the administration expenses of \$30.17 used for CY2005. Thus, they chose to leave the administration PMPM at the CY2005 level. A 2% load of the total capitation rate is then included for premium tax. A premium tax became applicable in October, 2003.

AHCCCS Comprehensive Medical and Dental Program

The FY2005 financial statement reports allocated administrative expenditures of \$2,949,709. This is an expense of \$26.85 PMPM for the period ending June 30, 2005. Based on the projected member months for CY2006, the four new positions would add \$1.47 PMPM of additional expense. If we assume that the average salary is \$50,000, the \$1,650 salary increase is equal to an increase of 3.3%. The table below shows our estimation of expenses for CY2006 based on the assumption that 80% of the expense is for Compensation.

	Total	Compensation	Other
CY2005 PMPM	\$26.85	\$21.48	\$5.37
Salary Increase		3.3%	
Performance Pay		2.5%	
Proj after Salary Adj	\$28.10	\$22.73	\$5.37
New Positions	\$1.48	\$1.48	
Total	\$29.58	\$24.21	\$5.37
Other Expense Inflation			3.0%
CY2006 Proj. Expense	\$29.74	\$24.21	\$5.53

Given the assumptions we made, our projected expense PMPM for CY2006 is within a reasonable range of the \$30.17 PMPM as developed by AHCCCS. We believe the methodology used by AHCCCS to develop projected expense levels for CY2006 is appropriate.

The budget impact of the proposed CY2006 rates was calculated using the annualized member months based on projected enrollment. The prospective member months are based on a 36 month regression for all populations. PPC member months were forecast based on historical ratios of PPC member months to Prospective member months. The Budget impact table in the actuarial memorandum shows that there will be very little impact. This is due to the fact that the CY2006 Prospective capitation rate is equal to the CY2005 Prospective capitation rate. The rates for the two contract years were calculated independently, however, the result for both years was the same. The PPC capitation rate PMPM increased significantly over the prior year.

AHCCCS Comprehensive Medical and Dental Program

Because of the low projected member months, the overall impact of the increase in the PPC rate is minimal.

We did note that the budget impact comparison is based on the same member months for both CY2005 and CY2006. If the intent is only to show the impact of the change in the capitation rates then this approach is reasonable. However, if the Committee desires to see the increase in the total cost of the Program from one contract year to the next with changes in membership included, then the approach should be revised. In this case, the impact table would show the projected or actual member months for CY2005 and the resulting total cost and compare this to the projected member months for CY2006 and the resulting costs based on those.

We reviewed the actuarial memorandums for both CY2005 and CY2006. The methodology used in developing the capitation rates is essentially the same for both years. We believe the overall methodology followed by AHCCCS is reasonable. The development of the assumptions used in the methodology is very similar between the two fiscal years. We did note that the weights applied to the 3 base data sources changed significantly from CY2005 to CY2006. For the CY2005 capitation rate development, the weights applied were 28.5% for FY2003 financial data, 68.5% for FY2004 financial data and 5% for CY2003 encounter data. As noted previously, a 50% weight was applied to the CY2004 encounter data for the CY2006 capitation rate development. This change is in line with the AHCCCS desire to rely solely on the encounter data as it becomes more reliable. As stated in the Validity of Data section, encounter submission errors have occurred which have caused the data to be somewhat incomplete in prior years.

AHCCCS Comprehensive Medical and Dental Program

Many issues have been corrected and continuing work is being performed to ensure that the encounter data is reported accurately and consistently.

AHCCCS Comprehensive Medical and Dental Program

COMPLIANCE WITH REGULATIONS AND ACCEPTED PRACTICE

Actuarial Standards of Practice (ASOPs) emphasize process over outcome. They are intended to provide actuaries with a framework for performing professional assignments and to offer guidance on relevant issues, recommended practices, documentation, and disclosure. The ASOPs intentionally leave significant room for the actuary to use professional judgment when selecting methods and assumptions, conducting an analysis, and reaching a conclusion.

Currently, no ASOP applies specifically to actuarial work performed to comply with CMS requirements for rate certification. Some health-related ASOPs have scopes that apply specifically to actuarial work performed on behalf of health plans. Other health-related ASOPs are general, so they apply both to health actuarial work performed for health plans or to health actuarial work performed for purchasers for health plan services. We believe the main ASOPs (shown in Appendix A) applicable to the development of capitation rates for this Program are the following:

ASOP 8	Regulatory Filings for Health Plan Entities
ASOP 23	Data Quality
ASOP 25	Credibility Procedures Applicable to Accident and Health, Group Term Life, and Property/Casualty Coverages
ASOP 31	Documentation in Health Benefit Plan Ratemaking
ASOP 41	Actuarial Communications

These ASOPs should be applied in conjunction with the Medicaid managed care regulation 42 CFR 438.6. Regulation 42 CFR 438.6 defines actuarially sound capitation rates as capitation rates that:

AHCCCS Comprehensive Medical and Dental Program

- a) have been developed in accordance with generally accepted actuarial principles and practices
- b) are appropriate for the populations to be covered, and the services to be furnished under the contract; and
- c) have been certified by actuaries who meet the qualification standards established by the American Academy of Actuaries and follow the practice standards established by the Actuarial Standards Board.

Benefits to be included in these actuarially sound rates are only those required to be covered by the Federal regulations. Extraneous benefits which may be provided by the Program should be excluded from the capitation rate calculation. Thus, program changes should only reflect those which are required by Federal regulation. Funding for extraneous benefits should be obtained from other sources unless agreed upon by the state legislature. We did not receive enough information to verify whether non-mandated benefits were included in the capitation rates developed for the Program. We would recommend that in the future, the actuary identify separately the cost for mandated benefits and the cost for additional non-mandated benefits (if any) covered by the Program.

A checklist was developed based on these regulations as a tool for Regional CMS Offices for use in approving rates. This checklist is often followed by actuaries in outlining the steps taken to determine the actuarial sound rates. The checklist suggests that the following items be addressed in filings:

Overview of rate setting methodology

AHCCCS Comprehensive Medical and Dental Program

- Actuarial certification
- Projected expenditures
- Procurement, Prior approval and rate setting
- Risk contracts
- Limit on payment to other providers
- Rate modifications

We did verify that all applicable items on the checklist were covered in the actuarial memorandum. The actuary includes a section which outlines where each item is addressed in the memorandum. For items which were not applicable the actuary gave an explanation as to why they did not apply. Based on our review, we believe the Program is operating within the Federal requirements for an actuarially sound system.

AHCCCS Comprehensive Medical and Dental Program

CONCLUSION

We believe the overall methodology used in developing the statewide capitation rates is reasonable. Trends applied in the development of the capitation rates mainly consider the FY2005 financial statement values by category of service. Other sources are also reviewed. The trend levels appear reasonable. Administration expenses PMPM are higher than those reported in the FY2005 financials. This is due to significant increases in salaries and the addition of new positions. They appear to have addressed all relevant items in the CMS checklist in developing the capitation rates. We believe that there is a wealth of data that cannot currently be accessed due to systems issues which would assist in better managing this Program as well as others. We would recommend that when the systems for this Program are updated, month of service be included in the encounter data reports.

Benefits to be included in actuarially sound rates are only those required to be covered by the Federal regulations. We did not receive enough information to verify whether non-mandated benefits were included in the capitation rates developed for the Program. We would recommend that in the future, the actuary identify separately the cost for mandated benefits and the cost for additional non-mandated benefits (if any) covered by the Program.

APPENDIX A

Capitation Rate Development

I. Prospective:												
Service Category	Financial Statement		Encounter Based CY04 PMPM	Trend rate	Projected 2006 Claim PMPM				CY06 Projected Claim PMPM	Program Changes	Adjusted CY06 Claim PMPM	
	FY 04 PMPM	FY 05 PMPM			Based on FY 04	Based on FY 05	Based on CY 04					
Hospital Inpatient	\$ 39.51	\$ 29.47	\$ 32.11	15.0%	\$ 55.99	\$ 36.33	\$ 43.95	\$ 43.09	0.00%	\$ 43.09		
Physician	54.21	52.27	43.30	10.7%	69.85	60.86	54.40	58.97	0.00%	58.97		
Emergency Services	4.06	3.82	10.13	8.0%	4.93	4.28	12.06	8.27	0.00%	8.27		
Pharmacy	39.19	32.95	28.91	17.9%	59.15	42.19	41.87	44.57	0.00%	44.57		
Lab, X-ray, & med image	5.97	5.53	6.61	5.2%	6.78	5.97	7.42	6.82	0.00%	6.82		
Outpatient Facility	18.01	17.98	15.92	12.7%	24.27	21.51	20.82	21.58	0.00%	21.58		
Durable Med Equip	1.93	2.64	5.23	4.8%	2.17	2.83	5.82	4.22	0.00%	4.22		
Dental	35.48	35.57	28.38	5.3%	40.37	38.44	31.88	35.45	0.00%	35.45		
Transportation	4.08	3.25	3.44	10.0%	5.17	3.75	4.26	4.22	0.15%	4.22		
NF, Home HC	1.06	1.55	0.27	15.0%	1.50	1.91	0.37	1.08	0.00%	1.08		
Physical Therapy	0.35	0.13	0.04	0.0%	0.35	0.13	0.04	0.12	0.00%	0.12		
Miscellaneous Med Exp	2.64	2.72	-	2.8%	2.83	2.84	2.84	2.84	0.0%	2.84		
Total	\$ 206.49	\$ 187.89	\$ 174.34		\$ 273.36	\$ 221.03	\$ 225.70	\$ 231.21		\$ 231.22		
Less Reinsurance										\$ (7.97)		
Less TPL										\$ (0.21)		
Net Claim Cost										\$ 223.04		
Administrative Expenses										\$ 30.17		
Premium Tax										\$ 5.17		
CY2006 Capitation Rate										\$ 258.38		

II. Prior Period Coverage:											
Service Category	Financial Statement		Encounter Based CY04 PMPM	Trend rate	Projected 2006 Claim PMPM				CY06 Projected Claim PMPM	Program Changes	Adjusted CY06 Claim PMPM
	FY 04 PMPM	FY 05 PMPM			Based on FY 04	Based on FY 05	Based on CY 04				
Hospital Inpatient	\$ 132.84	\$ 90.30	\$ 80.92	20.0%	\$ 209.54	\$ 118.70	\$ 121.96	\$ 139.95	0.00%	\$ 139.95	
Physician	61.55	88.03	42.07	20.0%	97.09	115.72	63.40	\$ 98.45	0.00%	98.45	
Miscellaneous Med Exp	46.63	61.28	58.78	4.9%	52.55	65.84	65.46	\$ 62.76	0.20%	62.89	
Total	\$ 241.01	\$ 239.62	\$ 181.76		\$ 359.18	\$ 300.27	\$ 250.81	\$ 301.16		\$ 301.29	
Less Reinsurance										\$ (0.01)	
Less TPL										\$ -	
Net Claim Cost										\$ 301.28	
Administrative Expenses										\$ 30.17	
Premium Tax										\$ 6.76	
CY2006 Capitation Rate										\$ 338.21	



Janet Napolitano, Governor
Anthony D. Rodgers, Director

Our first care is your health care

ARIZONA HEALTH CARE COST CONTAINMENT SYSTEM

801 East Jefferson, Phoenix AZ 85034
PO Box 25520, Phoenix AZ 85002
phone 602 417 4000
www.ahcccs.state.az.us

October 16, 2006

Richard Stavneak
Director
Joint Legislative Budget Committee
1716 West Adams Street
Phoenix, Arizona 85007



Dear Mr. Stavneak,

Arizona Health Care Cost Containment System (AHCCCS) has reviewed the draft actuarial audits of the Title XIX Acute Care, Long Term Care (ALTCS), and Comprehensive Medical and Dental Programs (CMDP) actuarial methods and assumptions, performed by Lewis and Ellis, Inc. (L&E). In addition, AHCCCS reviewed L&E's audit of the Department of Economic Security Division of Developmental Disabilities (DDD) program since AHCCCS' actuarial staff develop those capitation rates as well. Thank you for this opportunity to comment on the preliminary results.

AHCCCS in-house actuarial staff develop actuarially sound capitation rates for almost \$5.0 billion in AHCCCS capitated expenses, across sixteen contractors. I agree that these audits were a valuable endeavor, and they reaffirmed my confidence in our processes. I was pleased that each of the reports concluded that "the overall methodology used in developing the statewide capitation rates is reasonable."

In total there were seven distinct recommendations/observations made by L&E across these four audits.

- One recommendation was made for all four programs.
- One recommendation encompassed the Acute Care, ALTCS and CMDP programs.
- One recommendation encompassed the Acute Care, ALTCS and DDD programs.
- One recommendation covered both the CMDP and DDD programs.
- Acute Care, ALTCS and DDD programs each had a unique recommendation/observation.

The following are the Agency's comments on the recommendations included in the draft audits.

Mandated Benefits

L&E recommends that AHCCCS separately identify the costs of mandated vs. non-mandated benefits for Acute Care, ALTCS, CMDP and DDD.

AHCCCS Response

Given the current statutory requirements for AHCCCS regarding capitation rate-setting, the rates established contain only mandated changes or those issues funded by the Governor and Legislature. Furthermore, non-covered services are not included in capitation rate development.

Encounter Data Reporting

L&E recommends that month of service be added to the encounter data reports used by AHCCCS to set capitation rates for Acute Care, ALTCS and CMDP.

AHCCCS Response

AHCCCS' primary data source for capitation rate-setting is a database report containing tens of millions of encounters sorted by year of service (in fact the Acute Care report contains about 100 million records). AHCCCS agrees with this recommendation and staff had submitted such a request to the Information Services (IS) division earlier this year, though we do not expect that the enhancement of month of service will be available by the time we begin our next rate-setting cycle in early-2007. Our mainframe system is almost 20 years old and thus requires significant programming to modify existing reports. While AHCCCS does have a wealth of quality data, we have no doubt been restricted by the limits of mainframe technology.

L&E states that month of service data would assist AHCCCS "in better managing this Program." Please note that, while such data would refine capitation rate-setting and financial analysis, AHCCCS does not "manage" the day-to-day operations of the Acute Care, ALTCS, CMDP or DDD programs; our at-risk contractors manage the needs of AHCCCS' almost one million capitated members.

Administrative Expenses

L&E recommends that AHCCCS move away from using a flat percentage of claims' expenditures to develop the administrative expense factor for Acute Care and ALTCS, and instead consider revising administrative expenses annually using perhaps a per member per month (PMPM) calculation. A similar recommendation for AHCCCS to monitor actual non-behavioral health administrative expenses, and make adjustments when necessary, was included in the DDD audit.

AHCCCS Response

While AHCCCS does typically use a flat percentage for the administrative expense factor for Acute Care and ALTCS, the resulting dollar impact is compared to contractors' financial statements to check for reasonableness, and the increases projected in the claims expenses are reviewed to determine their impact on administration. For the contract year ending (CYE) 2006 ALTCS capitation rates, AHCCCS did not calculate an 8% administrative load factor but instead increased the previous year's administrative component by 5% as the increases in the ALTCS claims expenses did not suggest that administrative expenses should rise accordingly.

One concern AHCCCS has with a PMPM calculation is that, over time, administrative inefficiencies would begin to appear in the rates. L&E acknowledges that the administrative component of the AHCCCS rates is relatively low “reflective of a very efficient delivery system.” That being said, AHCCCS will consider other methods of setting the administrative expense factor as we develop future capitation rates, including those for DDD, as in fact we already did for CYE 2007.

Encounter Data Reliance

L&E notes that CMDP and DDD have experienced encounter data submission problems that have led AHCCCS to rely upon other data, in addition to encounter data, for rate-setting purposes. L&E restates AHCCCS’ goal of developing capitation rates solely on encounter data.

AHCCCS Response

AHCCCS concurs with this observation. AHCCCS employs various administrative measures to ensure the submission of complete, accurate and timely encounters and, in fact, CMDP has made great strides in correcting encounter data problems. We are continuing to work with DDD to resolve its unique encounter issues. Please note that while the CMDP CYE 2006 capitation rates were based on an average of financial and encounter data, AHCCCS has reached its goal of using primarily encounter data in the CYE 2007 rate-setting process for CMDP.

Reprice Every Three Years

L&E recommends that AHCCCS reprice the Acute Care capitation rates at least every three years.

AHCCCS Response

Currently AHCCCS rebases (or re-states the starting point for) the Acute Care rates upon each competitive bidding cycle, which is typically every five years. Capitation rates are updated in the renewal years primarily through trend analysis. Please note, though, that components of the rates are sometimes re-based in a renewal year if it is determined that such a repricing is necessary. AHCCCS will consider a full repricing effort at least every three years though, as L&E notes, “rebasings requires a greater effort than calculating and applying a trend ...”

AHCCCS currently has an actuarial unit comprised of only two full-time-equivalent (FTE) positions. Additional resources including FTE and associated funding would assist with implementation of this recommendation.

ALTCS Trend Development

L&E recommends that AHCCCS develop separate trend factors for change in utilization and change in unit cost.

AHCCCS Response

Richard Stavneak
October 13, 2006
Page 4

AHCCCS agrees with this recommendation and staff had submitted such a request to the IS division earlier this year. This enhancement may be available by the time the next rate-setting cycle begins in early-2007.

DDD Share of Cost Analysis

L&E recommends that share of cost amounts collected from institutionalized members be better tracked for rate-setting purposes.

