

**ACTUARIAL REVIEW REPORT
OF THE PUBLIC EMPLOYEES RETIREMENT ASSOCIATION
AND THE EDUCATIONAL RETIREMENT BOARD
FOR THE
NEW MEXICO LEGISLATIVE COUNCIL SERVICE**

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Submitted By:
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NEW MEXICO LEGISLATIVE COUNCIL SERVICE

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SECTION I. EXECUTIVE SUMMARY

PURPOSE AND SCOPE OF ACTUARIAL REVIEW

A periodic actuarial review of a pension fund is typically conducted by a separate firm, engaged specifically for the project, on a regular basis to ensure that the actuarial condition of the pension fund is being measured as accurately as possible. The Legislative Council Service issued a request for an actuarial review of the pension plans administered by the New Mexico Public Employees Retirement Association (PERA) and the Educational Retirement Board (ERB) in 2010. Buck was selected to perform the actuarial review. The actuarial review includes a review of the June 30, 2009 actuarial valuation results prepared by the actuaries (Gabriel Roeder Smith & Company (GRS)), the 2008 experience study, actuarial assumptions and methods used in the valuation. Since the June 30, 2009 valuation, New Mexico PERA employed Cavanaugh Macdonald to complete the annual actuarial valuations. Cavanaugh Macdonald supplied most of the information for the plans administered by PERA for our review. New Mexico ERB continues to employ GRS as their actuary.

As an independent reviewing actuary, we have been asked to express an opinion regarding the reasonableness and accuracy of the valuation data, actuarial assumptions, actuarial cost methods, and valuation results. This report documents the results of our review.

The scope of the review included both a technical review of the valuation results and a professional peer review of the actuarial assumptions and methods used by Gabriel Roeder Smith & Company. This review involved:

- verifying that the data from New Mexico PERA and ERB was complete and comparing it to the final actuarial data GRS used to determine if the final valuation data is accurate and reasonable assumptions were used to complete missing data and meets Actuarial Standards of Practice No. 23 for Data Quality
- reviewing recommendations by GRS for the experience studies
- reviewing demographic and economic assumptions for reasonability and compliance with Actuarial Standards of Practice Nos. 27 and 35
- reviewing sample member calculations from GRS that showed the details of the valuation calculations
- checking numbers in the valuation report for accuracy
- reviewing the actuarial value of asset calculations and methodology for compliance with Actuarial Standard of Practice No. 44

PRINCIPAL FINDINGS

We are pleased to report that Buck finds GRS's actuarial results for ERB generally reasonable based on our review with the exception of two major findings. We found the work to be reasonable and performed in accordance with generally accepted actuarial principles and practices. We found some areas where we suggest making changes to the current approach but these are not areas that would have a material impact on the actuarial valuation results. The major finding regarding the population growth assumption of 1.5% per year in the projections leads to an unreasonably optimistic asset accumulation.

SECTION I. EXECUTIVE SUMMARY

For PERA, we were unable to receive adequate information from GRS to confirm the numerical results of the 2009 valuation. Therefore, we are unable to render an opinion on the accuracy of the valuation. We have found two major findings in our review regarding PERA as noted below.

Major Findings:

1. In our opinion, the Modified Entry Age Normal Method used by GRS for ERB does not meet GASB requirements. We recommend a change to the traditional Individual Entry Age Method for GASB purposes.
2. In our opinion, the Market Value Smoothing Method used by GRS for PERA (PERA Fund and Volunteer Firefighters) is not a reasonable method since the Actuarial Value of Assets does not converge to Market Value in a reasonable period of time or does not use a corridor as required by Actuarial Standards of Practice (ASOP) No. 44.
3. GRS used an expected active population growth of 1.5% per year in the ERB projection model. In our opinion, this assumption is aggressive and we recommend GRS perform projections using a stable active population.
4. In our review of the experience analysis results on the retirement rates, we identified several groups where the rates for retirements are not conservative. These aggressive rates are understating the liability and we recommend the actuaries further review the experience under both PERA and ERB.

In addition, Buck was asked to assist the Retirement Systems Solvency Task Force with defining the solvency of PERA and ERB. A number of definitions were suggested, but it is generally agreed that a pension system is solvent if it can be expected to meet all future benefit payment obligations when due. Hence, insolvency would occur if the fund assets are fully depleted. Buck reviewed information from projections performed by GRS for both PERA and ERB and prepared projections based on this information. Our projections are included in Section VII of this report.

These projections were performed assuming all future experience matches the actuarial assumptions including an 8.0% annual rate of return on the market value of assets after June 30, 2010. We projected the results using two different approaches. One approach uses a closed group membership which excludes normal cost contributions and benefit payments of future members from the projection. Under this approach, assets for PERA are expected to be depleted by 2033 and assets for ERB are expected to be depleted by 2039. Under an open group approach that includes total contributions and benefit payments for all current and future members, assets for PERA are expected to be depleted by 2058 while assets for ERB are not expected to be depleted at any time in the future. The open group projection for PERA is based on a stable active population, but ERB is based on an assumption that the active member group grows 1.5% annually. As previously stated, we believe this assumption for ERB is unreasonably optimistic.

SECTION I. EXECUTIVE SUMMARY

Both David H. Slishinsky and Michelle Reding DeLange are Enrolled Actuaries, Members of the Society of Actuaries and Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report. This report has been prepared in accordance with all applicable Actuarial Standards of Practice and David H. Slishinsky has primary responsibility for the report.

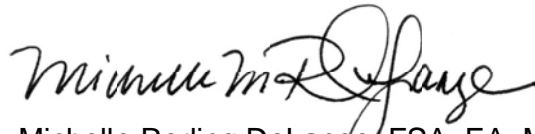
We would like to thank the staff at the State of New Mexico PERA and ERB, GRS and Cavanaugh Macdonald for their assistance in completing this report.

Respectfully submitted,

BUCK CONSULTANTS, AN ACS COMPANY



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SECTION II. INTRODUCTION

BACKGROUND

New Mexico PERA is responsible for administering four pension plans for most general, professional and certified employees in the State of New Mexico. New Mexico ERB is responsible for administering the pension plan for teachers, nurses and administrators employed by public schools in the State of New Mexico.

We requested copies of the actuarial reports prepared by GRS covering the plan year beginning June 30, 2007, 2008 and 2009, experience studies covering economic and demographic experience and benefit calculations. These reports were supplied to us by GRS for ERB and by Cavanaugh MacDonald for PERA. GRS provided projections and detailed liability calculations for ERB and PERA.

The objectives of our actuarial review can be summarized as follows:

- Assess the validity, completeness, and appropriateness of the member data, and demographic and financial information used by the current actuaries in the actuarial valuations of New Mexico PERA and ERB.
- Assess whether the valuation and asset methods and procedures used by GRS are reasonable and consistent with generally accepted actuarial standards and practices, are appropriate for each System's structure and funding objective, and are applied as stated in GRS's valuation reports. We will report any deviations from accepted standards.
- Assess whether the actuarial valuation assumptions are reasonable and consistent with generally accepted actuarial standards and practices, are reasonable based on the System's experience, and are appropriate for the System's structure and funding objectives.

This report is intended to document our independent analysis of the work performed and the conclusion reached during the period under review, and provide Legislative Council Service with recommendations and conclusions for improving the future funding requirements of New Mexico PERA and ERB's retirement funds.

ACTUARIAL PROCESS

The New Mexico PERA and ERB actuaries prepare an annual actuarial valuation to determine the funded status of the systems at the valuation date and the employer contributions that are necessary, along with investment return and employee contributions, to fund the promised pension payments. The valuation is a "snapshot" in time which measures the current value of expected future pension payments and balances this "liability" with the value of current assets and future funding needs. The funding methodology involves advance funding, or prefunding, so that assets are accumulated to pay for future benefits for current employees. The reasons for this advance funding include:

- Increasing the security of promised (and legislated) benefits by accumulating assets in an orderly manner.