AHCCCS Response

As L&E describes in the audit, only a very small number of DDD members are institutionalized and therefore pay a share of cost, thus the impact to the overall capitation rates is expected to be very minimal. However, we appreciate improvements in the rate-setting process and AHCCCS therefore agrees with this recommendation.

On a final note, L&E observes in the CMDP audit that AHCCCS' rate-setting materials include a budget comparison that is based on the same member months for the proposed rate year and the current rate year. The auditor's remark that "if the intent is only to show the impact of the change in the capitation rates then this approach is reasonable," but the approach should be revised if the intent is to "see the increase in the total cost of the Program." AHCCCS notes that holding membership constant for such projections is compliant with the 42 CFR 438.6(c)(4)(iii) (CMS requirements for capitated managed care Medicaid programs) and is most consistent with the intent of that regulation.

Thank you again for this opportunity to comment on the draft audits. Please call Shelli Silver at (602) 417-4647 if you have any questions.

Sincerely,

The signature is a cursive script, appearing to read "Anthony D. Rodgers".

Anthony D. Rodgers
Director

cc: January Contreras, Governor's Office
Gary Yaquinto, OSPB
Tom Betlach
Shelli Silver

**REPORT ON THE ACTUARIAL AUDIT OF
THE DEPARTMENT OF HEALTH SERVICES
BEHAVIORAL HEALTH SERVICES PROGRAM
FOR STATE FISCAL YEAR 2006**

PRESENTED TO

ARIZONA JOINT LEGISLATIVE BUDGET COMMITTEE

Prepared by:

**Lewis & Ellis, Inc.
Actuaries & Consultants**

Overland Park, Kansas

September 12, 2006

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ADHS Behavioral Health Services Program

INTRODUCTION

Lewis & Ellis, Inc. was engaged by the Arizona Joint Legislative Budget Committee (the “Committee”) to conduct an actuarial study of capitation rates in the Department of Health Services’ Behavioral Health Services Program (the “Program”).

Our review was to:

- a) Determine the validity of the data used by the actuary in setting the capitation rates;
- b) Determine whether or not the department is operating in accordance with principles and practices prescribed by the Actuarial Standards Board;
- c) Determine whether or not the department is operating within the Federal requirements for an actuarially sound system;
- d) Determine the reasonableness and appropriateness of plan assumptions;
- e) Provide an analysis of the consistency of assumptions and methods for state fiscal years 2005 and 2006.

This report presents our findings and describes the methodology used in our review. Observations are included.

This report has been prepared in conformity with consideration of appropriate actuarial standards of practice for the express purpose to which it was intended. The purpose of this report is to communicate our review of the capitation rate development for the Arizona Department of Health Services (ADHS). Judgments made as to the assumptions, data, methodologies, results and recommendations found in the report should only be made after careful consideration of the report in its entirety. The use of this report by parties outside of the Committee is not recommended. Outside parties use this report at their own risk.

ADHS Behavioral Health Services Program

Our conclusions are based on information supplied by ADHS, especially the Behavioral Health Services actuarial certifications, files, workpapers and correspondence provided by ADHS in response to our questions. If any information was inaccurate, it may require us to revise our conclusions and opinions.

Lewis & Ellis, Inc. is available to answer any questions that may be raised by this report. Please direct any inquiries to Tom Handley or Karen Elsom in our Overland Park office.

By:

Tom Handley, FSA, MAAA
LEWIS & ELLIS, INC.
Actuaries & Consultants
10561 Barkley, Suite 470
Overland Park, KS 66212
Telephone: (913) 491-3388
THandley@LewisEllis.co

Karen E. Elsom, FSA, MAAA
LEWIS & ELLIS, INC.
Actuaries & Consultants
10561 Barkley, Suite 470
Overland Park, KS 66212
Telephone: (913) 491-3388
KElsom@LewisEllis.com

September 12, 2006

ADHS Behavioral Health Services Program

EXECUTIVE SUMMARY

This report presents the results of the basic examination steps performed by Lewis & Ellis, Inc. during audit of the Department of Health Services' Behavioral Health Services Program. We were provided detailed information from the Program on the development of the capitation rates. We reviewed and analyzed the information and data. In certain instances we applied our own estimates to determine overall capitation rates appropriate for the State Fiscal Year 2006 (SFY2006). It is our opinion that the overall methodology used in developing the statewide capitation rates is reasonable. We did, however, make one recommendation regarding the development of the administration expense factor used in developing the gross capitation rates and one recommendation on mandated benefits.

- A flat percentage is applied to the net capitation rates to reflect administration expense. The percentage has remained unchanged since at least State Fiscal Year 2004. This implies that administration expenses will increase at the same level as the behavioral health claims trend. We do not believe this is the case and recommend that the level of administration expenses be revised each year to better reflect the actual level of expected expenses, possibly using per member per month (PMPM) as the basis rather than percent of capitation.
- We would recommend that in the future, the actuary identify separately the cost for mandated benefits and the cost for additional non-mandated benefits (if any) covered by the Program.

ADHS Behavioral Health Services Program

BACKGROUND

Mercer Health & Benefits LLC (Mercer) assisted the Arizona Department of Health Services, Division of Behavioral Health Services (BHS) in developing the capitation rates for each of its Regional Behavioral Health Authorities (RBHAs) for State Fiscal Year 2005 (SFY2005) and State Fiscal Year 2006 (SFY2006). Mercer provided a report to BHS which outlined their methodology in developing the proposed Capitation Rates.

GENERAL DESCRIPTION OF REVIEW PROCEDURES

The first step in conducting our audit was to gain familiarity with the Program. This included a review of the SFY2006 report developed by Mercer, the Health Practice Council of the American Academy of Actuaries Practice Note on the Actuarial Certification of Rates for Medicaid Managed Care Programs, the applicable Actuarial Standards of Practice as promulgated by the Actuarial Standards Board and the federal Medicaid Managed Care regulation. Preliminary discussions were held with the Arizona Joint Legislative Budget Committee as well.

We requested information from BHS including, but not limited to the encounter data, RBHA financial data, historical enrollment data and workpapers showing the development of trend factors and other program changes. We corresponded with BHS personnel to gain a better understanding of the Program's practices and procedures.

The actuarial methods and assumptions underlying the significant actuarial items were reviewed for reasonableness and consistency. We corresponded with BHS personnel who then provided additional information.

ADHS Behavioral Health Services Program

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ADHS Behavioral Health Services Program

VALIDITY OF DATA

The base data used in the development of the State Fiscal Year 2006 (SFY2006) capitation rates takes into account both encounter data for incurred dates during State Fiscal Year 2004 (SFY2004) as well as RBHA Financial Reports. Because of the timing of the review, Mercer was able to include eight months of runout encounter data to supplement the review. This allows for a more credible estimation of the expected fully incurred claims data. Data is split into four populations; Children's Medical Dental Plan (CMDP) Children, Non-CMDP Children, Serious Mental Illness (SMI) and General Mental Health/Substance Abuse (GMH/SA). Additionally the data is divided into six RBHAs and two Categories of Service; Behavioral Health Benefits and Pharmacy Benefits. Two of the 6 RBHA's, The EXCEL Group (EXCEL) and Pinal Gila Behavioral Health Association (PGBHA) are not contractors for SFY2006, however, their historical data was included as a base source and to develop adjustments.

The development of the capitation rates included the use of completion factors. These factors are used to estimate the total expected claim amounts for claims that have not been paid in their entirety. We reviewed the completion factors which were applied to the encounter data. The factors for two of the RBHAs appear to be within the level expected given that eight additional months of runout are included in the encounter data. We noted that completion factors for part of Community Partnership of Southern Arizona (CPSA), PGBHA and Northern Arizona RBHA (NARBHA) were higher than the others. This may be due to data collection and system difficulties. As noted in the next paragraph, since the financial data is ultimately used as the base and the encounter data was only used to adjust the level of the financial data downward, we do not believe the higher completion factors on certain RBHA's to be a major issue.

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The encounter data was also adjusted to exclude costs that were not reimbursed by Title XIX funds. A reduction of \$4.259 million was made to exclude court-ordered evaluation encounters which were included in the encounter data, but are not reimbursed by Title XIX funds.

There were significant differences (as noted in the Mercer report) between the encounter data and the financial data. According to Theresa Garcia at ADHS, two of the RBHAs, CPSA and PGBHA, changed encounter systems. They had major difficulties in bringing up the systems to meet the ADHS requirements over a two year span. ADHS is unsure of the exact dates when the system difficulties began. However, they did report that PGBHA has been doing well since February 2005. CPSA has only made major strides in the last 4 – 6 months. Thus, the accuracy of the encounter data for certain RBHAs may be suspect for some period of time into the future.

To account for these differences in data, Mercer compared the total encounter data to the total financial data for the all populations, RBHAs and Categories of Service combined. The total encounter data after adjustments were made and completion factors applied was 98.2% of the total financial data. Because of the problems with the encounter data systems, Mercer used the financial data for each RBHA and the four populations multiplied by 98.2% to adjust it to the total reported encounters. We believe this is a reasonable method given the difficulties with the individual RBHA encounter data.

We received electronic data files of encounter data for SFY 2004. We were able to summarize the files and closely tie the data to that used by Mercer. We were also able to tie the financial data included in the analysis to each RBHA's financial statement. Mercer also identified the

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Eligible Member Months for SFY 2004 by population and RBHA. We tied these amounts to the ADHS BHS Enrollment – Penetration Report for SFY 2001 through 2004. No significant discrepancies were noted.

Based on our examination of the data available at the time of the original review, the base data used and the methodology applied to adjust it to expected levels are reasonable.

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ASSUMPTIONS

Mercer provided us with the spreadsheets used as the basis for the trend factors applied to the base SFY 2004 data. As stated in the Mercer report, “trend is an estimate of the change in the cost of providing a specific set of benefits over time.” Trend can be positive or negative. Utilization per 1000, Unit Costs and Costs PMPM are calculated using the available encounter data by incurred month for each population and category of service previously identified. Although the data and trends are reviewed by several categories of service, for this Program, the ultimate trends used are by Pharmacy and Behavioral Health Benefits (non-pharmacy). The data is aggregated into rolling three month and rolling 12 month groupings and trends are calculated on these bases. Mercer also utilized their experience in working with other state Medicaid behavioral health and substance abuse programs to determine the appropriate trend levels.

As noted previously, there were significant problems with the encounter data which may make the results of a detailed review by RBHA questionable. We recognize the need to give significant weight to other data sources in this situation. We did review the encounter data and develop our own set of trend factors which we applied to the base data. We did not adjust the factors to remove negative trends in a particular category of service or population. Although our factors may have differed from those used by Mercer for a specified category of service or population, in total, the resulting net capitation rate for all categories of service and populations combined when applying the unadjusted trend factors resulting from the encounter data was very close (1.5%) to that developed by Mercer. Although Mercer made adjustments to the trends noted in the encounter data, overall, the net impact of those adjustments was minimal on the total

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capitation rates calculated. Thus, we believe the trend factors applied in the development of the capitation rates are reasonable.

Mercer separately identifies program changes which are not reflected in the base data. In several cases, these are new members currently receiving services who are being transferred to the BHS Program from another program. We reviewed the calculations for the various program changes and found them to be reasonable. We also compared the total expected claim amounts per added member and found the amounts to be fairly consistent with the prior year calculations. We did note that when the HRSI Adjustment PMPM amount of \$7.60 was calculated it appears that they assumed the SMI eligible member months for SFY2004 instead of SFY2006. Using the SFY2004 member months resulted in a slightly lower adjustment than would have been calculated using the SFY2006 member months. Mercer has also applied a reduction to the capitation rates for the SMI and GMH/SA populations to reflect the prescription drug benefit provided by Medicare. In cases where a population member has dual eligibility under both Medicaid and Medicare, the prescription drug benefit will be provided by Medicare.

An administrative load of 7.5% is built into the capitation rates for all populations, RBHAs and Categories of Service. An additional load of 2.5% is included for underwriting profit, risk and contingencies. These percentages have remained unchanged since at least SFY2004. Given that there have been significant non-pharmacy and pharmacy trends applied to the base data over at least the past 2 years, this may cause an excess load for expenses in the capitation rates. Normally expenses do not increase at the same rate as medical inflation. We did compare the expense load built into the SFY2004 capitation rates with the actual expenses experienced by the

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RBHAs during that period and found an excess over what had been experienced. We would recommend that expense loads be adjusted each year to eliminate the medical inflation component in the capitation rates and only reflect a lower inflation rate applicable to expenses. It may be best to include administration expenses using PMPM as the basis rather than percent of capitation.

BHS is at risk for the provision of BHS covered services. Thus, the capitation rates paid to BHS include an administrative load which was negotiated between The Arizona Health Care Cost Containment System (AHCCCS) and BHS Administration. The load is not included in the proposed capitation rates by RBHA. This is a separate amount that is added to the total expected dollars to be paid for the Program based on the projected enrollment for SFY2006. According to the Mercer report, the load represents the BHS costs of ensuring the efficient delivery of services in a managed care environment. The load was 4.695% for SFY2006 and 5.32% for SFY2005. This load is applied as a percentage of the overall statewide capitation rate calculated for each of the four populations, not the rates for the individual RBHA capitation rates. Appendix A shows how this load amount is incorporated into the overall rate by population.

The projected member months used in the calculation of the Statewide Capitation Rate in Attachment B of the Mercer report (shown in Appendix A) are based on projections provided by BHS. The BHS system tracks eligibility on a monthly basis by RBHA and population. The eligibility for future months is projected using a straight line regression model and the most recent six months of eligibility. Using the past data and our forecasting techniques, we were able

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to tie closely to the projected eligibility assumed for SFY2006. We believe the methodology used for projecting the eligibility is reasonable.

Mercer developed an estimate for the Tribal Fee-For-Service Claims of approximately \$26.1 million. We were supplied with a spreadsheet which outlined the basic methodology for estimating the Tribal claims. The base data used was the actual BHS payments for SFY2005 through February 15, 2005. They assumed a linear relationship between this amount and the total SFY2005 estimated amount of \$22,996,624. The SFY2005 estimated amount is about 1.8% higher than the estimate included in the SFY2005 capitation rates. A total trend of 16% was applied to the SFY2005 estimated claims to determine the SFY2006 amount. This trend includes 5% for utilization, 0.92% for the expected increase in Member months and 9.47% for Unit Cost trend. A significant portion of this unit cost trend is for changes in the Fee Schedule.

We reviewed the Mercer reports for both SFY2005 and SFY2006. The methodology used in developing the capitation rates is essentially the same for both years. We believe the overall methodology followed by Mercer is reasonable. The development of the assumptions used in the methodology is very similar between the two fiscal years. We did note that the trend rates developed for SFY2006 were constant by RBHA within a population and category of service. In SFY 2005, the trend rates varied by RBHA as well as population and category of service. Given the discrepancies noted in the base encounter data within the RBHAs which was used in the SFY2006 calculations, we believe that assuming an across the board trend rate for all RBHAs within a given population and category of service is reasonable. However, as encounter data reporting becomes more complete and accurate, we would expect this data to be reviewed by

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RBHA and category of service in order to develop trends that reflect the individual RBHA experience when credible.

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COMPLIANCE WITH REGULATIONS AND ACCEPTED PRACTICE

Actuarial Standards of Practice (ASOPs) emphasize process over outcome. They are intended to provide actuaries with a framework for performing professional assignments and to offer guidance on relevant issues, recommended practices, documentation, and disclosure. The ASOPs intentionally leave significant room for the actuary to use professional judgment when selecting methods and assumptions, conducting an analysis, and reaching a conclusion.

Currently, no ASOP applies specifically to actuarial work performed to comply with CMS requirements for rate certification. Some health-related ASOPs have scopes that apply specifically to actuarial work performed on behalf of health plans. Other health-related ASOPs are general, so they apply both to health actuarial work performed for health plans or to health actuarial work performed for purchasers for health plan services. We believe the main ASOPs (shown in Appendix B) applicable to the development of capitation rates for this Program are the following:

ASOP 8	Regulatory Filings for Health Plan Entities
ASOP 23	Data Quality
ASOP 25	Credibility Procedures Applicable to Accident and Health, Group Term Life, and Property/Casualty Coverages
ASOP 31	Documentation in Health Benefit Plan Ratemaking
ASOP 41	Actuarial Communications

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These ASOPs should be applied in conjunction with the Medicaid managed care regulation 42 CFR 438.6. Regulation 42 CFR 438.6 defines actuarially sound capitation rates as capitation rates that:

- a) have been developed in accordance with generally accepted actuarial principles and practices
- b) are appropriate for the populations to be covered, and the services to be furnished under the contract; and
- c) have been certified by actuaries who meet the qualification standards established by the American Academy of Actuaries and follow the practice standards established by the Actuarial Standards Board.

Benefits to be included in these actuarially sound rates are only those required to be covered by the Federal regulations. Extraneous benefits which may be provided by the Program should be excluded from the capitation rate calculation. Thus, program changes should only reflect those which are required by Federal regulation. Funding for extraneous benefits should be obtained from other sources unless agreed upon by the state legislature. We did not receive enough information to verify whether non-mandated benefits were included in the capitation rates developed for the Program. We would recommend that in the future, the actuary identify separately the cost for mandated benefits and the cost for additional non-mandated benefits (if any) covered by the Program.

A checklist was developed based on these regulations as a tool for Regional CMS Offices for use in approving rates. This checklist is often followed by actuaries in outlining the steps taken to

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determine the actuarial sound rates. The checklist suggests that the following items be addressed in filings:

- Overview of rate setting methodology
- Actuarial certification
- Projected expenditures
- Procurement, Prior approval and rate setting
- Risk contracts
- Limit on payment to other providers
- Rate modifications

We did verify that all applicable items on the checklist were covered in the Mercer report. We noted that they did not address the item on the limit on payment to other providers. BHS verified that they do not make payments to other providers with Title XIX or Title XXI money. Regarding Risk contracts, Mercer did address this issue, however, they did not identify the level of risk taken by the individual RBHAs. BHS stated that for SFY2006, the level of risk for the RBHAs is +/- 4% with an opportunity to earn an additional 1%. We believe the levels are reasonable. Based on our review, we believe the Program is operating within the Federal requirements for an actuarially sound system.

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CONCLUSION

We believe the overall methodology used in developing the statewide capitation rates is reasonable. We do, however, disagree with the assumption that the same flat percentage for administration expenses be applied to the net capitation rates to determine the gross rates. This implies that administration expenses will increase at the same level as the behavioral health claims trend. We do not believe this is the case and recommend that the level of administration expenses be revised each year to better reflect the actual level of expected expenses.

Benefits to be included in actuarially sound rates are only those required to be covered by the Federal regulations. We did not receive enough information to verify whether non-mandated benefits were included in the capitation rates developed for the Program. We would recommend that in the future, the actuary identify separately the cost for mandated benefits and the cost for additional non-mandated benefits (if any) covered by the Program.

APPENDIX A

Mercer Statewide Capitation Rates

APPENDIX A

Statewide TXIX Rate for Non-CMDP Children

RBHA	Col. 1 Projected Eligible MMs SFY06	Col. 2 Proposed Rates	Col. 1 x Col. 2 Total Dollars
CPSA 3	224,479	\$ 29.82	\$ 6,693,964
CPSA 5	766,294	\$ 34.03	\$ 26,076,985
Cenpatico 2	229,939	\$ 35.45	\$ 8,151,338
NARBHA*	796,092	\$ 19.82	\$ 15,778,543
Cenpatico 4	248,940	\$ 46.82	\$ 11,655,371
Value Options	2,974,193	\$ 25.33	\$ 75,336,309
Tribes			\$ 21,631,196
Subtotal	5,239,937		\$ 165,323,706
BHS Administration 4.70%			\$ 8,144,324
Total with BHS Administration			\$ 173,468,030
Statewide Capitation Rate			\$ 33.10

Statewide TXIX Rate for CMDP Children

RBHA	Col. 1 Projected Eligible MMs SFY06	Col. 2 Proposed Rates	Col. 1 x Col. 2 Total Dollars
CPSA 3	4,753	\$ 720.11	\$ 3,422,683
CPSA 5	28,431	\$ 848.78	\$ 24,131,664
Cenpatico 2	2,505	\$ 1,355.22	\$ 3,394,826
NARBHA*	9,968	\$ 883.67	\$ 8,808,423
Cenpatico 4	8,113	\$ 973.74	\$ 7,899,953
Value Options	67,072	\$ 670.32	\$ 44,959,703
Tribes			\$ 1,138,484
Subtotal	120,842		\$ 93,755,736
BHS Administration 4.70%			\$ 4,618,679
Total with BHS Administration			\$ 98,374,415
Statewide Capitation Rate			\$ 814.07

* NARBHA Eligible MMs Include Tribal Counts

Statewide TXIX Rate for SMI

APPENDIX A

	Col. 1	Col. 2	Col. 1 x Col. 2
RBHA	Projected Eligible MMs SFY06	Proposed Rates	Total Dollars
CPSA 3	282,027	\$ 45.38	\$ 12,798,385
CPSA 5	888,760	\$ 56.60	\$ 50,303,816
Cenpatico 2	237,469	\$ 54.97	\$ 13,053,671
NARBHA*	980,381	\$ 37.11	\$ 36,381,939
Cenpatico 4	276,169	\$ 42.30	\$ 11,681,949
Value Options	2,489,118	\$ 92.54	\$ 230,342,980
Tribes			\$ 3,089,763
Subtotal	5,153,924		\$ 357,652,503
BHS Administration 4.70%			\$ 17,618,997
Total with BHS Administration			\$ 375,271,500
Statewide Capitation Rate			\$ 72.81

Statewide TXIX Rate for GMH/SA

	Col. 1	Col. 2	Col. 1 x Col. 2
RBHA	Projected Eligible MMs SFY06	Proposed Rates	Total Dollars
CPSA 3	282,027	\$ 23.88	\$ 6,734,805
CPSA 5	888,760	\$ 38.49	\$ 34,208,372
Cenpatico 2	237,469	\$ 25.50	\$ 6,055,460
NARBHA*	980,381	\$ 15.39	\$ 15,088,064
Cenpatico 4	276,169	\$ 46.69	\$ 12,894,331
Value Options	2,489,118	\$ 32.44	\$ 80,746,988
Tribes			\$ 208,659
Subtotal	5,153,924		\$ 155,936,679
BHS Administration 4.70%			\$ 7,681,892
Total with BHS Administration			\$ 163,618,571
Statewide Capitation Rate			\$ 31.75

* NARBHA Eligible MMs Include Tribal Counts

**REPORT ON THE ACTUARIAL AUDIT OF
THE DEPARTMENT OF HEALTH SERVICES
CHILDREN'S REHABILITATIVE SERVICES PROGRAM
FOR STATE FISCAL YEAR 2006**

**PRESENTED TO
ARIZONA JOINT LEGISLATIVE BUDGET COMMITTEE**

**Prepared by:
Lewis & Ellis, Inc.
Actuaries & Consultants
Overland Park, Kansas**

September 13, 2006

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ADHS Children's Rehabilitative Services Program

INTRODUCTION

Lewis & Ellis, Inc. was engaged by the Arizona Joint Legislative Budget Committee (the Committee) to conduct an actuarial study of capitation rates in the Department of Health Services' Children's Rehabilitative Services Program (the Program or CRS).

Our review was to:

- a) Determine the validity of the data used by the actuary in setting the capitation rates;
- b) Determine whether or not the department is operating in accordance with principles and practices prescribed by the Actuarial Standards Board;
- c) Determine whether or not the department is operating within the Federal requirements for an actuarially sound system;
- d) Determine the reasonableness and appropriateness of plan assumptions;
- e) Provide an analysis of the consistency of assumptions and methods for state fiscal years 2005 and 2006.

This report presents our findings and describes the methodology used in our review. Observations are included.

This report has been prepared in conformity with consideration of appropriate actuarial standards of practice for the express purpose to which it was intended. The purpose of this report is to communicate our review of the capitation rate development for the Office for Children with Special Health Care Needs (OCSHCN). Judgments made as to the assumptions, data, methodologies, results and recommendations found in the report should only be made after careful consideration of the report in its entirety. The use of this report by parties outside of the Committee is not recommended. Outside parties use this report at their own risk.

ADHS Children's Rehabilitative Services Program

Our conclusions are based on information supplied by OCSHCN, especially the CRS actuarial certifications, files, workpapers and correspondence provided by OCSHCN in response to our questions. If any information was inaccurate, it may require us to revise our conclusions and opinions.

Lewis & Ellis, Inc. is available to answer any questions that may be raised by this report. Please direct any inquiries to Tom Handley or Karen Elsom in our Overland Park office.

By:

Tom Handley, FSA, MAAA
LEWIS & ELLIS, INC.
Actuaries & Consultants
10561 Barkley, Suite 470
Overland Park, KS 66212
Telephone: (913) 491-3388
THandley@LewisEllis.co

Karen E. Elsom, FSA, MAAA
LEWIS & ELLIS, INC.
Actuaries & Consultants
10561 Barkley, Suite 470
Overland Park, KS 66212
Telephone: (913) 491-3388
KElsom@LewisEllis.com

September 13, 2006

ADHS Children's Rehabilitative Services Program

EXECUTIVE SUMMARY

This report presents the results of the basic examination steps performed by Lewis & Ellis, Inc. during audit of the Department of Health Services' Children's Rehabilitative Services Program. We were provided detailed information from the Program on the development of the capitation rates. We reviewed and analyzed the information and data. It is our opinion that the overall methodology used in developing the statewide capitation rates is reasonable. We did however, make the following recommendations regarding the administration expense factors, the trend factors and mandated benefits:

- We believe the expense loads included for the Tucson, Flagstaff and Yuma regions were excessive. We would recommend that the Committee meet with the OCSHCN to determine an agreed upon method for development of contractor administrative loads that are fair and reasonable. We believe that the financials for each region should be reviewed and administrative expense factors be set which more closely reflect each region's actual expense levels.
- Regarding trend factors we did recommend that the actuary include an appendix in the report which shows the trend factors by category of service developed using the encounter data as well as the trends from other sources considered. With respect to prescription drug trends, we recommend that the prescription drug benefits be closely monitored in order to manage the trends for that component to a lower level where possible. We also noted that the program changes will need to be included in the analysis of the encounter data and the development of the trend factors in the future.

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- We would recommend that in the future, the actuary identify separately the cost for mandated benefits and the cost for additional non-mandated benefits (if any) covered by the Program.

ADHS Children's Rehabilitative Services Program

BACKGROUND

Mercer Health & Benefits LLC (Mercer) assisted the Arizona Department of Health Services (ADHS), Office for Children with Special Health Care Needs in developing the capitation rates by contractor site for State Fiscal Year 2005 (SFY2005) and State Fiscal Year 2006 (SFY2006). Mercer provided a report to OCSHCN which outlined their methodology in developing the proposed Capitation Rates.

GENERAL DESCRIPTION OF REVIEW PROCEDURES

The first step in conducting our audit was to gain familiarity with the Program. This included a review of the SFY2006 report developed by Mercer, the Health Practice Council of the American Academy of Actuaries Practice Note on the Actuarial Certification of Rates for Medicaid Managed Care Programs, the applicable Actuarial Standards of Practice as promulgated by the Actuarial Standards Board and the federal Medicaid Managed Care regulation. Preliminary discussions were held with the Arizona Joint Legislative Budget Committee as well.

We requested information from OCSHCN including, but not limited to the encounter data, contractor financial data, historical enrollment data and workpapers showing the development of trend factors and other program changes. We corresponded with OCSHCN personnel to gain a better understanding of the Program's practices and procedures.

The actuarial methods and assumptions underlying the significant actuarial items were reviewed for reasonableness and consistency. We corresponded with OCSHCN personnel who then provided additional information.

ADHS Children's Rehabilitative Services Program

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ADHS Children's Rehabilitative Services Program

VALIDITY OF DATA

The base data used in the development of the State Fiscal Year 2006 (SFY2006) is the encounter data for incurred dates during State Fiscal Year 2004 (SFY2004). This data was valued using Medicaid fee schedule allowed amounts, incorporating a "lesser of" methodology. This means that they use the lower of the Medicaid fee schedule allowed amount and the contractor's liability from the provider. The data was analyzed and categorized in High, Medium and Low diagnostic groupings for each contractor.

The data was then adjusted to account for Omissions, Non-encounterable costs and Incurred but not reported claims (IBNR). The Omissions adjustment is for encounters that are never reported by providers. When providers are paid on a capitation basis, they do not necessarily have any financial incentive to report all encounters. A study was performed to determine the level of Omissions in relation to reported encounters. The basis of the study to develop the factors for Omissions was not CRS specific. CRS specific data is difficult to obtain and may not be credible because of the size of the block. Thus, the actuary had to use judgment as to the level and reasonableness of the factor applied. For this Program, they chose to use 50% of the factors developed from the study which resulted in an overall adjustment of 2.25%. The Non-encounterable costs adjustment was 3.53% and is for services such as social workers, interpreters and counseling which are often never reported as an encounter. We did not receive copies of the studies used to develop the adjustments for Omissions and Non-encounterable costs, however, we believe the level of the factors are reasonable. Because of the timing of the review, Mercer was able to include 7.5 months of runout encounter data (through the middle of February 2005) in their initial review. A subsequent review of the data at the end of April indicated that there

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were outstanding claims as of the middle of February that amounted to about 1.4%. This allowed for a more credible estimation of the expected fully incurred claims data.

As stated above, the data was split into 3 diagnostic groupings. It was also divided by region and category of service. Utilization rates per 1,000 members and unit costs were developed for each diagnostic grouping, region and category of service.

We received electronic data files of encounter data for SFY2004. We were able to summarize the files and closely tie the data to that used by Mercer. We also randomly selected individual cells of utilization rates per 1,000 members and unit costs. The selected cells covered various categories of service in each region and diagnostic category. Mercer provided us with the base data for each cell selected and we were able to tie closely to the base encounter data amounts used in developing the capitation rates. We were off on a few utilization rates, however, we determined that the discrepancy was due to the adjustments for Omissions and IBNR.

Mercer also identified the Member Months for SFY2004 by diagnostic grouping and region. In total across all regions and diagnostic groupings, the member months utilized in the projections were less than 0.1% higher than the actual enrollment for SFY2004. The total member months by region were also within a reasonable range of the actual member months by region. The member months used in the projections in relation to the actual member months by region ranged from 99.5% of actual to 102.4% of actual. The member months utilized in the projections by diagnostic grouping within each region varied considerably from the actual member months. According to ADHS personnel, in SFY2005, a risk level adjustment was made for some disease

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classes so that the level more closely matched the risk. These adjusted member months by diagnostic grouping were used in the Mercer projections.

Based on our examination of the data available at the time of the original review, the base data used and the methodology applied to adjust it to expected levels are reasonable.

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ASSUMPTIONS

Mercer provided us with the spreadsheets used as the basis for the trend factors applied to the base SFY2004 data. Mercer states that they relied heavily on the CRS encounter information, but also utilized its professional experience in working with other stated Medicaid programs, outlooks in the commercial marketplace that influence Medicaid programs, regional and national economic indicators, and general price/wage inflation in developing trends.

We reviewed the encounter data used in the development of the trend factors. This data covers SFY2002, SFY2003 and SFY2004. Trends were developed by State Fiscal Year, region and category of service. The data was reviewed on 2 bases. First, claim dollars were valued as the lesser of a) Allowed minus Third Party Liability (TPL) or b) Billed Charges. A second review of the Allowed minus TPL alone was performed as well. The total PMPM annual trends using these two claim dollar bases was 7.8% and 5.2% respectively. It appears that these were the main considerations in setting the overall expected trend of 5.5% PMPM. Mercer stated that they used smoothing on an iterative basis to fill in all necessary components.

In reviewing the data, we noted that the trends varied significantly from one year to the next as well as within the regions. Even the average annual trends by category of service for the 2 year period from SFY2002 through SFY2004 varied significantly by region. The Physician, DME and Lab/Radiology average annual trends for the 2 year period were negative while the Other category trend was over 100% for the same period. It would not be reasonable to assume such trends would continue into the future.

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The trend in the pharmacy expense (19.5% PMPM) which was used in the capitation rate development appears high. This is comprised of a utilization per 1000 trend of 5% and a unit cost trend of 13.8%. To set these trends, Mercer used the Program encounter data in conjunction with published trend studies from Express Scripts and Medco. The encounter data is producing trends over 30%. The published studies determine the components in Unmanaged per member per year prescription drug cost trends. The Express Scripts report shows the trends reducing significantly from 18.5% for 2002 over 2001 to 10.6% for 2004 over 2003. A good portion of the drop in trend is due to reduced utilization trend which is one component of the total. The published reports reflect trend for the general population and do not identify trends for specialized groups such as the CRS population. Thus, Mercer reflected the reduction in trends in the trend factors developed but did not use the actual trend developed from the published studies.

This is reasonable given that this is a specialized population group and there can be significant differences in prescription drug usage between the CRS population and the general population. Given the level of the actual encounter data trends, the prescription drug trend factor applied to develop the SFY2006 rates is not unreasonable. We would recommend close monitoring of the prescription drug benefits in order to manage the trend to a lower level where possible

This is a small block of business. Thus, aberrations in experience trends can be expected to occur when data is parsed into even smaller groupings such as by region and category of service.

Significant judgment must be applied to develop trend factors by category of service that are reasonable and appropriate for the population covered. The chart below shows the annual trend developed using the encounter data vs. the actual annual trend used in the capitation rate

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development. Method 1 uses the lesser of the Allowed Charges minus the TPL or the Billed Charges. Method 2 uses the Allowed Charges minus the TPL.

Category of Service	PMPM Trends		
	Trend Used	Encounter Data Method 1	Encounter Data Method 2
Inpatient	1.6%	14.6%	14.6%
Outpatient	3.6%	19.0%	19.0%
Physician	4.5%	-8.6%	-10.2%
Pharmacy	19.5%	34.4%	30.6%
DME	4.0%	-17.0%	-24.0%
Non-Physician Professional	4.5%	8.3%	8.7%
Lab/Radiology	3.0%	-11.5%	-13.3%
Dental	2.0%	0.2%	-0.8%
Other	3.0%	120.8%	115.9%
Non-Encounterable Expenses	2.6%		
Total	5.5%	7.8%	5.2%

Because of the size of the block and the specialized nature of the member base and benefits provided, the methodology applied to develop the overall trend and the variations by category of service appears reasonable. We would recommend that in the future, the actuary include an appendix in the report which shows the trend factors by category of service developed using the encounter data as well as the trends from the other sources considered. This would give the Committee a better understanding of the components of the total trend and how the actual factors used relate to the encounter data as well as the experience of other Medicaid programs and the general population experience.