SECTION II. INTRODUCTION

- Providing for the equitable treatment of different generations of taxpayers by assigning reasonable retirement system costs to each year.
- Providing a method that appropriately recognizes costs over the working lifetime of both current and prospective members of each System. The infusion of new members replacing members who terminate, retire, and die makes funding a dynamic process.

Each year's valuation involves the determination of the liabilities for benefits promised to New Mexico PERA and ERB members, the calculation of the amount of assets currently available in the trust funds to pay for those benefits, and the determination of the actuarial soundness of statutorily required employee and employer contributions. Membership demographic data is merged with a pension model incorporating the New Mexico PERA and ERB benefit structures and anticipated future experience. Typically, a funding policy is established by the governing body with the goal of achieving reasonably level contributions and attaining an asset accumulation which provides adequate benefit security. The key elements of the valuation process which implement the funding policy are as follows:

- Membership data – demographic information is collected as of the valuation date and expected future pension payments are determined for each member of the system.
- Benefit levels – structure of promised benefits defined under state statute which are payable upon retirement, withdrawal, disability, or death.
- Actuarial assumptions – these represent the actuary's best guess of future experience and form the basis for estimating future benefits and determining plan liabilities.
- Asset valuation method – the methodology used to assign a value to the current assets on hand; the value can be market value or some smoothed or averaged value. The primary purpose of an asset valuation method which differs from market value is to smooth out volatile market fluctuations so that the goal of level contributions is supported.
- Funding method – the procedure used to allocate the costs of the promised benefits, to specific years. Various methods aim to smooth costs or benefits, or fund for benefits as they accrue.

The ultimate cost of a pension program over time equals the benefits paid and expenses incurred while administering the program. The source of revenue used to pay for this cost is equal to the contribution from employers and employees to fund the program, plus investment return earned on contributions made through pre-funding the benefit payments.

SECTION III. REVIEW OF MEMBERSHIP DATA

As part of Buck's actuarial review of New Mexico PERA and ERB, a data analysis was performed on the member information used for the current actuarial valuations completed as of June 30, 2009. New Mexico PERA and ERB supplied Buck with the same active, inactive, pensioner and beneficiary data that was used for the June 30, 2009 actuarial valuations performed by GRS.

DATA PROCESS

Our objectives in this process were to:

- Check for necessary data elements
- Check for validity of member data
- Check for completeness of member data elements

Data collection is a critical component of the review. Typically, our data review focuses on a comparison between the data provided to us from PERA and ERB, and the data summarized and used in the GRS actuarial valuation reports. New Mexico PERA and ERB submitted to us the same data files in the same format as was supplied to GRS to perform the June 30, 2009 actuarial valuation. In a standard valuation process, the actuary does not audit the data but checks for reasonableness and completeness, as well as reconciles with the prior year's valuation data. During the audit, we can review the data preparation procedure either by comparing the two files, or by reviewing an outline of such procedure together with sample questions and client responses verifying data items that appear unreasonable or incomplete. We compared the data provided by PERA and ERB with the valuation data used by GRS.

DATA FILES

New Mexico PERA and ERB create data files for the actuaries that include three distinct demographic groups of members: active members, terminated members, and members and their beneficiaries in pay status. One file contains the active group, one file contains the terminated members and a separate file contains the retired and beneficiary members in pay status. Each retired file from PERA and ERB contain fields to identify whether a member in pay status is a retiree or a beneficiary. There are also additional files that contain new terminations during the year for PERA and ERB and deaths for ERB.

Active Members

New Mexico PERA: The data supplied by PERA did contain some missing information, in particular dates of birth, gender codes and salary. The data provided by PERA had significant missing information for the Volunteer Firefighters group. The valuation data we received that was used in the GRS valuation also contained the same missing information. We did not obtain written documentation of GRS's process for populating missing or unreasonable information. Therefore, we are unable to determine if their process for adjusting salaries or missing gender are appropriate. However, the valuation report states that GRS assumes active members with missing dates of birth enter the system at the average entry age. This is a reasonable assumption.

SECTION III. REVIEW OF MEMBERSHIP DATA

There were a significant number of active members on the GRS valuation file that were not included in the active counts in their report. Upon review of data questions sent to PERA by GRS (supplied by Cavanaugh Macdonald), it appears that GRS excludes a significant number of active members because the annual salary provided by PERA is less than \$100 or the record is otherwise deemed “defective” by their valuation system. GRS states they previously discussed the actives with salary less than \$100 with PERA and it was determined that those records were actual terminations. GRS also excluded a significant number of active records for the Volunteer Firefighters. The Volunteer Firefighters valuation report provides a reconciliation of the active data provided by PERA and the records included for the valuation. In both cases, it may be reasonable to exclude these records; however, it is difficult for another actuary to match GRS’s active membership if these records are included on the valuation file without a field or fields to indicate they were not included in the active population. In addition, it would be helpful to an actuary if PERA did not report members that should not be considered as active for the valuation.

The table below details the missing information reported to GRS by New Mexico PERA:

Missing Item	PERA	Judicial	Magistrate	Volunteer Firefighters
Date of Birth	7,298	3	1	843
Gender	7,151	2	2	831
Service	5,912	3	5	2,262
Pay Rate	9,136	20	6	N/A

GRS includes a 2% load on active liability for Magistrate and the Judicial Funds, and a 5% load on active liability and normal cost for the Legislative Division of PERA and Volunteer Firefighters to account for issues surrounding data reported by PERA. We find loads to liability and normal cost to be a reasonable approach in cases where data reporting is inconsistent. However, GRS should clarify whether the 2% load for Magistrate and Judicial was also applied to the normal cost or simply just to the liability.

New Mexico ERB: We also compared the ERB active data to the active valuation data provided by GRS. The data supplied by ERB did contain some missing information, in particular dates of birth and salaries. The file from GRS did not contain any missing genders or service. GRS assumed a hire age of 35 for members with unreasonable or missing dates of birth. In addition, they screen the salary information and make adjustments to low or non-annualized amounts. The valuation data file provided by GRS did not contain these adjustments. They described their process for adjusting missing or unreasonable data. We find the adjustments for missing dates of birth and salaries used by GRS to be reasonable.

SECTION III. REVIEW OF MEMBERSHIP DATA

The table below details the missing information reported to GRS by New Mexico ERB:

Missing Item	ERB
Date of Birth	2,326
Gender	0
Service	1
Pay Rate / Salary	0

Finding: Overall, the active data provided by New Mexico PERA and ERB was reasonably complete and, from what we can determine, appears to be properly processed by GRS.

Retired and Inactive Members

New Mexico PERA: The inactive and retired data supplied by PERA contained very little missing information. All retired members on the PERA file contained benefit amounts, benefit options and dates of birth.

Similar to the active file used by GRS, there are inactive members included on the GRS file that are not included for the valuation.

Finding: We are unable to determine who was excluded by GRS and therefore could not determine if it was appropriate to exclude those members for the valuation. It would be helpful to the auditing actuary if the valuation actuary provides a data file that only includes members that are considered for the valuation.

New Mexico ERB: The inactive and retired data supplied by PERA contained very little missing information. All retired members on the PERA file contained benefit amounts, benefit options and dates of birth. The number of retired members included in the GRS valuation matched very closely to the data reported by PERA.

Finding: Overall, the retiree and inactive data provided by New Mexico PERA and ERB was complete and properly processed by GRS.