ADHS Children's Rehabilitative Services Program

Two benefit changes were incorporated into the SFY2006 rates. According to Mercer, in SFY2005 Chest Vests became a covered expense. These are primarily used for patients with Cystic Fibrosis. The costs for these were not included in the base data. Actual and estimated utilization cost data from contractors and CRS were reviewed to determine the cost impact of this additional benefit. The costs were only included in the regions where there were members with Cystic Fibrosis. Thus, each region is covering the cost of this benefit for its members only. This is consistent with the development of the overall claims PMPM. The PMPM adjustments shown in the actuarial memorandum of \$0.98 for Phoenix and \$0.75 for Tucson represent the impact on the overall capitation rates by region. The actual PMPM adjustments for the High diagnostic category are \$4.19 for Phoenix and \$2.26 for Tucson. There were no adjustments in the Medium and Low diagnostic categories for this benefit change as is appropriate. Consideration of this program change will need to be included in the analysis of encounter data and the development of trend factors for SFY2005 and later.

The second benefit change was the coverage by Medicare of prescription drug expenditures for dual eligibles (those individuals eligible for both Medicaid and Medicare). Prior to the implementation of the Medicare Modernization Act of 2003 (MMA) prescription drugs for dual eligibles were covered by Medicaid. The MMA shifts the coverage of prescription drugs for dual eligibles to the Medicare program. Because CRS is a children's program, the impact of this change is expected to be minimal as very few dual eligibles are enrolled with CRS. Mercer made estimates of the reduction in expected claims based on the historical dual eligible prescription drug expenditures. The adjustments are very small ranging from (\$0.23) to \$0.00. The methodology used to develop the adjustments appears reasonable.

ADHS Children's Rehabilitative Services Program

An administrative load which varies by region is built into the capitation rates for all diagnostic groupings. The load by region is as follows:

Region	Administrative Load
Phoenix	10%
Tucson	23%
Flagstaff	25%
<u>Yuma</u>	<u>30%</u>
Total	15%

Mercer was unable to provide quantitative documentation to support the level of the loads included by region. They did state that they reviewed the financials and they believe that a 10% administration factor is appropriate for Phoenix. For Tucson, they reviewed both the financials and the trend in Tucson's administration percentage. They observed that the administration percentage was trending downward. Mercer believes that the administration factor for Tucson should be lower than the actual financials due to the trend, but also believed that it should be higher than Phoenix. According to Mercer, relativities were utilized to determine the administration percentages applied for Flagstaff and Yuma. Mercer did not provide any explanation of what the relativities were. Their justification was that these two regions are much smaller programs and thus should have a higher administrative percentage based on the theory of fixed and variable costs. We believe they applied a percentage increase to the Phoenix administration factor which was based on the Program size of the region for which the factor was being determined in comparison to that of the Phoenix region.

We believe that the administrative factors included for the contractors are excessive for all regions except Phoenix. Although Mercer uses the small size of the CRS programs in the

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Tucson, Flagstaff and Yuma regions as their basis for setting high administrative factors, they also acknowledge that with the exception of Tucson, each contractor is part of a large hospital-based health care system. They do expect that in such cases allocations of expenses would disproportionately impact the CRS program. Although the hospitals may choose to disproportionately allocate higher expenses to the CRS program, that does not imply that expenses built into the Program should be required to support the allocations.

We reviewed the financials for the 3 smaller regions. The chart below shows the functional expenses and the revenues for the fiscal years ending in 2005. The Tucson values represent CRS data only. The Flagstaff and Yuma values represent the total hospital values.

	Fiscal Year Ending 2005		
	Tucson	Flagstaff	Yuma
Net Patient Service Revenue	\$14,151,862	\$360,764,000	\$229,575,247
Healthcare Services	11,719,674	305,536,000	205,949,191
Administrative Expenses	1,930,785	48,303,000	19,659,667
Expense as % of Total Healthcare and Administrative	14.1%	13.7%	8.7%
Expense as % of Revenue	13.6%	13.4%	8.6%

As the chart shows, for Tucson, administrative expenses reported in the 2005 financials for the CRS program are significantly lower than the 23% built into the capitation rates. Although the financials for Flagstaff and Yuma do identify total expenses for the CRS program as well as their other programs, they do not split these expenses by healthcare services and administrative expenses. This split is only shown on the total hospital expenses. Given the data we reviewed from the 2005 financials, we believe an administrative factor of 14% for Tucson and 15% for

ADHS Children's Rehabilitative Services Program

Flagstaff and Yuma would be more reasonable for the State Fiscal Year being reviewed. This would allocate a slightly higher percentage for Flagstaff and Yuma over what the total hospital programs for those regions are experiencing. We would recommend that the Committee meet with OCSHCN to determine an agreed upon method for development of contractor administrative loads that are fair and reasonable. We would recommend expense loads be developed on a PMPM basis by region. These could then be updated with trends in expenses only when new capitation rates are developed. We believe that the financials for each region should be reviewed and administrative expense factors be set which more closely reflect each region's actual expense levels.

An additional load of 2.5% is included for underwriting profit, risk and contingencies. This percentage is consistent with that used for other programs. The level is reasonable.

The Mercer report identifies three program changes which are in essence additional administrative expenses. These additional expenses are for Telemedicine Fees, Enrollment Services and External Quality Review Organization (EQRO) protocol compliance. The Telemedicine Fees and Enrollment Services were previously covered under the CRS Administration component of the capitation rates. These two changes just reflect a shift in the responsibilities to the CRS contractors.

ADHS has an Interagency Service Agreement (ISA) with the University of Arizona for the Telemedicine Fees. The University provided ADHS with a price sheet which identified the annual costs for the services by region. These annual costs by region were divided by the member months to determine the appropriate cost PMPM to include in the capitation rates. We

ADHS Children's Rehabilitative Services Program

were able to tie the costs used in the PMPM calculations to the ISA price sheet. We believe the methodology is reasonable.

Prior to SFY2006, CRS paid a total of \$350,000 per year to the four regional contractors for enrollment services. For SFY2006, CRS decided to move the enrollment services funding which was related to the Medicaid population (74%) into the capitation rates for each contractor. The total paid to each regional contractor was multiplied by 74% and then divided by the expected total member months for the projection. The amounts which varied by region were then added to the contractors' capitation rates for each diagnostic grouping. We verified the calculations. The methodology appears reasonable.

According to Mercer, due to the Balanced Budget Act (BBA) of 1997, the hiring of additional contractor staff is necessary to ensure compliance and implement corrective actions. Mercer estimates that one full-time (FTE) Compliance Officer for both Phoenix and Tucson will be required due to the increased federal and state compliance requirements. They assumed that Flagstaff and Yuma would each require one-half FTE for the same purpose. They estimate the total costs by region to be:

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<u>Region</u>	<u>Cost</u>	<u>Loading</u>
Phoenix	\$90,000	¼%
Tucson	70,000	½%
Flagstaff	35,000	1%
Yuma	40,000	2 ½%

Mercer converted these dollar amounts to percentages and applied the loading percentages to the capitation rates uniformly across all diagnostic groupings within each region. The rationale for this was to have a more relatively uniform rating impact over the diagnostic groupings as opposed to flat PMPMs. We cannot confirm nor dispute the number of full-time employees needed to ensure compliance with the BBA. We do believe the overall methodology used by Mercer to approximate the cost PMPM based on their assumptions is reasonable.

The four regional contractors' experience is aggregated in order to obtain the most favorable overall reinsurance costs. The reinsurer charges one aggregate PMPM of \$6.63. This amount is then allocated to the regional providers based on a review of the historical large claims in combination with some actuarial judgment. Because the expected cost of the large claims which would be covered by reinsurance were implicitly built into the contractor capitation rates, the cost of the reinsurance coverage PMPM is deducted from the gross capitation rate. We reviewed the spreadsheet provided by Mercer which shows how the reinsurance costs were allocated to the various regions. Mercer developed estimated reinsurance claim costs based on the historical claims for SFY2002, SFY2003 and SFY2004. According to the data, only Phoenix and Tucson had claims which would have exceeded the reinsurance deductible during the three year period. Although Flagstaff and Yuma have not incurred any reinsured claims over the past three years, it would not be prudent to assume that the trend will continue. They are still benefiting from the availability of the reinsurance coverage. Thus, Mercer made judgments as to the portion of the

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reinsurance costs allocated to Flagstaff and Yuma. They then allocated the remaining portion of the reinsurance offset to Tucson and Phoenix. The portion for Tucson was fairly close to the estimated reinsurance claims PMPM in relation to the SFY2006 projected contractor rates PMPM. The remainder was allocated to Phoenix so that the total PMPM would equal \$6.63. We believe the methodology applied by Mercer to develop the reinsurance offsets by region is reasonable.

ADHS is at risk for the provision of CRS covered services. Thus, the capitation rates paid to ADHS include an administrative load which was negotiated between The Arizona Health Care Cost Containment System (AHCCCS) and ADHS. The load is included in the proposed capitation rates by Contractor and Diagnostic Category which are shown in the report. According to the Mercer report, the load represents the ADHS costs of ensuring the efficient delivery of services in a managed care environment. The load was 8% for SFY2006. The SFY2005 and SFY2004 loads were 9.1% and 9.3% respectively. This load is applied as a percentage of the gross contractor capitation rate calculated for each of the diagnostic groupings. That is, the load is applied to the contractor capitation rate before any reinsurance offset is taken. We were not provided documentation regarding an explicit adjustment made to the CRS administration factor to reflect the shift in responsibilities for Telemedicine Fees and Enrollment Services from ADHS to the contractors. However, ADHS has stated that they did remove the funding when developing the administration factor. In determining the load they look at both past expenditures and future estimated administrative costs. Given the significant reduction in the administration factor for SFY2006 over the prior two years, it does appear that the fees were

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removed. Appendix A shows how this load amount is incorporated into the overall rate by contractor and diagnostic grouping.

We reviewed the Mercer reports for both SFY2005 and SFY2006. One significant change was made for the SFY2006 capitation rate development. Prior to SFY2006, the contractor capitation rates were updated from the prior year by applying claim and administrative cost trend factors as well incorporating program changes and adjusting for underwriting/profit/risk contingency risk loading and maximum capitation revenue limits. For the development of the SFY2006 capitation rates, the SFY2004 encounter data was used as the base data source. A description of the base data source and the adjustments made were given previously in the Validity of Data section. We believe the use of actual encounter data will allow for a more accurate development of capitation rates by region. This change also allows for the separate identification of the contractor administration charge included in the capitation rates. Prior to SFY2006, the contractor administration charge was hidden in the total capitation rate. We believe the process was greatly improved by incorporating these changes. The changes should lead to better transparency of the actual cost of the Program by region. Development of trend factors for both SFY2005 and SFY2006 appears to be similar as the trends in encounter data by category of service along with consideration of other sources were used for both years.

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COMPLIANCE WITH REGULATIONS AND ACCEPTED PRACTICE

Actuarial Standards of Practice (ASOPs) emphasize process over outcome. They are intended to provide actuaries with a framework for performing professional assignments and to offer guidance on relevant issues, recommended practices, documentation, and disclosure. The ASOPs intentionally leave significant room for the actuary to use professional judgment when selecting methods and assumptions, conducting an analysis, and reaching a conclusion.

Currently, no ASOP applies specifically to actuarial work performed to comply with CMS requirements for rate certification. Some health-related ASOPs have scopes that apply specifically to actuarial work performed on behalf of health plans. Other health-related ASOPs are general, so they apply both to health actuarial work performed for health plans or to health actuarial work performed for purchasers for health plan services. We believe the main ASOPs (shown in Appendix B) applicable to the development of capitation rates for this Program are the following:

ASOP 8	Regulatory Filings for Health Plan Entities
ASOP 23	Data Quality
ASOP 25	Credibility Procedures Applicable to Accident and Health, Group Term Life, and Property/Casualty Coverages
ASOP 31	Documentation in Health Benefit Plan Ratemaking
ASOP 41	Actuarial Communications

These ASOPs should be applied in conjunction with the Medicaid managed care regulation 42 CFR 438.6. Regulation 42 CFR 438.6 defines actuarially sound capitation rates as capitation rates that:

ADHS Children's Rehabilitative Services Program

- a) have been developed in accordance with generally accepted actuarial principles and practices
- b) are appropriate for the populations to be covered, and the services to be furnished under the contract; and
- c) have been certified by actuaries who meet the qualification standards established by the American Academy of Actuaries and follow the practice standards established by the Actuarial Standards Board.

Benefits to be included in these actuarially sound rates are only those required to be covered by the Federal regulations. Extraneous benefits which may be provided by the Program should be excluded from the capitation rate calculation. Thus, program changes should only reflect those which are required by Federal regulation. Funding for extraneous benefits should be obtained from other sources unless agreed upon by the state legislature. We did not receive enough information to verify whether non-mandated benefits were included in the capitation rates developed for the Program. We would recommend that in the future, the actuary identify separately the cost for mandated benefits and the cost for additional non-mandated benefits (if any) covered by the Program.

A checklist was developed based on these regulations as a tool for Regional CMS Offices for use in approving rates. This checklist is often followed by actuaries in outlining the steps taken to determine the actuarial sound rates. The checklist suggests that the following items be addressed in filings:

Overview of rate setting methodology

ADHS Children's Rehabilitative Services Program

Actuarial certification
Projected expenditures
Procurement, Prior approval and rate setting
Risk contracts
Limit on payment to other providers
Rate modifications

We did verify that all applicable items on the checklist were covered in the Mercer report. Based on our review, we believe the Program is operating within the Federal requirements for an actuarially sound system.

ADHS Children's Rehabilitative Services Program

CONCLUSION

We believe the overall methodology used in developing the statewide capitation rates is reasonable. We do, however, disagree with the contractor administration expense loads which varied by region and were applied to the net capitation rates to determine the gross rates. We believe the expense loads included for the Tucson, Flagstaff and Yuma regions were excessive. In light of the CRS financial data for Tucson, it appears that a load of around 14% would be more appropriate. For Flagstaff and Yuma where administration expenses were only available in total, we believe an administrative load of 15% would be reasonable. We would recommend that the Committee meet with OCSHCN to determine an agreed upon method for development of contractor administrative loads that are fair and reasonable. We believe these loads should be expressed on a PMPM basis and trended forward each year using expense trend only.

Regarding trend factors we did recommend that the actuary include an appendix in the report which shows the trend factors developed using the encounter data as well as the trends from other sources considered. With respect to prescription drug trends, we recommend that the prescription drug benefits be closely monitored in order to manage the trends for that component to a lower level where possible. We also noted that the program changes will need to be included in the analysis of the encounter data and the development of the trend factors in the future.

Benefits to be included in actuarially sound rates are only those required to be covered by the Federal regulations. We did not receive enough information to verify whether non-mandated benefits were included in the capitation rates developed for the Program. We would recommend

ADHS Children's Rehabilitative Services Program

that in the future, the actuary identify separately the cost for mandated benefits and the cost for additional non-mandated benefits (if any) covered by the Program.

APPENDIX A

Mercer Statewide Capitation Rates

APPENDIX A

CRS Gross Capitation Rates SFY2006

Diagnostic Grouping	Region	Contractor Capitation Rate	Reinsurance	CRS Administration	Gross Capitation Rate
High	Phoenix	\$500.45	\$9.27	\$40.94	\$550.66
	Tucson	\$427.74	\$3.40	\$34.63	\$465.77
	Flagstaff	\$237.08	\$1.20	\$19.14	\$257.42
	Yuma	\$287.37	\$0.80	\$23.15	\$311.32
Medium	Phoenix	\$289.73	\$9.27	\$24.02	\$323.02
	Tucson	\$308.25	\$3.40	\$25.03	\$336.68
	Flagstaff	\$137.92	\$1.20	\$11.17	\$150.29
	Yuma	\$125.70	\$0.80	\$10.16	\$136.66
Low	Phoenix	\$134.52	\$9.27	\$11.55	\$155.34
	Tucson	\$153.15	\$3.40	\$12.58	\$169.13
	Flagstaff	\$92.50	\$1.20	\$7.52	\$101.22
	Yuma	\$69.46	\$0.80	\$5.65	\$75.91

Office of the Director

150 North 18th Avenue, Suite 500
Phoenix, Arizona 85007-3247
(602) 542-1025
(602) 542-1062 FAX

JANET NAPOLITANO, GOVERNOR
SUSAN GERARD, DIRECTOR

October 13, 2006

Mr. Richard Stavneak
Director, Joint Legislative Budget Committee
1716 West Adams
Phoenix, Arizona 85007



Dear Mr. Stavneak:

Thank you for allowing the Department of Health Services to respond to the findings in the Reports on the Actuarial Audit of the Department of Health Services Children's Rehabilitative Services and Behavioral Health Services for Fiscal Year 2006 that were prepared by Lewis & Ellis, Inc. The response is as follows:

Children's Rehabilitative Services:

Pages 5, 16-18, 26: Administration expense factors for Tucson, Flagstaff and Yuma

Administration expense factors of 23% to 30% are above those typically seen in commercial health insurance. However, given the contractual requirements, and size, of the three smallest CRS contractors (i.e., their CRS program revenue base); we believe the factors within the SFY06 capitation rates are reasonable and appropriate.

The chart on page 17 of the draft L&E report, and accompanying discussion, is problematic. Actuarially sound Medicaid capitation rates are required to be developed for Medicaid eligibles utilizing only Medicaid expenses. Even if the chart developed reasonable factors, it is highly unlikely the Centers for Medicare & Medicaid Services (CMS) would allow the administrative component to be developed utilizing a hospital's total revenue and expenses, including those to provide care for Commercial, Medicare, TRICARE, and uninsured patients. Due to the size of the three smallest CRS contractors compared to Phoenix CRS, a differential of only 5% in their respective CRS contractor administrative load factors does not reflect clinic costs. Using the projected SFY06 CRS-specific capitation revenue (Phoenix = \$37.4 million; Tucson = \$14.5 million; Flagstaff = \$3.7 million; Yuma = \$1.7 million), Phoenix CRS is 2.6 times larger than Tucson CRS, and Tucson CRS is 3.9 times

larger than Flagstaff CRS and 8.5 times larger than Yuma CRS. Various fixed costs to run a clinic exist for all four CRS contractors that must be maintained despite the size of the contractor and its respective membership.

Pages 5, 12-14, 26: Trend Documentation

The actuarial certification letter is designed to meet the needs of many actual and potential, audiences, including CRS Administration, AHCCCS Administration, CMS, JLBC, and the four CRS regional contractors. Including within the certification the detailed trend information suggested by L&E may unnecessarily add to the cost of the program, both in consulting fees, and potentially in higher capitation rates, through the negotiation process. The underlying source data, information, and assumptions with regards to trend or other components can be supplied as needed with out including this in the certification letter.

Pages 6, 24, 26: Benefits Documentation

Under the Arizona 1115 waiver, all medically necessary Children's Rehabilitative Services are covered. The Federal Government has approved the benefit package under the current 1115 waiver. As such, the Department is not certain what Lewis and Ellis mean by "extraneous benefits" and "non-mandated benefits".

Behavioral Health Services:

Pages 5, 12, 13, 19: Flat Administration

Each year the actuaries and the Department work together to develop capitation rates that take into consideration historical expenses. This analysis includes a complete analysis of the Regional Behavioral Health Authorities (RBHA) actual administration expenses. Based on this, we believe the current 7.5% is reasonable. In 2006, the average RBHA administrative expense for Title XIX and Title XXI was 7.1% and 7.3% respectively.

In addition to reviewing historical administration expenses, the Department and its actuaries must take into consideration the current contract between the RBHAs and the Department. This contract not only allows for a 7.5% administration expense before the calculation of maximum profits.

A flat per-member per-month (PMPM) administration approach may actually have the effect of increasing the effective percentage. For example, when the FY07 Title XIX SMI rates dropped, the

Mr. Stavneak
October 13, 2006
Page 3

effect of keeping administration rates at a 7.5% actually had the effect of keeping costs lower than what they would have been under a flat PMPM approach.

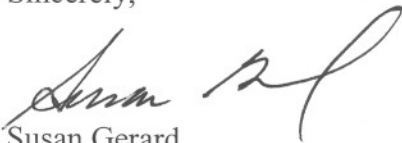
Pages 5, 17, 19: Benefits Documentation

Under the Arizona Medicaid Plan 1115 waiver, all medically necessary behavioral health services are covered. The State Medicaid Agency and CMS has approved the benefit package under the current 1115 waiver. As such, the Department is not certain what Lewis and Ellis means by "extraneous benefits" and "non-mandated benefits".

If you need additional information, please contact Theresa Garcia, Central Budget Office Director, at 542-1266.

Thank you.

Sincerely,



Susan Gerard
Director

SG/tsg

- c: George Cunningham, Deputy Chief of Staff, Finance/Budget, Governor's Office
- January Contreras, Policy Advisor for Health, Governor's Office
- Gary Yaquinto, Budget Director, Office of Strategic Planning and Budgeting
- Ryan Harper, Budget Analyst, Office of Strategic Planning and Budgeting
- John Malloy, Fiscal Analyst, Joint Legislative Budget Committee
- Eddy Broadway, Deputy Director, Behavioral Health Services, DHS
- Chris Petkiewicz, Chief Financial Officer, Behavioral Health Services, DHS
- Joan Agostinelli, Office Chief, Office of Children with Special Healthcare Needs, DHS
- Cynthia Layne, Chief Financial Officer, Office of Children with Special Healthcare Needs, DHS

**REPORT ON THE ACTUARIAL AUDIT OF
THE DEPARTMENT OF ECONOMIC SECURITY
DIVISION OF DEVELOPMENTAL DISABILITIES PROGRAM
FOR CONTRACT YEAR 2005**

**PRESENTED TO
ARIZONA JOINT LEGISLATIVE BUDGET COMMITTEE**

**Prepared by:
Lewis & Ellis, Inc.
Actuaries & Consultants
Overland Park, Kansas**

September 12, 2006

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DES Division of Developmental Disabilities Program

INTRODUCTION

Lewis & Ellis, Inc. was engaged by the Arizona Joint Legislative Budget Committee (the Committee) to conduct an actuarial study of capitation rates in the Department of Economic Security Division of Developmental Disabilities Program (the Program).

Our review was to:

- a) Determine the validity of the data used by the actuary in setting the capitation rates;
- b) Determine whether or not the department is operating in accordance with principles and practices prescribed by the Actuarial Standards Board;
- c) Determine whether or not the department is operating within the Federal requirements for an actuarially sound system;
- d) Determine the reasonableness and appropriateness of plan assumptions;
- e) Provide an analysis of the consistency of assumptions and methods for contract years 2004 and 2005.

This report presents our findings and describes the methodology used in our review. Observations are included.

This report has been prepared in conformity with consideration of appropriate actuarial standards of practice for the express purpose to which it was intended. The purpose of this report is to communicate our review of the capitation rate development for the Department of Economic Security (DES). Judgments made as to the assumptions, data, methodologies, results and recommendations found in the report should only be made after careful consideration of the report in its entirety. The use of this report by parties outside of the Committee is not recommended. Outside parties use this report at their own risk.

DES Division of Developmental Disabilities Program

Our conclusions are based on information supplied by DES, especially the Division of Developmental Disabilities actuarial certifications, files, workpapers and correspondence provided by DES in response to our questions. If any information was inaccurate, it may require us to revise our conclusions and opinions.

Lewis & Ellis, Inc. is available to answer any questions that may be raised by this report. Please direct any inquiries to Tom Handley or Karen Elsom in our Overland Park office.

By:

Tom Handley, FSA, MAAA
LEWIS & ELLIS, INC.
Actuaries & Consultants
10561 Barkley, Suite 470
Overland Park, KS 66212
Telephone: (913) 491-3388
THandley@LewisEllis.com

Karen E. Elsom, FSA, MAAA
LEWIS & ELLIS, INC.
Actuaries & Consultants
10561 Barkley, Suite 470
Overland Park, KS 66212
Telephone: (913) 491-3388
KElsom@LewisEllis.com

September 12, 2006

DES Division of Developmental Disabilities Program

EXECUTIVE SUMMARY

This report presents the results of the basic examination steps performed by Lewis & Ellis, Inc. during audit of the Department of Economic Security Division of Developmental Disabilities Program. We were provided detailed information from the Program on the development of the capitation rates. We reviewed and analyzed the information and data. We found the assumptions and methodology used to develop the capitation rates reasonable. We made the following observations and recommendations.

- According to AHCCCS, about 85% of the DDD encounters are missing for the time period January 1, 2004 through July 31, 2004. The portion of missing encounter data for this Program is well above the norms in the industry. AHCCCS and DDD are working to resolve the encounter data reporting issues. Because the encounter data was not used as the basis for the CY2005 capitation rates, but only as a consideration in the development of trend factors, we do not believe that the missing encounter data impacted the level of the CY2005 capitation rates. However, we do believe that accurate encounter data is essential for monitoring and ensuring the adequacy and reasonableness of the capitation rates.
- We recommend that the Arizona Health Care Cost Containment System (AHCCCS) monitor the actual non-behavioral health administration expenses included in the capitation rates and make adjustments to those expenses where necessary.
- We recommend that the share of cost amounts collected from members be tracked so a better estimate of the share of cost adjustment to the capitation rates can be determined.

DES Division of Developmental Disabilities Program

- We would recommend that in the future, the actuary identify separately the cost for mandated benefits and the cost for additional non-mandated benefits (if any) covered by the Program.

DES Division of Developmental Disabilities Program

BACKGROUND

Windy Marks of AHCCCS assisted the Department of Economic Security, Division of Developmental Disabilities (DDD) in developing the capitation rates for the various Program components for Contract Year 2004 (CY2004) and Contract Year 2005 (CY2005). Ms. Marks provided an actuarial memorandum to DES which outlined her methodology in developing the proposed Capitation Rates.

GENERAL DESCRIPTION OF REVIEW PROCEDURES

The first step in conducting our audit was to gain familiarity with the Program. This included a review of the CY2005 actuarial memorandum developed by Ms. Marks, the Health Practice Council of the American Academy of Actuaries Practice Note on the Actuarial Certification of Rates for Medicaid Managed Care Programs, the applicable Actuarial Standards of Practice as promulgated by the Actuarial Standards Board and the federal Medicaid Managed Care regulation. Preliminary discussions were held with the Arizona Joint Legislative Budget Committee as well.

We requested information from DES including, but not limited to historical enrollment data and workpapers showing the development of trend factors and other program changes. We corresponded with DES personnel to gain a better understanding of the Program's practices and procedures.

The actuarial methods and assumptions underlying the significant actuarial items were reviewed for reasonableness and consistency. We corresponded with DES personnel who then provided additional information.

DES Division of Developmental Disabilities Program

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DES Division of Developmental Disabilities Program

VALIDITY OF DATA

The CY2005 capitation rates were developed as a rate update from the CY2004 capitation rates. The CY2005 rates are effective for eighteen months for the period January 1, 2005 through June 30, 2006. Because the membership base for this Program is small, the use of the prior year capitation rates is reasonable. The encounter data for a small program can vary considerably from year to year and may not always be credible.

DES reviewed both financial data and encounter data in its verification of the prior year capitation rates and the development of the current year capitation rates. The encounter data is often significantly lower than the reported financial data. According to AHCCCS, they are missing about 85% of the DDD encounters for the time period January 1, 2004 through July 31, 2004. The portion of missing encounter data for this Program is well above the norms in the industry. AHCCCS and DDD are working to resolve the encounter data reporting issues. Encounter underreporting is not uncommon where providers are paid on a capitation basis, as there is not always an incentive for providers to report encounters. Because the encounter data was not used as the basis for the CY2005 capitation rates, but only as a consideration in the development of trend factors (which is discussed in the Assumptions section), we do not believe that the missing encounter data impacted the level of the CY2005 capitation rates. However, we do believe that accurate encounter data is essential for monitoring and ensuring the adequacy and reasonableness of the capitation rates.

We did compare the financial data for the period October 1, 2003 through June 30, 2004 to the capitation rates paid for the same period. Our comparison was performed on both a category of

DES Division of Developmental Disabilities Program

service (COS) basis and in total. The capitation rates for each COS (excluding behavioral health) were within about 5% of the financial data. In total, the capitation rate per member per month (PMPM) was within 1.5% of the total PMPM for non-behavioral services reported in the financial statements. The capitation rate PMPM in the financial statements is slightly higher than what was paid for the CY2004 period. Therefore, we believe the starting basis for the CY2005 capitation rates is reasonable.

As is noted in the actuarial memorandum in the section Actuarial Pricing Adjustments, the behavioral health capitation rates for CY2004 were underpriced. In reviewing the behavioral health data, we verified that the actual results from the financial reports reflected much higher behavioral health service expenses than were originally included in the CY2004 capitation rate. Thus, an additional adjustment for this COS was warranted.

Based on our examination of the data available at the time of the original review, the base data used and the methodology applied to adjust it to expected levels are reasonable.

DES Division of Developmental Disabilities Program

ASSUMPTIONS

DES provided us with the spreadsheets used as the basis for the trend factors applied to the base CY2004 capitation rates. Various sources were reviewed in the development of the trend factors by COS. These sources included financial data, encounter data, Statewide Elderly and Physically Disabled (EPD) trends and Medicaid trends for the Acute COS only. The financial data and encounter data used in the review is for the period July 1, 2002 through June 30, 2004. Regression analysis is performed on the data to determine the financial and encounter trends experienced for the period. The actuary assigned weights to the trend factors from the various sources to determine the overall expected trend factor for each COS. The weights applied were based on the actuary's assessment of the credibility of the source data. The period for application of the trend factors was 16.5 months. We verified that this is the time from the midpoint of CY2004 to the midpoint of CY2005. We believe the methodology used in the development of the trend factors and the application to the CY2004 capitation rates by COS is reasonable

As noted in the previous section, an additional pricing adjustment was applied to the behavioral health capitation rates to reflect underpricing in the CY2004 rates. When comparing the financial data for the 12 months ending June 30, 2004 we found that the actual experience reported in the financial statement was significantly higher than the original estimate included in the CY2004 capitation rate. We compared the CY2005 proposed rate to the financial data experienced through June 30, 2004 and trended forward to the midpoint of the CY2005 period and found the results to be reasonable.

DES Division of Developmental Disabilities Program

An administrative load of 8.379% is built into the capitation rates for non-behavioral health services. This is comprised of a load of 8.3% for general administration and .079% for behavioral health transition expenses. The total administrative load for behavioral health services is 7.3% which is comprised of 3.3% for administration and 4% for Regional Behavioral Health Services. According to Shelli Silver of AHCCCS, the administration expense percentage usually stays the same each year. They do consider increases in salaries and other expenses when setting the administration expense percentage. She also stated that they do compare the capitation administration expense PMPM to the financial statement administration expenses PMPM and adjust the administration expense percentage where appropriate.

The trends in non-behavioral health services are fairly low and thus the overall non-behavioral health expense trend from CY2004 to CY2005 was only 2.17%. The trend appears reasonable, however, in reviewing the actual administration PMPM from the financial data for the 12 month period from July 1, 2003 through June 30, 2004, the administration PMPM built into the non-behavioral health capitation rates was high by about \$9 PMPM. We did also note that the administration expenses for the quarter ending June 30, 2004 were significantly higher than the prior 3 quarters. Thus, at this time, we do not recommend that a change in the level of the administration PMPM be made. However, we would recommend that AHCCCS continue to closely monitor the actual non-behavioral health administration PMPM to those included in the capitation rates and make adjustments if the excess continues.

The trends which were applied to the behavioral health administration expense PMPM (29.9%) do appear to be considerably higher than would normally be expected for administration

DES Division of Developmental Disabilities Program

expenses. However, we did review both the trends in the behavioral health administration expenses in the financial data and the actual behavioral health administration expenses PMPM. The administration expense trend has been about 16%. In addition, the expense included in the capitation rate for CY2004 was lower than the actual experienced as reported in the financial data. When both the trend and the actual PMPM level are considered, the projected administration expense PMPM for behavioral health services which is included in the CY2005 capitation rate appears reasonable. We would expect that the Behavioral Health administration expense trend will be much lower in future years now that the PMPM level is commensurate with actual results.

An additional load of 1.5% for non-behavioral health services and 3.0% for behavioral health services is included for risk and contingencies. A 2% load of the total capitation rate is included for premium tax. A 2% premium tax became applicable in October, 2003.

An updated actuarial memorandum was developed to account for a programmatic change which was legislated by the Arizona State Legislature. Effective July 1, 2005 a provider rate increase was legislated by the Arizona State Legislature to increase community based service providers and independent service agreement providers to 97.61% of market rates for all services on the published schedule. For most services this represented an increase of 1.94% from their previous 95.75% benchmark to the revised 97.61% benchmark. For the day treatment and employment services, the previous benchmark was significantly below the 97.61% benchmark are required substantial increases. These increases only applied to Ventilator Dependent services and non-ventilator dependent HCBS services. Adjustments were also applied to the risk and contingency

DES Division of Developmental Disabilities Program

PMPM and the premium tax PMPM as these are based solely on a percentage of the capitation rate. The administrative PMPM did not change, thus the overall administrative percentage applied to the net capitation rate will likely be reduced in future contract year calculations.

For certain long term care services members are required to contribute toward the cost of care based on their income and type of placement. Generally only institutionalized members sustain a share of cost. This is a very small portion of the total members in the DES/DDD population. DES/DDD is responsible for collecting their members' share of cost. The estimated share of cost amount of \$2.88 for the non-ventilator dependent population is deducted from the capitation rates. This is estimated as 0.1% of the gross claim PMPM. For prior year capitation rate development, no adjustment had been made for share of cost. Thus, the CY2006 adjustment is just an estimate based on judgment. We would recommend that the share of cost amounts collected from members be tracked so a better estimate of the adjustment can be determined.

The budget impact of the proposed CY2005 rates was calculated based on the annualized August 2004 member months. Thus, the total dollar expenditure was based on the known population at the time of the review. No estimation of the population changes were included in the total budget calculation. When the actuarial memorandum was updated to reflect the programmatic changes legislated by the Arizona State Legislature, they reflected a combination of actual member months plus projections of member changes for the future period. We believe the incorporation of projected member changes for the future period will give a more accurate projection of the total cost of the Program and recommend that this method be used going forward.