NECESSARY DATA ELEMENTS

We believe that all necessary data elements are present on the New Mexico PERA and ERB data files in order to value liabilities for active, inactive, and retired members and beneficiaries. However, we do have some suggestions that can improve valuation precision:

For the active and inactive member file:

- On the active file, include a date of hire and a date of termination. This will help in determining current statuses if there are questions about the status that is reported.

SECTION III. REVIEW OF MEMBERSHIP DATA

- On the inactive file, include termination reason codes to assist the actuary with preparing a detailed gain/loss and experience analysis. Separate codes should include vested and non-vested termination and reduced and unreduced retirement.

For the retired file:

- For joint & survivor options, include a separate field showing the pop-up amount updated annually for COLAs. This will help the actuary more accurately value this benefit option.
- Include remaining contribution balance for calculation of modified cash refund benefits.

BENEFIT CALCULATIONS

New Mexico PERA: We received from PERA 40 benefit calculations of recent retirements covering members from each plan. We were able to reasonably match the results of these calculations. The calculations matched the data provided by PERA for the valuation, including optional form of payments.

We did find two calculations that appear to use more than 36 months in the calculation of final average salary. We recommend that PERA review these calculations. Also, one of the calculations noted above was not reported by PERA on the valuation file. We recommend that PERA research why this retiree was excluded.

New Mexico ERB: We reviewed three benefit calculations we received from ERB for recent retirements. We were able to reasonably match the results of these calculations. The calculations for ERB did not contain any identifying information, but we were able to match the results of the calculations to the valuation data used by GRS. The calculations matched the data provided by ERB including optional form of payments.

SECTION IV. ACTUARIAL ASSUMPTIONS AND EXPERIENCE STUDY

BACKGROUND ON ACTUARIAL ASSUMPTIONS

The actuarial assumptions form the basis of the actuary's best guess of future benefit payment amounts. Choosing actuarial assumptions is a matter of professional opinion based on analysis of past data and judgment of future expectations. Since it is not possible to know in advance how each member's career will evolve in terms of salary growth, future service and cause of termination, the actuary must develop assumptions in an attempt to predict future employment and benefit payment patterns. These assumptions enable the actuary to quantify the expected amount of benefits earned and when these benefits are likely to be paid. Similarly, the actuary must make an assumption about future investment earnings of the trust fund. In developing the assumptions, the actuary examines the past experience and considers future expectations to make his or her best estimate of the anticipated experience under the plan. There is no one right assumption, but each assumption should be reasonable based on the actuary's professional judgment.

Traditionally, actuarial assumptions have been considered either "explicit" or "implicit." Under the explicit approach, each individual assumption represents the actuary's best estimate of experience with respect to that assumption. Under the implicit approach, the assumptions in the aggregate represent the actuary's best estimate of future experience, but each individual assumption does not necessarily represent the actuary's best estimate. The explicit approach to assumptions is required under ERISA and the Internal Revenue Code. Although New Mexico PERA and ERB are not subject to ERISA, standard actuarial practice today tends to be based on the explicit approach to selecting assumptions. The New Mexico PERA and ERB actuaries have been following the explicit approach.

There are two general types of actuarial assumptions:

- Economic assumptions – these include the valuation interest rate (expected return on plan assets), assumed rates of salary increase, inflation, cost-of-living increases (if applicable), and increase in total payroll.
- Demographic assumptions – these include the assumed rates of mortality (both before and after retirement), disability, retirement, and withdrawal before and after eligibility for a vested benefit.

For purposes of our review, we focused on the New Mexico PERA and ERB assumptions and their reasonableness. We reviewed the most recent experience analysis reports and commented on the reasonableness of assumption changes given historical plan experience.

ECONOMIC ASSUMPTIONS

The key economic assumptions are the valuation interest rate (expected return on plan assets and forms the basis for discounting future benefit payments), the salary scale (or assumed rates of salary increase), the increase in total payroll (since unfunded liabilities are amortized over an increasing payroll), and inflation. Since inflation impacts salary increases, COLAs and asset return, it is important to equally reflect the underlying inflation rate in the valuation interest rate, the COLA and the salary scale assumptions. In addition, GRS makes an assumption for total

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payroll increases that should also be consistent with other economic assumptions and New Mexico PERA and ERB expected experience.

Inflation: Recent inflation rates have been lower than in the 1970s and 1980s. The inflation rate under the CPI-U index over the 16-year period ending June 30, 2009 was as follows:

Inflation Rates

Year	CPI-U Index
1994	2.6%
1995	2.8%
1996	3.0%
1997	2.3%
1998	1.6%
1999	2.2%
2000	3.4%
2001	2.9%
2002	1.6%
2003	2.3%
2004	2.7%
2005	3.4%
2006	3.2%
2007	2.8%
2008	3.8%
2009	(0.4%)
Geometric Mean for 10 year period ending:	
12/31/1969	2.32%
12/31/1979	7.08%
12/31/1989	5.52%
12/31/1999	2.92%
12/31/2009	2.65%
Last 50 years	4.10%

Additionally, we looked at the spread between the nominal yield on treasury securities and the inflation indexed nominal yield on inflation protected treasury bills (TIPS). This spread is reflective of the bond market's expectation of inflation during the maturity period of the bond. The table below shows this spread over 3 maturity periods as of May 28, 2010.

Maturity Period	Bond Yield	TIPS Yield	Spread
5	2.10%	0.41%	1.69%
10	3.31%	1.32%	1.99%
20	4.05%	1.74%	2.31%

SECTION IV. ACTUARIAL ASSUMPTIONS AND EXPERIENCE STUDY

Short-term projections of inflation suggest lower inflation than is currently assumed. Actuarial calculations are long term so a higher inflation assumption is more appropriate. We recommend using an inflation assumption between 3.00% and 3.50% at this time.

In the 2008 actuarial experience studies, GRS recommends a change to the inflation assumption to 3.50% for PERA and no change in the assumption of 3.00% for ERB. The inflation rate is greater than the average inflation over the last ten years of 2.65%, but less than inflation experienced over the last 50 years of 4.10%. This assumption has been trending down as a result of recent low inflation. Although many economists currently forecast inflation of less than 3.00%, long-term rates should be higher given the historical record of inflation. We believe long-term inflation assumptions ranging from 3.00% to 3.50% are reasonable. According to the 2009 NASRA survey of public plans, the median inflation assumption was 3.50%. In our opinion, the long-term price inflation rate of 3.00% per year recommended by GRS for ERB is reasonable but an inflation rate of up to 3.50% could be considered. We would agree with the recommendation to decrease in the inflation assumption to 3.50% for PERA.

Although there was a recommendation to decrease the inflation assumption for PERA, it does not appear as though that assumption was changed for the 2009 valuation.

Valuation Interest Rate: The valuation interest rate should represent the long-term rate of return expected on the Actuarial Value of Assets, considering the real rate of return on the plan's assets, the underlying inflation rate, expenses, and future contributions. The period considered for funding represents a long time horizon. In reviewing this assumption, the actuary should consider the asset allocation policy, history of returns and expectations of any future economic implications.

In 2009, the New Mexico PERA and ERB actuaries performed an experience analysis on economic assumptions based on information through June 30, 2008. The actuaries considered historical New Mexico PERA and ERB investment returns and a projection of expected investment returns using capital market assumptions. The actuaries recommended no change to the assumption for investment return of 8.00%, net of all expenses, while keeping the underlying price inflation of 4.00% for PERA and 3.00% for ERB, resulting in a real rate of return assumption of 4.00% for PERA and 5.00% for ERB.

The New Mexico PERA target asset allocation is 73% equities-like (includes international and private equity) and 27% fixed income. The New Mexico ERB target asset allocation is 62% equities-like and 38% fixed income. Below is a comparison of New Mexico PERA and ERB's valuation interest rate and asset allocation to several similar regional statewide retirement plans. The information below comes from the 2009 Public Fund Survey published by NASRA for 126 public plans.

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Valuation Interest Rates and Asset Allocations

Retirement System	Valuation Interest Rate	Asset Allocation (Equity-like vs. Fixed Income)
<i>New Mexico PERA</i>	8.00%	73% / 27%
<i>New Mexico ERB</i>	8.00%	62% / 38%
Colorado PERA	8.00%	75% / 25%
Kansas PERS	8.00%	60% / 40%
Minnesota State Retirement System	8.50%	76% / 24%
Montana Public Employees Retirement Board	7.75%	73% / 27%
Montana Teachers	7.75%	73% / 27%
Nevada PERS	8.00%	64% / 36%
South Dakota Retirement System	7.75%	71% / 29%
Utah Retirement System	7.75%	59% / 41%
Washington Department of Retirement Systems	8.00%	76% / 24%
Wyoming Retirement Systems	8.00%	66% / 34%
Public Fund Survey (Average)	8.00%	67% / 33%

New Mexico PERA and ERB's valuation interest rate assumption is average when compared to similar systems and the median Public Fund survey. ERB's equity exposure is less than the average while PERA's equity exposure is more than the average. Return expectations of investment professionals have declined recently. Although some retirement systems have decreased their valuation interest rates, many systems have not.

The Actuarial Standards of Practice No. 27 provides actuaries with guidance in the selection of economic assumptions used for measuring pension obligations. We used this standard as the basis for our review of GRS's economic assumption analysis in the experience analysis report. The standard states that the actuary should develop a best estimate range that in the actuary's best judgment is reasonable for setting the investment return assumption. The standard allows for the use of the building block method and stochastic simulation models to develop the best estimate rate.

We concur with the methods used by GRS to determine the range, but have used Buck's capital market assumptions which differ from those used by GRS. Below is a summary of the assumptions used.

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New Mexico PERA: The experience analysis report indicates that they have relied on the capital market assumptions by RV Kuhns.

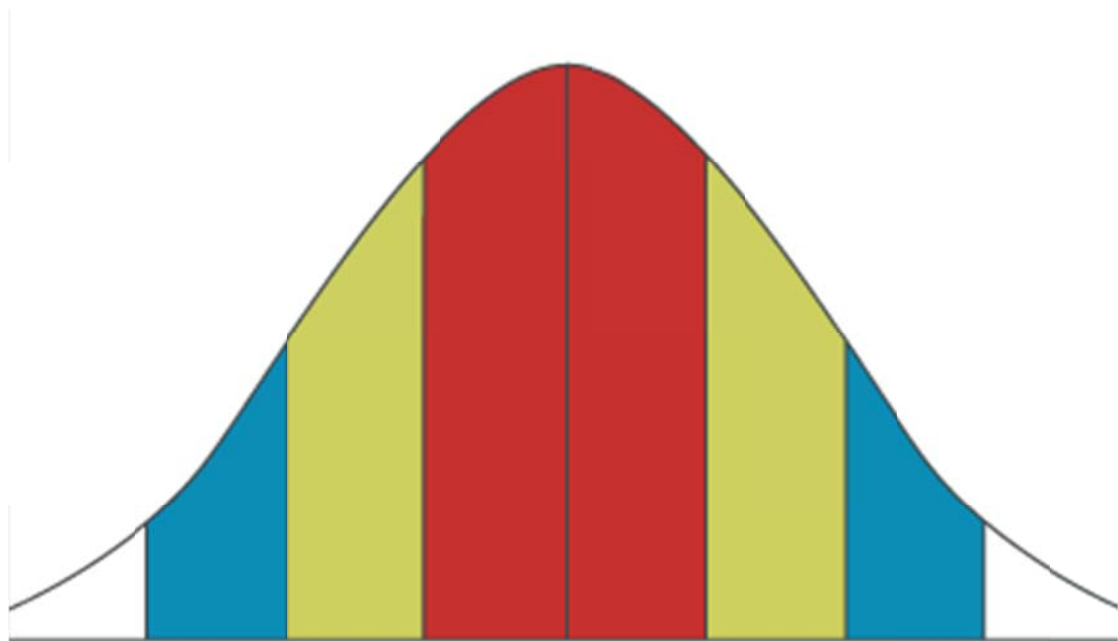
	Buck		GRS (RV Kuhns)
	Expected Real Return (Arithmetic Mean)	Standard Deviation	
Domestic Equity	6.03%	18.48%	
International Equity	6.61%	20.07%	
Fixed Income	2.23%	4.94%	
Real Estate	4.40%	6.93%	
Absolute Return/Hedge Funds	4.85%	12.50%	
Private Equity	10.85%	32.00%	
Real Assets/Inflation Linked	3.50%	7.76%	
Global Tactical AA	5.20%	16.91%	
Portfolio (Real)	4.50%		4.12%
Inflation	4.00%		4.00%
Expenses	(0.30%)		N/A
Net Portfolio (Nominal)	8.20%	12.98%	8.12%*

*Assumes 4.00% inflation was used by GRS in the experience analysis.

GRS then developed the distributions of annual returns and a mean. The report does not indicate a best estimate range for the annual returns.

Our approach is to develop the distributions of annual returns and then to select a reasonable range that falls within the 40th percentile and the 60th percentile, resulting in a 20% chance that the long-term investment return will fall around the mean return. Then we typically recommend a rate that contains some conservatism, resulting in a long-term assumption with at least a 50% chance of being achieved. We have conducted this analysis for the PERA and ERB plans using our capital market assumptions. These results follow:

SECTION IV. ACTUARIAL ASSUMPTIONS AND EXPERIENCE STUDY



Percentile:	5 th	25 th	40 th	50 th	60 th	75 th	95 th
New Mexico PERA							
Rate of Return:	4.92%	6.84%	7.69%	8.20%	8.71%	9.58%	11.59%
Inflation:	4.00%						

Reasonable range: 7.69% to 8.71%
 Conservative range: 7.69% to 8.20%

New Mexico ERB							
Rate of Return:	4.48%	6.27%	7.05%	7.53%	8.00%	8.80%	10.66%
Inflation:	3.00%						

Reasonable range: 7.05% to 8.00%
 Conservative range: 7.05% to 7.53%

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New Mexico ERB: The capital market assumptions used for the investment return modeling were not provided in the experience analysis report. The report indicates that GRS relied on the underlying capital market assumptions by four different consulting firms. The average expected gross return was 8.29% and average expected real return net of expenses was 5.41%.

	Buck	ERB (Average of Four Consultants)
Portfolio (Real)	4.83%	5.41%
Inflation	3.00%	2.58%
Expenses	(0.30%)	(0.30%)
Net Portfolio (Nominal)	7.53%	7.69%

When recommending valuation interest rates, actuaries must consider the long-term expected rate of return on plan assets given the plan's asset allocation policy, inflation, historical investment data, current fixed income yield rates, historical plan performance, and future economic expectations. History has shown that a deep recession like our current economic environment is often followed by a recovery. During recovery, equities tend to outperform the historical averages. Many investment professionals are predicting a recovery will occur within the next three years, with varying strength. Although we concur that a recovery will occur, it would take a very strong recovery to eliminate the severe market losses experienced recently.