DES Division of Developmental Disabilities Program

We reviewed the reports for both CY2004 and CY2005. The methodology used in developing the capitation rates is essentially the same for both years. We believe the overall methodology is reasonable. The development of the assumptions used in the methodology is very similar between the two fiscal years. We also reviewed the actuarial memorandum for the interim change in the CY2004 rates. This change was due to the provider rate increase legislated by the Arizona State Legislature and was effective July 1, 2005. As is appropriate, the Administration PMPM remained unchanged and thus became a lesser percentage of the capitation rate. The premium tax and the Risk/Contingency amount did increase as these are a set percentage of the capitation rate.

DES Division of Developmental Disabilities Program

COMPLIANCE WITH REGULATIONS AND ACCEPTED PRACTICE

Actuarial Standards of Practice (ASOPs) emphasize process over outcome. They are intended to provide actuaries with a framework for performing professional assignments and to offer guidance on relevant issues, recommended practices, documentation, and disclosure. The ASOPs intentionally leave significant room for the actuary to use professional judgment when selecting methods and assumptions, conducting an analysis, and reaching a conclusion.

Currently, no ASOP applies specifically to actuarial work performed to comply with CMS requirements for rate certification. Some health-related ASOPs have scopes that apply specifically to actuarial work performed on behalf of health plans. Other health-related ASOPs are general, so they apply both to health actuarial work performed for health plans or to health actuarial work performed for purchasers for health plan services. We believe the main ASOPs (shown in Appendix A) applicable to the development of capitation rates for this Program are the following:

ASOP 8	Regulatory Filings for Health Plan Entities
ASOP 23	Data Quality
ASOP 25	Credibility Procedures Applicable to Accident and Health, Group Term Life, and Property/Casualty Coverages
ASOP 31	Documentation in Health Benefit Plan Ratemaking
ASOP 41	Actuarial Communications

These ASOPs should be applied in conjunction with the Medicaid managed care regulation 42 CFR 438.6. Regulation 42 CFR 438.6 defines actuarially sound capitation rates as capitation rates that:

DES Division of Developmental Disabilities Program

- a) have been developed in accordance with generally accepted actuarial principles and practices
- b) are appropriate for the populations to be covered, and the services to be furnished under the contract; and
- c) have been certified by actuaries who meet the qualification standards established by the American Academy of Actuaries and follow the practice standards established by the Actuarial Standards Board.

Benefits to be included in these actuarially sound rates are only those required to be covered by the Federal regulations. Extraneous benefits which may be provided by the Program should be excluded from the capitation rate calculation. Thus, program changes should only reflect those which are required by Federal regulation. Funding for extraneous benefits should be obtained from other sources unless agreed upon by the state legislature. We did not receive enough information to verify whether non-mandated benefits were included in the capitation rates developed for the Program. We would recommend that in the future, the actuary identify separately the cost for mandated benefits and the cost for additional non-mandated benefits (if any) covered by the Program.

A checklist was developed based on these regulations as a tool for Regional CMS Offices for use in approving rates. This checklist is often followed by actuaries in outlining the steps taken to determine the actuarial sound rates. The checklist suggests that the following items be addressed in filings:

Overview of rate setting methodology

DES Division of Developmental Disabilities Program

- Actuarial certification
- Projected expenditures
- Procurement, Prior approval and rate setting
- Risk contracts
- Limit on payment to other providers
- Rate modifications

We did verify that all applicable items on the checklist were covered in the actuarial memorandum. The actuary includes a section which outlines where each item is addressed in the memorandum. For items which were not applicable the actuary gave an explanation as to why they did not apply. Based on our review, we believe the Program is operating within the Federal requirements for an actuarially sound system.

CONCLUSION

We believe the overall methodology used in developing the statewide capitation rates is reasonable. Trends applied in the development of the capitation rates consider several sources. The trend levels appear reasonable. Administration expenses PMPM are in line with those reported in the financials. They appear to have addressed all relevant items in the CMS checklist in developing the capitation rates. We did make the following recommendations:

- AHCCCS should continue to closely monitor the actual non-behavioral health administration PMPM to those included in the capitation rates and make adjustments where necessary so expenses paid are close to those actually incurred.
- The share of cost amounts collected from members should be tracked so a better estimate of the share of cost adjustment can be determined.
- The actuary identify separately the cost for mandated benefits and the cost for additional non-mandated benefits (if any) covered by the Program.



ARIZONA DEPARTMENT OF ECONOMIC SECURITY

1717 W. Jefferson • P.O. Box 6123 • Phoenix, AZ 85005

Janet Napolitano
Governor

Tracy L. Wareing
Director

OCT 13 2006



Richard Stavneak
Director, Joint Legislative Budget Committee
1716 West Adams
Phoenix, Arizona 85007

Dear Mr. Stavneak:

Thank you for the opportunity to review and comment on the draft studies conducted by Lewis & Ellis, Inc. regarding the actuarial methods and assumptions used by the Arizona Health Care Cost Containment System (AHCCCS) in the development of the capitation rates for the Department's Title XIX Developmental Disabilities program and Comprehensive Medical and Dental Program (CMDP).

The Department acknowledges that Lewis & Ellis, Inc. found that the assumptions, methodology, and trend rates used to develop the capitation rates are reasonable. Following are the Department's comments on the observations and recommendations included in the studies.

In both studies, Lewis & Ellis, Inc. observed problems with encounter data. As noted in the reports, these problems have not impacted the integrity of the capitation rates and the Department has been working with AHCCCS to resolve these issues. Both studies also recommend that the cost of mandated and non-mandated benefits be separately delineated; however, neither program's capitation rate includes costs that are not mandated by AHCCCS.

Specific to the CMDP study, the report identifies the Arizona Health Care Cost Containment System Comprehensive Medical and Dental Program as "the Program". AHCCCS and CMDP are, however, separate and distinct entities. Use of "the Program" in the report typically refers to AHCCCS, but in some instances appears to be referencing CMDP. The distinction between the entities should be clarified prior to completion of the final report. The CMDP study recommends that AHCCCS' information system be enhanced to improve reporting of encounter data. As this recommendation relates to AHCCCS' system, the Department does not have a position.

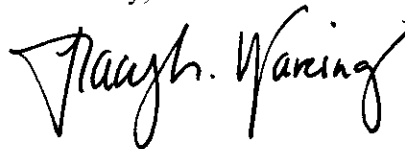
The Developmental Disabilities study recommends that AHCCCS monitor the actual non-behavioral health administration expenses included in the capitation rates and make adjustments

to those expenses where necessary. The Department agrees that all expenses should be monitored and adjusted accordingly, but notes that the administrative component of the capitation rate is set by AHCCCS at the level deemed necessary to operate the program and ensure the health and safety of clients. The fiscal year 2007 capitation rate includes \$211.72 per member, per month, for administrative costs, but the program has received appropriation authority of less than \$75.00 per member, per month. The Department's fiscal year 2008 budget request includes additional funding to increase program monitoring and administrative oversight. Additionally, Lewis & Ellis, Inc. recommended that share of cost collections be tracked. This data is tracked and is available to AHCCCS' actuaries.

The Department appreciates the opportunity to provide comment prior to the finalization of the studies and the October 24, 2006 presentation to the JLBC Subcommittee.

If you have any questions, please contact me at (602) 542-5757.

Sincerely,

A handwritten signature in black ink, reading "Tracy L. Wareing". The signature is written in a cursive style with a large, stylized initial "T".

Tracy L. Wareing
Director



September 7, 2006

1184-001

Arizona Joint Legislative Budget Committee
1716 West Adams Street
Phoenix, Arizona 85007

Attn: Mr. Richard Stavneak
Director

Actuarial Audit of the Contribution Strategy Workers Compensation, Liability and Property Programs

The Arizona Joint Legislative Budget Committee (JLBC) requested ARM Tech to perform an actuarial audit (peer review) of the contribution strategy of the self-insured programs (the Program) that are managed by the Arizona Department of Administration, Risk Management Section (RMS). These programs include workers compensation, general liability, medical malpractice, environmental liability and property, fidelity and surety, auto liability, auto physical damage and buildings & contents. Aircraft and international programs are outside the scope of the study.

Findings

We have reviewed the cost allocation documentation (prepared by Watson Wyatt Worldwide, dated November 1995, included here in the Appendix) and the spreadsheets containing the cost allocation calculations for fiscal years 2006 and 2007. The spreadsheets were provided by RMS. The broad scope of work is to independently evaluate the validity of the contribution strategy for plan year 2006. The key components of the work and our findings are:

- **Review the appropriateness of the rating base for each program.** The rating base for each program is appropriate. Assumed to correlate directly with losses, the chosen bases are consistent with those commonly used. They correlate with losses as well as any alternatives that may be considered and are practical in that the information is readily available. Rating bases (alternatively called exposure bases) for the different programs are listed in the Appendix.
- **Consider the balancing issue of rate stability and responsiveness to loss history in the process of determining each agency's premium.** The plan provides a reasonable balance between rate stability and responsiveness to individual member's loss

history. The contribution strategy achieves this balance by limiting loss to a specified amount per claim and by using 5-year claim experience for the liability programs (where claim settlement takes multiple years after the claim-causing incident) and 2-year claim experience for the quick-closing programs (auto physical damage and buildings and contents). Use of unlimited losses will certainly increase responsiveness to actual losses incurred by member agency but would likely cause unacceptably large fluctuations in contribution rates from one budget cycle to the next. Likewise, adding more years in the experience period may improve stability but will diminish responsiveness when the older information is different from the recent years' experience.

Due to the infrequent but potentially expensive nature of environmental claims, allocation of future costs for the environmental program is based solely on exposures. Loss experience would be an unstable indicator of future loss experience.

- **Evaluate whether the rate setting method and premium calculation plan are designed to be understood by agency managers.** The rate setting method and premium calculation plan are designed to be understood by agency managers. The method is simple and objective (see cost allocation example in the Appendix). Member premium, which is based on the member's share of the total exposures, is modified by comparing the member's loss experience to the RMS total loss experience. Members with better-than-average loss experience would have a lower share of the costs than members with worse-than-average experience. The measure used to modify individual premium is based on relative loss ratio for each member. Relative loss ratio (also called experience modifiers or ex-mods) is % losses (as percentage of RMS total) divided by % exposure (percentage of RMS total).

For workers compensation, the loss experience modifier is based on the NCCI's experience rating plan. NCCI (National Council of Compensation Insurance) is a non-profit statistical and ratemaking association of workers compensation companies. Although the formula appears complex, cost allocation by members is essentially based on individual member actual losses relative to expected losses. Expected losses are based on payroll and industry-based parameters.

- **Determine whether experience-rated premiums (if any) provide the revenue needed to achieve funding goals.** The funding is based on projected aggregate payments to be made in the upcoming two fiscal years. These payments are projected in the actuarial report prepared

for RMS. This aggregate amount ensures that sufficient funds will be collected from the agencies. The aggregate payments are then allocated to agencies based on exposures (e.g., payroll) of each agency. The exposures are modified using formulas to reflect agencies' claims experience. The modified exposures are then adjusted (via an off-balance factor) to ensure that the projected aggregate amounts are collected.

- **Evaluate the timing of the premium development process to determine whether it is likely to provide premiums to agencies early enough in the budgeting cycle.** Cost allocation amounts are established every two years. For example, budgets for fiscal years 2005/06 and 2006/07 are based on actuarial projections as of June 30, 2004 that were made available to state agencies in September 2004. This allows ample time for agencies to incorporate them into their budgets for fiscal years 2005/06 and 2006/07.

Recommendations

Overall, the State's contribution strategy is easy to understand and designed to generate funding sufficient to cover the Program's funding needs. More importantly, it rewards agencies with better-than-average loss experience. For enhancements, we recommend the following:

- For workers compensation, consider using an even more simplified experience rating plan that relies on RMS loss and exposure data in lieu of industry parameters. This alternate plan would be similar to the experience rating plan used for the other self-insurance programs managed by RMS.

Although the NCCI plan is currently automated (and, therefore, easy to administer despite the complex formulas), simplifying the plan would enable RMS' own unique claim experience to be reflected, as well as ease of understanding by agency managers.

- We noted significant premium changes (decreases and increases) between 2005 and 2006 for some members. For example, for general liability, 16% of the members had premium increase over 50% and 3% of the members had premium decrease more than 50%. RMS may wish to consider capping these premium changes to plus/minus 25%, especially for those members where there is no significant change in volume of exposures. However, other members will have to pay more if premium increases are capped at 25% for some members (and, equivalently, pay less if premium decreases are capped at 25%), so that RMS collects the same total

budgeted amount before and after capping. Capping of premium changes would enhance stability for the members as they plan and budget for upcoming fiscal years.

✧ ✧ ✧ ✧ ✧

We appreciate the opportunity to be of service to JLBC, and are available to answer any questions.

Sincerely,



Mujtaba Datto, ACAS, MAAA
Actuarial Practice Leader



Emma M. McCaffrey, ACAS, MAAA
Senior Consultant and Actuary

MD/EMM:pem

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Enc.

Appendix

*State of Arizona
Cost Allocation Presentation*

*Watson Wyatt Worldwide
San Francisco
November 1995*



State of Arizona - Cost Allocation Presentation

THREE PRIMARY GOALS OF THE NEW ALLOCATION SYSTEM

1. Stability of year-to-year allocations
2. Responsiveness to loss experience
3. Simplicity.

ALLOCATION MODEL IS APPLIED SEPARATELY BY LINE OF COVERAGE

- General liability
 - ⇒ Criminal justice
 - ⇒ Highway operations
 - ⇒ Employment practices
 - ⇒ Other
- Auto liability
- Auto physical damage
- Medical malpractice
- Building and contents
- Environmental liability
- Environmental property damage.



State of Arizona - Cost Allocation Presentation

NEW ALLOCATION SYSTEM IS MUCH SIMPLER THAN OLD MODEL

OLD MODEL

Numerous actuarial factors:

- Incurred loss development factors
- Paid loss development factors
- Payment percentages by fiscal year/calendar year
- Loss trend
- Exposure trend
- Credibility constant
- Increased limits factor
- Limited loss rate
- Unlimited loss rate
- Method weights

Run on main frame computer.

NEW MODEL

One factor: credibility. The new model is completely driven by the agencies' historical loss and exposure experience.

New model run on spreadsheet program on PC.



AMMENDMENT TO COST ALLOCATION

EXPOSURE BASES BY LINE OF COVERAGE

The following table summarizes the types of exposures used in the allocation system for each line of coverage.

Line of Coverage	Exposures
General Liability	
-Criminal Justice	Not Applicable
-Highway Operations	Not Applicable
-Employment Practices	FTEs
-Other	FTEs
Auto Liability	Vehicles
Auto Physical Damage	Vehicles
Medical Malpractice	Based on professional staff by classification
Building and Contents	Total Insured Value (\$000s)
Environmental Liability	UST and Hazardous Sites, based on weighted loss history
Environmental Property Damage	UST and Hazardous Sites, based on weighted loss history
Note: For Criminal Justice and Highway Operations, allocations are based 100% on loss experience, and therefore no exposures are used.	

Agencies w/ ^{Police} officers

ADOT

AMMENDMENT TO COST ALLOCATION

EXPERIENCE, FREQUENCY CAP AND SEVERITY CHARGE

The following table summarizes the experience period, loss limits, and severity charges used in the cost allocation system.

Line Of Coverage	Experience Period		Incurred Losses	
	Number of Years	Ending With	Frequency Cap	Severity Charge
General Liability -Criminal Justice -Highway Operations -Employment Practices -All Other	5	Prior FY	\$100,000	10% of all claims > \$1,000,000
Auto Liability	3	Prior FY	\$100,000	10% of all claims > \$1,000,000
Auto Physical Damage	2	Current FY	Unlimited	Unlimited
Medical Malpractice	2	Prior FY	\$100,000	10% of all claims > \$1,000,000
Buildings and Contents	2	Current FY	Unlimited	Unlimited
Environmental Liability*	N/A	N/A	N/A	N/A
Environmental Property*	N/A	N/A	N/A	N/A
* For Environmental Liability and Environmental Property Damage, allocations are based 100% on exposures, and therefore no losses are used.				

State of Arizona - Cost Allocation Presentation

STABILITY VS. RESPONSIVENESS		
	Stability	Responsiveness
Lengthen Experience Period	↑	↓
Increase Loss Limit	↓	↑



State of Arizona - Cost Allocation Presentation

SPECIAL SITUATIONS

Agencies with losses but no exposures

Assigned a credibility of 1.00. The allocation is developed based 100% on loss experience for the agency.

New agencies

Allocation based on exposures.

Environmental lines of coverage

For environmental exposures, loss experience is less indicative of future losses than current exposures. Future allocations are based solely on exposures.