Conclusion: Therefore, we concur with GRS's proposal that the investment return assumption of 8.00% is reasonable, although we would have recommended a different set of economic assumptions. We suggest that New Mexico PERA and ERB consider changing the inflation and real return components of the investment return. We recommend decreasing the inflation assumption to 3.50% and increasing the real return to 4.50% for PERA. For ERB, we recommend increasing the inflation assumption to 3.50% and decreasing the real return to 4.75%. After reflecting the expense assumption, Buck recommends a long-term investment return assumption of 8.00% for ERB and a 7.75% investment return assumption for PERA.

We also recommend continuous monitoring of the returns and this assumption, and reconsidering the investment return assumption in another 2-3 years when the magnitude of the expected recovery is known, or whenever the asset allocation policy is changed.

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Salary Scale: The salary scale, or assumed annual rates of salary increase, is another key economic assumption. An analysis of the appropriateness of the salary scale needs to consider two points. First, how does the rate of actual salary increases compare with those expected according to the actuarial assumptions? Second, are the two economic assumptions (interest rate and salary scale) internally consistent with regard to the underlying inflation assumption?

The salary scales used for New Mexico PERA and ERB consist of two components. The first component is the rate of general wage inflation. This is comprised of the price inflation assumption that is inherent in the development of the valuation interest rate, plus an economic productivity assumption. The general wage inflation assumption is 4.50% for PERA and the price inflation assumption inherent in the valuation interest rate is 4.00%. For ERB, the wage inflation is 5.00% and price inflation is 3.00%. The table below shows historical wage inflation.

Year	Annual increase in Social Security Wage Index
1994	2.68%
1995	4.01%
1996	4.89%
1997	5.84%
1998	5.23%
1999	5.57%
2000	5.53%
2001	2.39%
2002	1.00%
2003	2.44%
2004	4.65%
2005	3.66%
2006	4.60%
2007	4.54%
2008	2.30%
2009	(1.51)%
Geometric Mean for 10 year period ending:	
12/31/1969	4.33%
12/31/1979	6.89%
12/31/1989	5.76%
12/31/1999	4.25%
12/31/2009	2.94%
Last 50 years	4.83%

Productivity of our economy creates salary increases that are greater than price increases (inflation). Assumptions generally range from 0.50% to 1.50% for most plans to reflect economic productivity. The table below shows historical productivity based on inflation and increases in the Social Security wage index.

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10-year Period ending	Wage Inflation	Price Inflation	Productivity
12/31/1969	4.33%	2.32%	2.01%
12/31/1979	6.89%	7.08%	(0.19%)
12/31/1989	5.76%	5.52%	0.24%
12/31/1999	4.25%	2.92%	1.33%
12/31/2009	2.94%	2.65%	0.29%
Last 50 years	4.83%	4.10%	0.73%

We find GRS's current productivity assumption of 0.50% and general wage inflation reasonable for PERA. The 2.00% productivity assumption and general wage inflation of 5.00% for ERB is very conservative. Our recommendation would be to lower the productivity assumption to 0.75% and increase price inflation to 3.50% for a total wage inflation of 4.25%.

The other component of the salary scale varies by service and measures merit or step/longevity increases. As of June 30, 2009, the merit/step/longevity component for PERA members ranges from 15.00% for 1 year of service, grading down to 0.50% at 20 years of service. The June 30, 2009 merit/step/longevity component for Judicial members is 0.75% for all ages. The June 30, 2009 merit/step/longevity component for Magistrate members is 0.25% for all ages. The salary scale assumption does not apply to Legislative or Volunteer Firefighters since the benefits are not pay related. The current merit/step/longevity component for ERB members ranges from 8.50% at 0 years of service to 0.00% at 10 or more years of service.

The merit/step/longevity component can be applied to salary increases by age, by service, or by a combination of age and service. We generally find these rates starting at 5.00% to 6.00%, and grading down over time to 0.00% to be common. We find the scale reasonable given New Mexico PERA and ERB experience. We agree with the recommendation of the actuaries to change to the salary scale assumption based on the experience for PERA and no change to the salary scale assumption for ERB.

Over the analysis period, the actual rates of salary increases were lower than expected for Magistrate and short service members in PERA but higher than expected for long service members for PERA and Judicial members. For ERB, GRS indicated that they did not have proper data to effectively analyze the salary increases to implementation of the three-tier licensure program so no change to the salary scale was recommended. Given that the inflation over this period has been low, the results indicate that merit increases may have been higher than expected. It does not appear that inflation and merit increases were split for analysis. We recommend that these components be split for review for the next study.

Another consideration in examining the package of economic assumptions is to look at the spread between the valuation interest rate and the general wage inflation; also known as "economic spread." In a 2008 Wisconsin survey of 87 major public employee retirement systems, the average spread was 4.36%. Economic spread ranged from a low of 3.25% to a high of 5.50%, with 4.50% being the most common. Economic spreads should directly correlate

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with the expected real rate of return of a plan's asset allocation. Higher allocations to equity, and hence higher expected rates of return, should result in higher economic spreads.

We believe an economic spread between 3.00% and 4.00% is reasonable for New Mexico PERA and ERB. GRS's recommended economic assumptions include a spread of 4.00% for PERA and 5.00% for ERB. We find the economic spread reasonable for PERA but high for ERB. Following is a table showing the economic spread of other similar retirement plans:

Economic Spread

Retirement System	Rate
<i>New Mexico PERA</i>	4.00%
<i>New Mexico ERB</i>	5.00%
Idaho PERS ⁽¹⁾	3.25%
Kansas PERS ⁽¹⁾	4.00%
Minnesota State Retirement System ⁽¹⁾	4.00%
Montana Public Employees Retirement Board ⁽¹⁾	3.75%
Montana Teachers ⁽¹⁾	3.25%
Nebraska School ⁽²⁾	3.50%
South Dakota Retirement Systems ⁽²⁾	3.75%
Utah Retirement Systems ⁽¹⁾	4.75%
Washington Department of Retirement Systems ⁽¹⁾	4.50%
Wyoming Retirement Systems ⁽¹⁾	4.50%

⁽¹⁾ 2008 Wisconsin Comparative Study

⁽²⁾ Survey of Buck Governmental Clients

Increase in Total Payroll: As part of determining the actuarial contribution rate, the unfunded accrued liability is amortized over a 30-year open period as a level percent of pay for most of the PERA Plans and ERB. The Legislative Division of PERA and the Volunteer Firefighter Fund both amortize the unfunded accrued liability as a level dollar amount since the benefits for these plans are not pay related. Since pay is expected to increase, an assumption is made for the rate at which total payroll is expected to increase. The amortization payment will remain level as a percentage of total payroll provided:

- the active payroll on which the contribution is based remains at a constant or stationary level, and
- the total payroll grows by 4.50% for PERA and 3.75% for ERB.

This procedure for amortizing unfunded accrued liabilities is common for large public plans. However, this methodology increases the risk of future funding shortfalls since adequate funding is dependent on a stationary or growing active membership group needed to meet the assumed payroll growth rate. If active membership decreases, contributions may need to be increased in

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order to meet the amortization period. Accounting Standards (GASB No. 25 & 27) do not allow an assumption for population increases when setting a payroll growth assumption.

The table below shows the historical summary of the average active covered payroll increase from the CAFR for each of the plans.

Year	PERA	Magistrate	Judicial	ERB
2009	3.23%	2.29%	2.33%	3.58%
2008	1.29%	12.18%	1.25%	4.74%
2007	7.65%	5.77%	9.85%	4.04%
2006	2.06%	(1.45%)	(1.91%)	2.96%
2005	1.49%	6.45%	6.86%	2.36%
Average	3.14%	5.05%	3.68%	3.54%

The current assumption of a 4.50% payroll growth assumption PERA appears high and we recommend lowering this assumption to 4.25%. Additionally, analysis should be done by each group within PERA to see if different payroll growth assumptions should be made. The current assumption of a 3.75% payroll growth assumption for ERB appears reasonable but could be increased to 4.25% by increasing the inflation assumption to 3.50%.