State of Arizona - Cost Allocation Presentation

COST ALLOCATION EXAMPLE

STEP 1 - SUMMARIZE EXPERIENCE

STEP 2 - COMPARE ACTUAL TO EXPECTED EXPERIENCE

STEP 3 - CALCULATE CREDIBILITY

STEP 4 - CALCULATE INITIAL MODIFICATION FACTOR

STEP 5 - CALCULATE INDICATED ALLOCATION

STEP 6 - CALCULATE FINAL ALLOCATION



Step 1

Summarize Experience

State of Arizona
Cost Allocation ExampleAuto Liability
Losses Limited to \$100,000

Agency Code	1992-93 through 1994-95		
	Number of Vehicles	Incurred Losses	Claim Counts
(1)	(2)	(3)	(4)
A	5,000	\$2,500,000	200
B	3,400	850,000	75
C	100	103,500	4
D	1	0	0
E	<u>0</u>	<u>1,500</u>	<u>1</u>
	8,501	\$3,455,000	280

Agency C Losses

Claim Number	Accident Date	Paid Losses	Case Reserves	Incurred Losses	Losses Limited to \$100,000
1	7/1/92	\$1,000	\$0	\$1,000	\$1,000
2	10/15/93	0	0	0	0
3	2/1/94	75,000	50,000	125,000	100,000
4	6/15/95	<u>0</u>	<u>2,500</u>	<u>2,500</u>	<u>2,500</u>
Totals		\$76,000	\$52,500	\$128,500	\$103,500



Step 2
Page 1

Compare Actual to Expected Experience

State of Arizona
Cost Allocation Example

Auto Liability
Losses Limited to \$100,000

Agency Code	1992-93 through 1994-95			Percent of Total	
	Number of Vehicles	Incurred Losses	Claim Counts	Exposure	Losses
(1)	(2)	(3)	(4)	(5)	(6)
A	5,000	\$2,500,000	200	58.82%	72.36%
B	3,400	850,000	75	40.00%	24.60%
C	100	103,500	4	1.18%	3.00%
D	1	0	0	0.01%	0.00%
E	0	1,500	1	0.00%	0.04%
	8,501	\$3,455,000	280	100.00%	100.00%



Step 2

Compare Actual to Expected Experience

Page 2

State of Arizona
Cost Allocation Example

Auto Liability
Losses Limited to \$100,000

Agency Code	1992-93 through 1994-95			Percent of Total		Ratio
	Number of Vehicles	Incurred Losses	Claim Counts	Exposure	Losses	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
A	5,000	\$2,500,000	200	58.82%	72.36%	1.2302
B	3,400	850,000	75	40.00%	24.60%	0.6151
C	100	103,500	4	1.18%	3.00%	2.5466
D	1	0	0	0.01%	0.00%	0.0000
E	<u>0</u>	<u>1,500</u>	<u>1</u>	<u>0.00%</u>	<u>0.04%</u>	0.0004
	8,501	\$3,455,000	280	100.00%	100.00%	

The ratio is equal to the percent of losses divided by the percent of exposures.
Note that the ratio for Agency E is equal to the percent of losses since there are no exposures.



Step 3
Page 1

Calculate Credibility

State of Arizona
Cost Allocation Example

Auto Liability
Losses Limited to \$100,000

Agency Code	1992-93 through 1994-95			Percent of Total		Ratio	Credibility
	Number of Vehicles	Incurred Losses	Claim Counts	Exposure	Losses		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A	5,000	\$2,500,000	200	58.82%	72.36%	1.2302	0.43
B	3,400	850,000	75	40.00%	24.60%	0.6151	0.26
C	100	103,500	4	1.18%	3.00%	2.5466	0.06
D	1	0	0	0.01%	0.00%	0.0000	0.00
E	<u>0</u>	<u>1,500</u>	<u>1</u>	<u>0.00%</u>	<u>0.04%</u>	0.0004	1.00
	8,501	\$3,455,000	280	100.00%	100.00%		



Step 3 - Calculate Credibility
Page 2

CREDIBILITY

Credibility is defined as "a measure of the predictive value that the actuary attaches to a particular body of data". In other words, credibility represents the relative confidence we have in the loss experience. In the allocation procedure, it is the weight given to an agency's experience. It is expressed as a number between zero and 1 (100%).

The credibility, or weight, given to each agency's loss experience is defined using one of the following formulae:

Formula One

$$Z = \sqrt{N/K}$$

Where:

N = the number of claims in the experience period

K = the credibility constant (1,082 for Auto Liability and Auto Physical Damage, 683 for General Liability - Employment Practices and General Liability - Other)

Formula Two

$$Z = E / (E + K)$$

Where:

E = the amount of exposure in the experience period

K = the credibility constant (2,036 for Medical Malpractice)

For Buildings and Contents K is solved for by setting Z equal to .70 for the agency with the greatest amount of exposure. That constant is then used for all other agencies.



Step 3 - Calculate Credibility
Page 3

Exceptions

For General Liability - Criminal Justice and General Liability - Highway Operations a credibility rating of 1.00 was given to each agency to make the allocation amount completely dependent on losses.

All agencies in the Environmental Liability and Environmental Property lines were given a credibility rating of 0.00 to make the allocation amount entirely dependent on exposure.

We select credibility standards based on insurance industry standards and our judgment. We display the various credibility standards by coverage in the following table.

Line of Coverage	Full Credibility Standard	Basis
General Liability		
Criminal Justice	100% Credibility	Losses
Highway Operations	100% Credibility	Losses
Employment Practices	683	Claim Counts
Other	683	Claim Counts
Auto Liability	1,082	Claim Counts
Auto Physical Damage	1,082	Claim Counts
Medical Malpractice	2,036	Exposure
Building and Contents	Largest Agency Assigned 70%	Exposure
Environmental Liability	0% Credibility	Exposure
Environmental Property Damage	0% Credibility	Exposure



Step 4
Page 1

Calculate Initial Modification Factor

State of Arizona
Cost Allocation Example

Auto Liability
Losses Limited to \$100,000

Agency Code	1992-93 through 1994-95			Percent of Total		Ratio	Credibility	Initial Modification Factor
	Number of Vehicles	Incurred Losses	Claim Counts	Exposure	Losses			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
A	5,000	\$2,500,000	200	58.82%	72.36%	1.2302	0.43	1.0990
B	3,400	850,000	75	40.00%	24.60%	0.6151	0.26	0.8987
C	100	103,500	4	1.18%	3.00%	2.5466	0.06	1.0940
D	1	0	0	0.01%	0.00%	0.0000	0.00	1.0000
E	0	1,500	1	0.00%	0.04%	0.0004	1.00	0.0004
	8,501	\$3,455,000	280	100.00%	100.00%			



Step 4 - Calculate Initial Modification Factor
Page 2

INITIAL MODIFICATION FACTOR

The initial modification factor is calculated using the following formula:

$$\text{MOD} = (A/B) \times Z + (1 - Z)$$

Where : A = The agency's percentage of total losses.

B = The agency's percentage of total exposures

Z = Credibility as defined in Step 3.

The purpose of this formula is to modify the agency's experience only by the amount that we believe it's experience to be reliable. The modification factor will always be somewhere between the agency's ratio of losses to the exposures and 1.00.

For Agency B:

$$A = 24.6\%$$

$$B = 40.0\%$$

$$Z = \sqrt{75/1082} = 0.26$$

$$\text{MOD} = 0.6151 \times (0.26) + (0.74) = 0.8987.$$



Step 5

Calculate Indicated Allocation

State of Arizona Cost Allocation Example

Auto Liability

Losses Limited to \$100,000

1992-93 through 1994-95										
Agency Code	Number of Vehicles	Incurred Losses	Claim Counts	Percent of Total		Ratio	Credibility	Initial Modification Factor	Indicated Allocation	
				Exposure	Losses				Percent	Dollars
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
A	5,000	\$2,500,000	200	58.82%	72.36%	1.2302	0.43	1.0990	64.64%	\$323,194
B	3,400	850,000	75	40.00%	24.60%	0.6151	0.26	0.8987	35.94%	179,713
C	100	103,500	4	1.18%	3.00%	2.5466	0.06	1.0940	1.29%	6,435
D	1	0	0	0.01%	0.00%	0.0000	0.00	1.0000	0.01%	59
E	0	1,500	1	0.00%	0.04%	0.0004	1.00	0.0004	0.04%	217
	8,501	\$3,455,000	280	100.00%	100.00%					\$509,618
Total Premium to be Allocated										\$500,000

Indicated allocation equals the product of the exposure percentage (Column 5) and the initial modification factor (Column 9).

Step 6

Calculate Final Allocation

State of Arizona Cost Allocation Example

Auto Liability

Losses Limited to \$100,000

Agency Code	Number of Vehicles	Incurred Losses	Claim Counts	Percent of Total		Ratio	Credibility	Modification Factor		Indicated Allocation
				Exposure	Losses			Initial	Adjusted	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
A	5,000	\$2,500,000	200	58.82%	72.36%	1.2302	0.43	1.0990	1.0782	\$317,095
B	3,400	850,000	75	40.00%	24.60%	0.6151	0.26	0.8987	0.8817	176,321
C	100	103,500	4	1.18%	3.00%	2.5466	0.06	1.0940	1.0734	6,313
D	1	0	0	0.01%	0.00%	0.0000	0.00	1.0000	0.9811	58
E	0	1,500	1	0.00%	0.04%	0.0004	1.00	0.0004	0.0004	213
	8,501	\$3,455,000	280	100.00%	100.00%					\$500,000
Total Premium to be Allocated										\$500,000

The adjusted modification factor is equal to the initial modification factor multiplied by the ratio of the total premium to be allocated to the total indicated allocation amount. For example, Agency B is equal to .8987 x (500,000 / 509,618).

Indicated allocation equals the product of the exposure percentage (Column 5) and the adjusted modification factor (Column 10).

TOTAL P.19

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September 7, 2006

Arizona Joint Legislative Budget Committee
1716 West Adams Street
Phoenix, Arizona 85007

Attn: Mr. Richard Stavneak
Director

Actuarial Audit of the Contribution Rates Workers Compensation, Liability and Property Programs

The Arizona Joint Legislative Budget Committee (JLBC) requested ARM Tech to perform an actuarial audit (peer review) of the self-insured programs (the Program) that are managed by the Arizona Department of Administration, Risk Management Section (RMS). These programs include workers compensation, general liability, medical malpractice, environmental liability and property, fidelity and surety, auto liability, auto physical damage, and buildings and contents. Definition of these coverages is included in the Appendix (Glossary of Actuarial Terms).

Summary

We have reviewed Milliman's actuarial projections based on the actuarial report (dated September 7, 2005) provided to us. The broad scope of work is to provide an independent review of various actuarial valuations and assumptions used in funding the Program. The specific scope of work and our findings are as follows:

- **The reasonableness and appropriateness of assumptions used in developing the rates.** The assumptions underlying the analyses, including adjustments due to data limitations, are reasonable and appropriate.
- **Appropriateness of the actuarial methods employed in the projections.** Overall, the methods applied are consistent with actuarial standards.
- **Accuracy of the calculations and application of actuarial methods.** We found no computational errors and the actuarial analysis was well documented and consistent with actuarial standards of practice.

- **Our review will check for general consistency and reasonability of the data underlying the rates, and will not include verification or audit of the data.** We did not audit or verify the data. We checked for general consistency and reasonableness of the data underlying the rates. The data appear to be reasonable
- **Overall reasonableness of the results.** Overall, our independent review produced results which were within a reasonable range of Milliman's projections.

Recommendations

Overall, the methods applied are consistent with actuarial standards and the assumptions underlying the analyses are reasonable and appropriate. However, we recommend the following enhancements:

- Include in the actuarial report an exhibit which shows large claims (over \$1 million per claim) which received particular adjustment in the analyses. Such an exhibit would provide useful information to management and for an actuarial audit process.
- Utilize an additional method to develop retained ultimate losses for general liability. Although the current method (as described in the "Retained Ultimate Losses and Reserves" section) is reasonable, an enhancement would be to develop ultimate loss projections based on limited losses.
- Develop contingency margins for property and liability coverages separately.
- To be financially prudent, RMS should consider, in consultation with its auditors, contingency reserves for environmental claims since the projected liabilities do not include any provision for late reported claims.

Data Source

The JLBC provided the "Actuarial Analysis of Self-Insurance Program valued as of June 30, 2005 (report dated September 7, 2005)" prepared by Milliman, Inc.

We relied on the data included in the above report and did not audit or perform any reasonability checks on the data. We limited our review to ensuring actuarial methods were appropriately applied and that the results were reasonable.

Methodologies

Milliman's estimation of contribution requirements for each coverage is based on three methods. These methods are described in the attached glossary.

1. Incurred loss development
2. Paid loss development
3. Cost Projection/Cape Cod Method

The above are standard actuarial methods. Each method has strengths and weaknesses, and depends on the availability of credible, appropriate data. The actuary applies judgment based on a program's context (e.g., claims settlement pattern, etc.) to select an ultimate value.

The selection of ultimate losses is based on reviewing all methodologies available and actuarial judgment. The latest fiscal years (claim periods) tend to be less mature and the incurred and paid loss development methods tend to be more volatile, hence more weight is given to the Cost Projection/Cape Cod Method. Generally, Milliman relied on the Cost Projection Method for the latest two years.

Assumptions

For all coverages, we found the selection of paid and incurred loss development factors to be reasonable. When we independently selected the loss development factors, the results were not materially different.

For workers compensation, our analysis using combined medical, indemnity and allocated loss adjustment expenses (ALAE) claims data produced results within a reasonable range when compared with Milliman's projections. Milliman's paid loss development method projections were based on a separate analysis of medical, indemnity and ALAE. Milliman's incurred loss development projections were based on combined analysis (due to data limitations) of medical, indemnity and ALAE. This is an example where data availability dictates the structure of the analysis (combined versus separate indemnity and medical). We found the overall results to be consistent between paid

(indemnity and medical separated) and incurred (combined indemnity and medical) methods.

For the cost projection methods, the selected trend factors are consistent with the trend underlying the data, and with external trends we have observed in similar programs.

The exposure bases used for the cost projection methods were vehicle count for auto liability and auto physical damage, total insured value for buildings and contents, full-time equivalent employees (FTEs) for general liability, physician-equivalent FTEs for medical malpractice and current rate level premium for workers compensation. These exposure bases are assumed to correlate directly with losses and are commonly used in cost projection methods.

Retained Ultimate Losses and Reserves

Milliman projected losses, separately by coverage, for accident years through 2005. Due to the sparsity of the data and lack of appropriate exposure data, cost projections for the environmental coverage were largely based on claims closed with payments, severity analysis and actuarial judgment.

For fidelity and surety coverage, the cost projection method was based on ultimate claim count and severity projections due to lack of appropriate exposure data needed for projecting frequencies and costs.

The selected ultimate losses for the older accident years were based on the paid and incurred development methods. For the more recent years (years with 80% or less estimated reported), selected ultimate was based on the cost projection methods.

As noted in the Milliman report, the projected ultimate losses for all coverages (except for general liability) were assumed to be below the applicable Program's self-insured retention (SIR). For general liability, total limits IBNR (incurred but not reported) projections were first developed from projected total limits losses and these IBNR projections were then adjusted for the Program's SIR. The estimated IBNRs limited to the SIRs were then added to the limited incurred losses to derive the limited (to the Program's SIR) ultimate amounts.

General liability claims with case reserves of at least a \$1 million are assumed to be adequately reserved and were not developed further. We believe this approach is reasonable since such claims tend to receive particular attention and are monitored closely by experienced, knowledgeable claims staff. For environmental claims, there were adjustments for large claims according to the notes in the exhibits.

As noted in the Milliman report, the projected liabilities for environmental coverage do not include any provision for late reported claims due to significant inherent uncertainties in projecting environmental claim costs. For such volatile claims, this is an acceptable practice.

Contribution Estimates

Contribution estimates for 2006, 2007 and 2008 were based on the cost projection method using projected frequency (number of claims per exposure unit), severity (losses per claim), loss cost (losses per exposure unit) and projected exposure counts. Frequencies, severities and loss costs were projected from the developed and trended historical claims experience. For environmental and fidelity and surety coverages, contribution amounts were based on severities and claim counts since suitable exposure data to project frequencies and claim costs were not available. We believe that this approach and the results are reasonable.

Projected Payments

Payments in 2006, 2007 and 2008 were projected for each of the coverages. These payments are the claim disbursements during 2006, 2007 and 2008, regardless of accident or report dates.

Future payments were projected from the selected paid loss development patterns and the selected ultimate amount for each accident year. For all open claims except for one large employment practices liability claim, the projected payments were based on average settlement rates indicated by the selected payment pattern. Actual payments will vary from these projected payments.

Milliman estimated projected payments at various confidence levels (70%, 80% and 90%). The projections at various confidence levels are useful in budgeting cash flow requirements of the Program, especially for the more volatile coverages (environmental and fidelity and surety coverages).

For general liability, the projected payments were adjusted for one employment practices liability claim according to the structured settlement information provided by RMS.

Contingency Margins

The methods used by Milliman to calculate contingency margins conform to standard actuarial practice. We did not have the detailed data to verify the results.

Contingency margins provide additional funding at confidence levels higher than the expected level. A confidence level is the statistical certainty that an actuary believes funding will be sufficient. Coverages that are low frequency and high severity (such as environmental liability) are subject to greater risk than coverages that are high frequency and low severity (such as automobile physical damage). Therefore, they need a greater margin to attain a given confidence level.

◇ ◇ ◇ ◇ ◇

A separate report will be prepared to summarize our actuarial audit of the contribution strategy. We appreciate the opportunity to be of service to JLBC, and are available to answer any questions.

Sincerely,



Mujtaba Dattoo, ACAS, MAAA
Actuarial Practice Leader



Emma M. McCaffrey, ACAS, MAAA
Senior Consultant and Actuary

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Appendix A

Glossary of Actuarial Terms

Glossary of Actuarial Terms

Actuarial Methods (Most Common)

A major objective of an actuarial study is to statistically project ultimate losses. The following actuarial methods are the most common:

- Paid Loss Development
- Incurred Loss Development
- Developed Case Reserves
- Frequency Times Severity Analysis
- Loss Rate Analysis
- Cape Cod Method

The following describes each method:

1. **Paid Loss Development.** Paid losses represent the amounts actually paid to claimants (less excess insurance recoveries). As time goes on, loss payments continue until all claims are closed and there are no remaining payments expected. At this time, the ultimate losses for the claim period are known. This common process is called “paid loss development.”