INVESTMENT AND ADMINISTRATIVE EXPENSES: As part of determining the investment return assumption, the investments and administrative expenses are offset from the expected return assumption. The experience analysis report for PERA did not review this assumption. We recommend that the next experience analysis for PERA include such a review. For ERB, GRS recommended a reduction of .30% to the investment return assumption for the inclusion of expenses. We agree with this approach and the results look reasonable.

DEMOGRAPHIC ASSUMPTIONS

The demographic assumptions are the assumed rates of retirement, withdrawal (with or without a vested benefit), disability and mortality (death before or after retirement or disability). These decrements define the member status changes which effect the payment of benefits. Since New Mexico PERA and ERB are large retirement systems, the demographic assumptions should reflect each System's own experience. To this end, the New Mexico PERA and ERB actuaries have prepared a periodic experience study to review the current actuarial assumptions and revise them as necessary. GRS reviewed experience for the following:

- Four-year interval ending June 30, 2008 for PERA
- Six-year interval ending June 30, 2009 for ERB
- Five-year interval ending June 30, 2007 for Magistrate
- Five-year interval ending June 30, 2007 for Judicial
- Five-year interval ending June 30, 2006 for Volunteer Firefighters

We did not receive an experience analysis for the Legislative group. Our comments regarding the current assumptions and the recent changes follow.

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Rates of Retirement. These rates form the basis of determining the expected future benefits paid upon early, normal, or late retirement. The following is a summary of eligibility for reduced and unreduced benefits for the plans administered by PERA and ERB:

Retirement Eligibility			
Plan	Early	Unreduced	Normal
PERA	N/A	Tier 1: 25 years or graded points table Tier 2: 30 years or 80 points	Tier 1: age 65 with 5 years Tier 2: age 67 with 5 years
Legislative	N/A	N/A	Plan 1 and Plan 1 Enhanced: age 65 with 5 years, age 64 with 8 years, age 63 with 11 years, age 60 with 12 years, or 14 years Plan 2: age 65 with 5 years, or 10 years
Magistrate	N/A	N/A	64 with 5 years, 60 with 15 years, or 24 years
Judicial	Hired prior to July 1, 2005: age 50 with 18 years Hired after July 1, 2005: N/A	N/A	Hired before July 1, 2005: 64 with 5 years, 60 with 15 years Hired after July 1, 2005: 64 with 5 years, 55 with 16 years
Volunteer Firefighters	55 with 10 years	N/A	55 with 25 years
ERB	Tier 1: 75 points Tier 2: 80 points	Tier 1: 25 years or age 60 with 75 points Tier 2: 30 years or age 65 with 80 points	Tier 1: age 65 with 5 years Tier 2: age 67 with 5 years

Members who leave before eligibility for a service retirement are not eligible for immediate benefit payments, but are eligible for a future benefit if vested.

It is our experience that employees will often wait until they are eligible for unreduced benefits to retire, and therefore, the incidence of retirement after attaining eligibility for unreduced benefits is higher than when eligible for a reduced retirement benefit. Members electing to continue working until after becoming eligible for a retirement benefit may work a number of years into late retirement.

The retirement rates used by GRS for PERA are structured to coincide with retirement eligibility for each division and are based on age and eligibility for unreduced benefits after 20 or 25 years of service. Late retirement rates continue after age 65 until age 80, a typical ultimate retirement age.

The retirement rates used by GRS for ERB are structured to coincide with retirement eligibility and are based on age and service and eligibility for unreduced benefits after 25 years of

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service. However, they did not analyze eligibility for unreduced benefits at age 60 with 75 points. We would recommend reviewing retirement rates by all ages and service combinations for reduced and unreduced retirement to more accurately reflect all eligibilities for benefits.

One way that actuaries analyze decrement rates is to compare the number of actual members decrementing to the number of expected members decrementing. This ratio is referred to as the actual/expected ratio, or A/E ratio. Below is a table containing the A/E ratio for all PERA divisions and for ERB before and after the change in retirement rates due to the experience analysis (if applicable).

	A/E ratio before	A/E ratio after
PERA		
State General – Male Age Based	111%	112%
State General – Male Service Based	173%	154%
State General – Female Age Based	123%	116%
State General – Female Service Based	169%	152%
State Police – Age Based*	22%	22%
State Police – Service Based*	99%	84%
State Hazardous Corrections – Age Based	67%	73%
State Hazardous Corrections – Service Based	213%	104%
Municipal General – Male Age Based	132%	117%
Municipal General – Female Age Based	95%	94%
Municipal General – Service Based	173%	151%
Municipal Police – Age Based*	107%	107%
Municipal Police – Service Based	216%	194%
Municipal Fire – Age Based*	63%	83%
Municipal Fire – Service Based	173%	148%
Magistrate	400%	228%
Judicial	123%	125%
Volunteer Firefighters	9%	17%
ERB – Males	103%	No Change
ERB – Female	102%	No Change

* These populations are small so less weight should be put on experience analysis results.

For retirement, an A/E ratio under 100% is considered conservative. We would recommend an A/E ratio between 85% and 100%. As shown above, there are many A/E ratios for PERA that are over 100% before and after the experience analysis. In general, GRS adjusted the rates to move closer to the actual plan experience (closer to 100%). However, in many cases, the adjustment was less than we would have recommended. In particular, we would have recommended a larger increase in the retirement rates for male and female service based rates for State General and service based rates for Municipal General, Police and Fire.

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For ERB, GRS recommended no change to the retirement rates. While the total A/E ratios seen with the current set of retirement rates are close to 100%, there are many ages with less than 25 years of service where we see an A/E ratio over 100%. They also note that the results from the current experience analysis were similar to the last experience study. We would have recommended an increase to retirement rates for members with less than 25 years of service. In particular, we would have considered higher rates for members meeting the rule of 75.

We recommend that each of the actuaries further review their proposed retirement rates.

Rates of Withdrawal (Before and After Eligibility for Vested Benefits): Currently, a member who terminates employment with at least five years of service may choose to receive a refund of contributions with interest or a vested inactive pension for both PERA and ERB. Members terminating with less than five years of service receive a refund of member contributions with interest. Typically, to calculate withdrawal liability after five years of service, the valuation assumes that a portion of terminating members will leave their contributions in the system and receive a vested inactive pension and the rest will terminate and take a refund. The remaining terminated members with less than five years of service are assumed to receive a refund of contributions.

To value these benefits, GRS currently uses withdrawal rates that are a function of both age and years of service for both PERA and ERB. In addition, GRS uses withdrawal rates that are also a function of gender for the State Police, State Corrections, Municipal General, Municipal Police, and Municipal Fire divisions of PERA. Actuaries will either set rates by age, by service, or by a combination of age and service, and may include gender depending on the best fit of experience. We generally find GRS's proposed assumptions reasonable for PERA and ERB.

The portion of terminating members electing a refund is often an assumption in the valuation. The PERA report and experience analysis are silent regarding this assumption. We would recommend a review of this assumption in the future. For ERB, GRS assumes that a vested member will elect to receive the more valuable benefit. We find this to be a reasonable assumption.

Rates of Disability: If a member becomes disabled prior to retirement, he or she is eligible for a disability benefit. Rates of disability are used to quantify the value of this benefit. These rates are set on the basis of age and increase as age increases.

The disability rates for PERA and ERB appear reasonable. GRS adjusted disability rates to be more in line with experience for PERA when needed. They also separated disability experience by gender for Municipal General. GRS did not recommend changes to the disability assumption for ERB. We would not recommend any changes to this assumption for PERA or ERB.

Rates of Mortality: The most important decremental valuation assumption is mortality because this assumption is a predictor of when pension payments stop. The mortality assumption applies to members both before and after retirement. Most often, gender distinct rates are used for non-disabled members since studies continually show that females live longer than males, although that gap has been shrinking according to recent mortality studies.

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Mortality tables can be derived on the System's actual experience or a published table. Since New Mexico PERA is a very large plan but does not have enough members to produce credible experience, a published table is preferable.

When selecting a published table, the most important selection criteria are that the table is a good fit to the data and provides a reasonable level of conservatism. There are two types of published tables that should be considered: static and generational. A static table is very common among plans but does not project mortality improvement into the future so conservatism is important. Therefore, it is typical to select a static table with a 5% to 15% level of conservatism or a generational table which improves mortality over time.

New Mexico PERA: A different set of mortality rates are used for post-retirement non-disabled members, post-retirement disabled members and active members.

In GRS's experience analysis report, the post-retirement non-disabled member mortality rates proposed for the valuation are the 1971 Group Annuity Mortality Table projected to 2000 with adjustments of a three-year setback for males and a seven-year setback for females. The recommendation for post-retirement male rates does not provide an appropriate level of conservatism. The post-retirement female rates use a seven-year setback and provide an adequate level of conservatism. We understand from GRS that they made the decision not to improve mortality for males because of potential data issues. We would not recommend any changes to this assumption. We recommend identifying any data issues now in order to have reliable data for further review of the mortality for males at the next experience analysis.

Totally disabled members can be expected to have a shorter life expectancy than healthy retired members. GRS's disabled mortality rates are higher than for all healthy retirees. GRS did not recommend a change to the post-retirement disabled mortality table and this seems reasonable. Since the GRS experience analysis report and the valuation report did not specify, we are unsure if the table they have in place for disabled mortality is a published table or based on plan experience. We recommend a better description of the disabled mortality be included in the PERA report.

GRS proposed changes to the active mortality tables by division, but we are unable to determine if they are using a published table or one based on experience. The changes appear reasonable and we recommend a better description in the report of the active mortality table used.

New Mexico ERB: GRS did not recommend any changes to post-retirement, disabled or active mortality. For post-retirement mortality, GRS is currently using the 1994 Uninsured Pensioners Mortality Table with a setback of three years for males and two years for females. Based on plan experience, the table provides an appropriate level of conservatism.

For disabled mortality, GRS is using the 1981 Disabled Mortality Table. There is very little experience for ERB for disabled mortality. While the A/E ratios only provide a small level of conservatism, the small sample size does not necessarily warrant a change in this assumption.

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GRS reviewed the active mortality experience for ERB. They observed a large discrepancy in the number of active deaths compared to other teachers' retirement systems. They believe there may be a data reporting problem and chose to keep the current active mortality table. Based on the small sample size for this assumption and potential data problems, we would not recommend any change to this assumption.

Other Assumptions: Based on our review, all other assumptions described in the valuation report and experience analysis appear reasonable. We would recommend that the actuaries review the optional form elections for retirees to incorporate an explicit assumption on the members expected to elect life only benefits versus joint and survivor benefits. While the impact on the liability is small, a more refined assumption on optional form election provides better cashflow results when doing a projection.

Recommendations for the Experience Analysis Report: The reports prepared by GRS include several graphs and tables that are useful in describing the results of the study. Overall, we find the report complete. We recommend the following changes to further improve the communication of the report:

- For PERA, we suggest a review and comment of other assumptions used in the pension valuation such as percent married and spouse age difference. It is not expected that these assumptions will have a significant impact on the valuation. The ERB report indicated that they reviewed the assumption but no data was provided. We recommend showing the data that was reviewed for these assumptions.
- We recommend including A/E ratios for all decrements reviewed for PERA. The ERB report contained this information.
- We suggest commenting on the continued appropriateness of the asset, funding, and amortization methods for PERA. The ERB report contained this information on the asset and funding method. We recommend also commenting on the amortization method.
- In the PERA report, additional commentary by group would be helpful on the retirement and withdrawal decrements to explain the justification of the changes in rates.
- In Section B of the PERA report, the impact of the new demographic assumptions on the unfunded liability, funded ratio and the annual required contribution is shown. It would be helpful if the impact of each individual demographic assumption change was shown so analysis could be done to see if the change is reasonable.
- In the PERA report, we recommend using the same color for the lines in graphs throughout the report for actual, current and proposed assumptions to make it easier to follow.

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ACTUARIAL COST METHODS

As discussed earlier, the ultimate cost of any retirement program is equal to the benefits paid plus the administrative costs of operating the plan. This cost is provided from contributions made to the plan plus the investment return on accumulated contributions which are not immediately needed to pay benefits or administrative costs. The level and timing of the contributions needed to fund the ultimate cost are determined by the actuarial assumptions, plan provisions, member characteristics, investment experience, and the actuarial cost method. Actuarial cost methods are calculation processes which determine and allocate the cost of a retirement plan to specific periods of time. As such, it has an influence on the level and timing of the ultimate contributions.

Different actuarial cost methods can provide for faster funding earlier in a plan's existence, more level funding over time, or more flexibility in funding. The choice of an actuarial cost method will determine the pattern or pace of the funding and therefore should be linked to long term financing objectives of the fund and benefit security considerations.

The desired pattern of funding that is influenced by the actuarial cost method will depend on the importance of the following factors to the financing of the plan:

- Budgetary limitations
- Stability of contribution rate
- Flexibility of funding
- Pace of funding
- Benefit security
- Intergenerational equity

These factors and their relative importance to maintaining the actuarial integrity of the plan are significant elements to be considered when selecting an actuarial cost method.

Changes in member characteristics, plan experience, and investment return over time can lead to a funded status which is either more or less favorable than expected under the actuarial method used. This difference, applied differently by each cost method, adjusts the level of funding required in any one year. This adjustment can distort the true cost of benefits accruing under the plan.

The cost of accruing benefits under most methods is referred to as the normal cost. This cost is typically expressed as a percentage of pay when benefits and contributions are based on compensation. For flat or unit benefits based on service, this cost is expressed as a dollar amount per active member assumed to continue in service. The pattern of this cost varies by cost method. This cost can be expressed as a level percentage of pay over a member's full career, or can be expressed as the value of benefits accruing during the current year as a percentage of pay. The latter approach leads to an increasing normal cost pattern throughout a member's career since the initial value of accruing benefits is small and increases as a member reaches retirement age.

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At any point in time (i.e., the valuation date), the actuarial cost method may determine the accrued liability of benefits which, under the cost method, is expected to be funded by past contributions and investment return. An unfunded actuarial liability will exist if the accrued liabilities exceed the value of assets on hand on the valuation date as measured by the asset valuation method. Although actuarial cost methods may differ in how this unfunded liability is treated, an additional cost results since future funding of this amount is not considered in the cost of accruing benefits (normal cost). This additional cost may be determined by amortizing the unfunded obligation over a period of years and adding it to the normal cost to arrive at the total cost, or it may be expressed as a percentage of future salaries and included in the normal cost determination.

The Entry Age Normal actuarial cost method is as follows:

- **Entry Age Normal Actuarial Cost Method** – This method is used to determine the actuarially required contribution. This cost method determines the normal cost as a level percentage of pay (or level dollar for non-pay related plans) for each individual member of the plan, which if paid from entry into the plan to the last assumed retirement age, will accumulate to an amount sufficient to pay the expected benefit. An additional cost is determined by amortizing the unfunded actuarial liability over a period not to exceed 30 years as a percentage of increasing payroll (or level dollar for non-pay related plans) and is added to the normal cost to determine the total actuarially required contribution. Actuarial gains and losses adjust the unfunded liability each year.