Paid loss development is an extrapolation of actual dollars paid. It does not depend on case reserve estimates. A potential shortcoming of utilizing this method is that only a small fraction of total payments have been made for the most recent claim periods. Extrapolating ultimate losses based on small amounts of actual payments may be speculative. A second potential shortcoming is that payment patterns can change over time.

2. **Incurred Loss Development.** Reported incurred losses are paid losses plus case reserves. In most programs, total reported incurred losses underestimate the ultimate losses. Over time, as more information about a body of claims becomes known, they are adjusted either up or down until they are closed. Though many individual claims settle for less than what was estimated, these decreases are generally more than offset by increases in the cost of other claims for which new information has emerged.

The net effect is that total estimated costs are often revised upward over time. This normal process is called “reported incurred loss development.” Actuaries typically review the development patterns of the recent past to make projections of the expected future loss development and, therefore, estimations of ultimate losses.

3. **Developed Case Reserves.** The developed case reserves method is a hybrid of the paid loss development and reported incurred loss development methods. It relies on the historical adequacy of case reserves to predict ultimate losses.
4. **Cost Projection Methods**
 - **Frequency Times Severity Analysis.** The frequency times severity analysis is an actuarial method that uses a preliminary projection of ultimate losses to project claims severity. The claims severity times the number of claims is a predictor of ultimate losses. The focus of the frequency times severity analysis is that ultimate losses each period are dependent on the number of claims.
 - **Loss Rate Analysis.** The loss rate analysis is based on the historical loss rates per exposure unit (such as payroll, vehicles or property value). The loss rates (projected ultimate losses divided by exposure units) are trended to reflect the effect of claim cost inflation and retention changes. The trended loss rates represent the rates that one would see if all of the claims had been handled in the claim cost environment that will be present in the upcoming period. The trended loss rate times the projected exposure units is a predictor of losses.
5. **Cape Cod Method.** The Cape Cod method is a combination of the paid and incurred methods and a priori expected loss amount generally estimated from historical information, pricing analyses, or budget estimate of losses. Effectively, a “credibility” weight, which is equivalent to the inverse of the loss development factor, is given to the loss development method projection and the complement of the weight is given to the a priori expected loss.

Actuary

A specialist trained in mathematics, statistics, and finance who is responsible for rate, reserve, and dividend calculations and other statistical studies.

Allocated Loss Adjustment Expenses

Allocated loss adjustment expenses (ALAE) are the direct expenses to settle specific claims. These expenses are primarily legal expenses.

Governmental Accounting Standards Board (GASB) Statement No. 10 requires that ALAE be included in financial statements and that they be calculated by actuarial methods.

American Academy of Actuaries

A society concerned with the development of education in the field of actuarial science and with the enhancement of standards in the actuarial field. Members may use the designation MAAA (Member, American Academy of Actuaries).

Benefits

The financial reimbursement and other services provided insureds by insurers under the terms of an insurance contract. An example would be the benefits listed under a life or health insurance policy or benefits as prescribed by a workers compensation law.

Casualty Actuarial Society

A professional society for actuaries in areas of property and casualty insurance work. This society grants the designation of Associate of the Casualty Actuarial Society (ACAS) and Fellow of the Casualty Actuarial Society (FCAS).

Claim

Demand by an individual or entity to recover for a loss.

Confidence Level

A confidence level is the statistical certainty that an actuary believes funding will be sufficient. For example, an 80% confidence level means that the actuary believes funding will be sufficient in eight years out of ten.

Confidence levels are determined based on mathematical models. Coverages that are low frequency and high severity (such as excess liability) are subject to greater risk than coverages that are high frequency and low severity (such as automobile physical damage). Therefore, they need a greater margin to attain a given confidence level.

GASB Statement No. 10 requires public entities to use “expected” amounts as a liability in financial statements. Expected corresponds to approximately a 55% confidence level. Amounts above expected are prudent, but should be considered equity (not a liability).

Contingency Margin

Contingency margins provide additional funding at confidence levels higher than the expected level (approximately 50% to 55% confidence level).

Coverage

The scope of the protection provided under a contract of insurance.

- **Auto Liability**
Coverage for damages for which the insured is legally liable for bodily injury or property damage caused by an occurrence arising out of the ownership or use of an automobile.
- **Auto Physical Damage**
Coverage for direct and accidental damages to the insured automobile, including collision, theft, fire, vandalism, falling objects, flood and hail.
- **Buildings and Contents**
Coverage for direct loss or damage to buildings, business personal property and personal property of others.
- **Environmental Liability and Property**
Coverage for bodily injury and property damage liability associated with pollution and other environmental exposures; may include liability for clean-up costs.
- **Fidelity**
Coverage for employee theft of money, securities or property
- **General Liability**
Coverage for most liability exposures other than auto liability and professional liability
- **Medical Malpractice**
Coverage for the acts, errors, and omissions of physicians and surgeons; encompasses physicians professional liability, hospital professional liability and allied health care (nurses) professional liability.
- **Surety**

Coverage for non-performance of a contract under which one party (the surety) guarantees the performance of certain obligations of a second party (the principal) to a third party (the obligee).

- **Workers Compensation**

Coverage for job-related injury (including death) resulting from an accident or occupational disease.

Credibility

Credibility is the belief that the sample data is an accurate reflection of the larger population. Credibility is highest when the sample data is large and the standard deviation (discussed later) of the larger population is low.

Estimated Outstanding Losses

Estimated outstanding losses are the cost of claims that have occurred but have not yet been paid. They typically include indemnification and allocated loss adjustment expenses (ALAE), but not unallocated loss adjustment expenses (ULAE).

Estimated outstanding losses are calculated as projected ultimate losses less paid losses. Alternatively, they are the sum of case reserves and incurred but not reported (IBNR) claims.

Estimated outstanding losses are usually the largest single item listed as a liability on the balance sheet of a public entity's financial statement. GASB Statement No. 10 requires they be calculated by actuarial methods. Other common names for estimated outstanding losses are outstanding claims liabilities and unpaid claims.

Exposure Data

Exposure data refers to the activities of the organization. For example, payroll is the most common exposure measure for workers compensation. ARM Tech suggests collecting exposure data with the following characteristics:

- **Readily Available.** The exposure data should be easily obtained. It is best if it is a byproduct of other activities, although this is not always possible. If getting data is arduous, it may discourage collection.
- **Vary With Losses.** The exposure data should correlate directly with losses. The ideal situation is where exposure and expected losses move in tandem. The exposure base needs to be fitting to the coverage. For example, the number of employees may vary with property losses (more employees = more office space = more losses), but property value is a clearly superior

exposure base for property losses.

Incurred But Not Reported

IBNR is really comprised of two distinct items. These are the development of known case reserves (incurred but not enough reported [IBNER] and incurred but not yet reported [IBNYR]).

IBNER are the actuary's estimate of the inadequacy of case reserves. Most claims settle at amounts close to what is set by the claims administrator. Some claims close favorably and some emerge as more expensive. On balance, case reserves tend to be too low (especially for recent years). IBNER is the actuary's estimate of the amount total case reserves will rise upon closure.

IBNYR refers to those claims that have occurred, but have not yet been reported. A classic example is medical malpractice claim reported several years after the medical procedure was performed.

Limited

Most programs purchase excess insurance for catastrophic claims. For example, they may purchase coverage for claims above a \$500,000 per occurrence self-insured retention. "Limited" refers to an estimate or projection being limited to the self-insured retention. In contrast, "unlimited" means a loss projection not limited to the self-insured retention.

Other common names for limited are net of excess insurance, capped losses or retained losses.

Loss Development

The difference between the amount of losses initially estimated by the insurer and the amount reported in an evaluation on a later date. Loss development is typically measured for paid losses, reported incurred losses and claim counts.

Occurrence

An event that results in an insured loss. In some lines of insurance, such as general liability, it is distinguished from accident in that the loss does not have to be sudden and fortuitous and can result from continuous or repeated exposure that results in bodily injury or property damage neither expected nor intended by the insured.

Pool

An organization of entities through which particular types of risks are written with the premiums, losses, and expenses shared in agreed amounts among the members belonging to the organization.

Premium

The price of insurance protection for a specified risk for a specified period of time; also called contribution.

Projected Losses Paid

Projected losses paid are the projected claims disbursements in a period, regardless of when the claim occurred. They typically include indemnification and ALAE, but not unallocated loss adjustment expenses (ULAE).

“Projected losses paid” is a cash-flow analysis that can be used in making investment decisions.

Projected Ultimate Losses

Projected ultimate losses are the accrual value of claims. They are the total amount that is expected to be paid in a particular claim period after all claims are closed. Projected ultimate losses are the total loss costs for a particular period. They typically include indemnification and ALAE, but not ULAE.

Other common names for projected ultimate losses are expected losses, ultimate losses and total losses.

Rate

The cost of a given unit of insurance. For example, in life insurance, it is the price of \$1,000 of the face amount. In property insurance, it is the rate per \$100 of value to be insured. The premium is the rate multiplied by the number of units of insurance purchased.

Self-Insurance Retention (SIR)

That portion of a risk or potential loss assumed by an insured. It is often in the form of a per occurrence deductible.

Unallocated Loss Adjustment Expenses

Unallocated loss adjustment expenses (ULAE) are the indirect expenses to settle claims. These expenses are primarily administration and claims handling expenses.

GASB Statement No. 10 requires that ULAE be included in financial statements and that they be calculated by actuarial methods.

Janet Napolitano
Governor



William Bell
Director

ARIZONA DEPARTMENT OF ADMINISTRATION

OFFICE OF THE DIRECTOR

100 North 15th Avenue • ROOM 401
PHOENIX, ARIZONA 85007

(602) 542-1500

October 10, 2006

Mr. Richard Stavneak, Director
Joint Legislative Budget Committee
1716 West Adams
Phoenix, Arizona 85007



Re: Actuarial Review of Risk Management Program

Dear Mr. Stavneak:

Thank you for the opportunity to respond to the review of our Risk Management actuarial work by your actuary, ARM Tech, Inc. ARM Tech, Inc. prepared two reports of audit findings and recommendations, one for Risk Management's Contribution Strategy and one for the audit of our actuary's (Milliman) Actuarial Projection Report. Each report is addressed separately below:

Risk Management's Contribution Strategy

Our response to ARM Tech, Inc., recommendations of Risk Management's Contribution Strategy for Workers Compensation, Property and Liability Programs, is as follows:

ARM Tech Recommendation: For workers' compensation, consider using an even more simplified experience rating plan that relies on RMS loss and exposure data in lieu of industry parameters. This alternate plan would be similar to the experience rating plan used for the other self-insurance programs managed by RMS.

Risk Management Response: We agree that the contribution strategy for the other lines of insurance (property and liability) is less complex. The property and liability contribution strategy was updated with a more simplified strategy in 1995. Since the agency allocation for workers' compensation has been completed for fiscal years 2008 and 2009, Risk Management will design a new simplified system prior to the fiscal year 2010 allocation, which is due on September 1, 2008.

While a more simplified system is beneficial for ease of understanding by agencies, a new contribution strategy will not affect the total allocation collected from all agencies. However, amounts collected from individual agencies will change. Until a new system is designed, we are unsure of the fiscal impact to individual agencies. Upon design completion, we will run the new

system parallel with the old system to determine agency fiscal impact. Agency fiscal impact can then be reviewed prior to system implementation.

ARM Tech Recommendation: We noted significant premium changes (decreases and increases) between 2005 and 2006 for some members. For example, for general liability, 16% of the members had premium increase over 50% and 3% of the members had premium decrease more than 50%. RMS may wish to consider capping these premium changes to plus/minus 25%, especially for those members where there is no significant change in volume of exposures. However, other members will have to pay more if premium increases are capped at 25% for some members (and, equivalently, pay less if premium decreases are capped at 25%), so that RMS collects the same total budgeted amount before and after capping. Capping of premium changes would enhance stability for the members as they plan and budget for upcoming fiscal years.

There are two factors in our current allocation model that address budget stability for our agencies:

- There are per claim caps on each agency's loss experience. For example, all general liability claims are capped at \$100,000. Therefore one large loss will not significantly skew any agency's allocation.
- The loss experience period included in our allocation is greater than one year. For example, the loss experience period for general liability claims is five years. Therefore an agency with one large year of total losses will be stabilized when combined with the experience of years with lower losses.

Any additional stability factors will marginalize the loss experience factors in our allocation. Also, as mentioned in ARM Tech's recommendation, some agencies will have to pay more to account for reductions given to other agencies. Overall, from Risk Management's standpoint, we believe the addition of premium caps would erode the allocation's important goal of being responsive to the loss experience of each agency.

Actuarial Projection Report:

ARM Tech's recommendations focused mostly on the methodology used by our actuary, Milliman. Therefore we asked Milliman to also respond and to include in their responses how ARM Tech's recommendations would influence the three main goals of the actuarial study, specifically:

1. Would the recommendation materially change the appropriation requested by Risk Management or premiums charged to our agencies, or
2. Would the recommendation materially affect projected liabilities used in GAO's Comprehensive Annual Financial Report, or
3. Would the recommendations provide Risk Management additional management information at a reasonable cost?

Our responses to ARM Tech's recommendations are as follows:

ARM Tech Recommendation: Include in the actuarial report an exhibit which shows large claims (over \$1 million per claim) which received particular adjustment in the analyses. Such an exhibit would provide useful information to management and for an actuarial audit process

Milliman Response: These types of adjustments are typically documented in our work papers and the text of the report. This recommendation would not materially change our estimates or affect the projected loss and ALAE payments or reserves in the summary exhibits. This may provide useful information to management; however, it is information they already have. This would result in an additional exhibit or exhibits being added to our analysis but would not increase the cost.

Risk Management Response: It appears that this may have some useful management information, at little or no additional cost. Our contract with Milliman expires November 1, 2006. Depending on the result of the current procurement process, it may be that Risk Management would be engaging a different actuary to conduct the next study. We will ask our successor actuaries to incorporate this schedule into their fiscal year 2007 actuarial report

ARM Tech Recommendation: Utilize an additional method to develop retained ultimate losses for general liability. Although the current method (as described in the "Retained Ultimate Losses and Reserves" section) is reasonable, an enhancement would be to develop ultimate loss projections based on limited losses.

Milliman Response: Our studies prior to June 05 included a general liability limited analysis. The analysis was all GL claims combined limited to \$500,000 per claim. We eliminated it because the "enhancements" gained from the results were not enough to warrant the additional time and expense. This recommendation would not materially change our estimates or affect the projected loss and ALAE payments or reserves in the summary exhibits. This would not provide additional useful information to management. This would result in additional exhibits being added to our analysis and would marginally increase the cost (in the neighborhood of 5%).

Risk Management Response: Based on Milliman's response, it appears that this recommendation will not materially improve upon our three main goals and may add significant costs to the study. However, since there appears to be a disagreement among the two actuarial firms, we will discuss this recommendation with our new actuary to determine if the benefit of this recommendation exceeds the cost. If the recommendation is accepted, it will be reflected in the fiscal year 2007 actuarial report and Consolidated Annual Financial Report.

ARM Tech Recommendation: Develop contingency margins for property and liability coverages separately.

Milliman Response: We calculate the contingency margins for the various coverages separately, and then make a selection to apply to all of the coverages based on the expected margins. This issue is one to be considered carefully by RMS since it depends on the goal in using the contingency margins. If the goal is to achieve a sufficient probability level of funding for property and liability coverages separately on a stand-alone basis, then separate contingency margins are appropriate. However, in programs of this nature the goal is usually to project

adequate funding in total. Since probability levels are not additive across lines, they need to be estimated on a combined basis to be appropriate for funding in total.

Risk Management Response: Milliman is correct in that our funding requests for property and liability are in total. However, our allocations to the agencies are by individual insurance lines, and thus separate contingency margins may be appropriate. We will discuss incorporating separate contingency reserves with our successor actuaries. If the recommendation is accepted, it will be reflected in the fiscal year 2007 actuarial report, with any changes included the fiscal year 2010 premium allocations.

ARM Tech Recommendation: To be financially prudent, RMS should consider, in consultation with its auditors, contingency reserves for environmental claims since the projected liabilities do not include any provision for late reported claims.

Milliman Response: This would not affect the projected payments but it would affect the projected reserves since unreported claims liability would be added. Given the nature of environmental claims, we caution that the reliability of unreported claims estimates is less than that of the more traditional exposures.

Risk Management Response: Because of inherent uncertainties in projecting environmental claim costs, estimating late reporting claims has always been difficult. We will confer with our successor actuary to determine if ARM Tech or Milliman has the more reasonable approach. If the recommendation is accepted, it will be reflected in the fiscal year 2007 actuarial report and Consolidated Annual Financial Report.

Sincerely,

A handwritten signature in black ink, appearing to read 'William Bell', with a stylized flourish extending to the right.

William Bell
Director

xc: Charlotte Hosseini, Deputy Director, Department of Administration
Paul Shannon, Budget Manager, Department of Administration
Ray Di Ciccio, Risk Manager, Department of Administration
Gary Yaquinto, Director, OSPB
Matt Gottheiner, Budget Analyst, OSPB
Tyler Palmer, Budget Analyst, JLBC