The Entry Age Normal Actuarial Cost Method is the most common method used by public systems. The 2009 Public Fund Survey by NASRA showed 94 out of 126 surveyed systems, or 75%, used Entry Age Normal. The Wisconsin 2008 Comparative Study of Major Public Employee Retirement Systems, published in December 2009 (revised in May 2010), had 79% of the 87 plans surveyed using Entry Age Normal.

New Mexico PERA: GRS used the Entry Age Normal method for PERA and we agree with this approach.

New Mexico ERB: The method used for New Mexico ERB differs significantly from the conventional Entry Age Method used by most public employee retirement systems. The method used by ERB is a modification of this conventional Entry Age Method. Rather than calculating the Normal Cost for each individual each year, the normal cost is determined for a hypothetical group of new entrants, based on actual new entrants for the five-year period ending June 30, 2004.

For purposes of this discussion, we will refer to this ERB method as "modified Entry Age," and the traditional method as "conventional Entry Age."

This modified Entry Age is no longer widely used. It was used by many public systems many years ago. In many states, it was required by statute. In some states (not New Mexico), it still is required by statute. The original reason for the modified Entry Age was that it was twice as easy as conventional Entry Age in the era before computerized data processing. To use the conventional Entry Age, actuaries needed to make four present value calculations for each

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member each year. To use modified Entry Age, actuaries only needed to make two calculations per member per year, and the other two calculations were made periodically on a smaller group of individuals (the hypothetical group).

This is not to say that modified Entry Age is an inappropriate method for funding purposes. Nevertheless, we recommend that conventional Entry Age be considered to replace modified Entry Age. Most statewide systems switched to the conventional Entry Age over the years because of several weaknesses with the modified Entry Age method:

- Hypothetical group may not fit individuals

Modified Entry Age calculates a normal cost rate for all individuals based on the profile of an arbitrary group of individuals. Each member's normal cost is not related to that member's own profile.

- Volatility of group selected

The hypothetical group of new entrants is typically updated every five years or so. GRS indicated they reviewed this group at the last experience analysis and no changes were recommended. The profile of new entrants in any given period could vary. One period, there may be a need for math and science teachers from general industry. Five years later, there may be a large need for younger teachers because of growth. The 5 year period of new hires may not be an appropriate proxy for the entire system.

- Stair step versus smooth changes

Although the normal cost rate remains fixed for five years, the changes from one five year period to another would be greater than for conventional Entry Age, because conventional Entry Age normal cost rates change slowly over five years. For example, compare the new teachers hired in a school in 2004 with those hired in that school in 1999. Their average age could be significantly different. But the average entry age of the entire school is about the same in 2004 as it was in 1999.

- Potential bias to understate average entry age

While modified Entry Age may be appropriately conservative for a group where the average entry age increases, it would tend to be too aggressive in the opposite environment. This is because the average entry age for a group of new hires is necessarily younger than for a group as a whole. This is because turnover is higher at the younger ages, leaving the older hires more likely to continue employment.

- Inaccurate measurement of actuarial gains and losses

Use of the modified Entry Age method does not reflect the true normal cost of the group being valued from one year to the next; thereby leading to incorrect expected accrued liabilities during the next valuation, and a different result in the measurement of actuarial gains and losses.

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- GASB Actuarial Cost Methods

The Guide to Implementation of GASB Statements 25, 26 and 27 on Pension Reporting and Disclosure by State and Local Government Plans and Employees describes the Entry Age Normal Actuarial Cost Method that is an approved method under the parameters as follows:

*A method under which the Actuarial Present Value of the Projected Benefits of **each individual** included in an Actuarial Valuation is allocated on a level basis over the earnings or service of the **individual** between entry age and assumed exit age(s). The portion of this Actuarial Present Value allocated to a valuation year is called the Normal Cost. The portion of this Actuarial Present Value not provided for at a valuation date by the Actuarial Present Value of Future Normal Costs is called the Actuarial Accrued Liability.*

This is the traditional approach to the Entry Age Method.

Based on this language, we do not believe that the modified Entry Age Method used by GRS for New Mexico ERB is in compliance with GASB for three reasons. First, the use of a hypothetical group is inconsistent with “each individual included in an Actuarial Valuation.” Second, GRS uses an aggregate Entry Age Normal Method on this hypothetical group instead of the individual Entry Age Normal Method. Finally, GRS has set the Normal Cost Rate as the cost for the new tier of members who have yet to be hired. There are no members with this benefit structure included in the Actuarial Valuation, yet the Normal Cost fully reflects the new benefit eligibilities.

Recommendation: We recommend that GRS switch to the conventional Entry Age Normal Method for ERB. If New Mexico ERB were to adopt the conventional Entry Age method, the normal costs would likely increase. This would decrease the actuarial liability. Although we do not believe the difference will be significant, we recommend a change to the conventional Entry Age Method.

ASSET VALUATION METHODS

A primary funding policy goal is to have stability in the contribution pattern. Large market value fluctuations make this goal difficult to achieve. Thus, most actuaries use an asset valuation method which smoothes out these fluctuations in support of achieving level contributions. A good asset valuation method places values on a plan’s assets which are related to current market value but which will also produce a smoother pattern of costs. This is a question of balancing fit (measured against market value) and smoothness.

Neither book nor market value of these assets is generally felt to be appropriate in determining the actuarial contribution rate for an ongoing pension plan. Book value produces smooth predictable employer contributions, but it ignores sizeable appreciation and is not a good measure of the fund’s true value (i.e., a poor fit to market value). On the other hand, market value is a realistic current measure of the fund, but on a long-term basis, one day’s market value may not be a very meaningful figure for a pension fund. Furthermore, sharp short-term

SECTION V. ACTUARIAL METHODS

swings in market value can result in large fluctuations in the employer contributions required to fund the plan (i.e., not very smooth).

The goal of the actuarial asset valuation method is to smooth or reduce investment fluctuations. This is particularly important during periods of volatile capital markets in which abrupt changes in asset values, when factored into the funding valuation, produce sudden unnecessary changes in contribution levels. In this case, “unnecessary” implies that the change in asset values is not necessarily a true revaluing of the assets involved but rather a fluctuation reflecting a current economic climate or a short-term reaction to specific news.

Desirable characteristics of an actuarial asset valuation method include the following:

- The method should be simple to operate. It should be readily calculable from financial statements.
- The method should be easy to explain to all interested parties.
- The theoretical underpinnings should be solid and not produce a long-term lag to the fair value of assets. The value produced should account for market and book values.
- The method should smooth the effect of market fluctuations such that the smoothed value should converge to the Market Value in a reasonable period of time if all assumptions are met.
- Investment decisions should not be affected by the actuarial asset valuation method, and vice versa.
- The value produced should be realistic; the price tag placed on assets should be sensible and should not cause other variables to be adjusted to account for unrealistic asset values.

New Mexico PERA (including Magistrate, Judicial and Volunteer Firefighters): The asset valuation method used by New Mexico PERA to develop the Actuarial Value of Assets (AVA) is generally referred to as a Four-Year Smoothed Market Value method. The difference between the actual return on market value of assets (MVA) and the expected return on AVA is determined each year. Twenty-five percent of this difference is recognized in the AVA each year, so that after four years, the entire difference has been recognized. This becomes a rolling process where the differences from the three previous years are partially recognized. For example, in the current year, 75% of the difference from three years ago is recognized. Likewise, 50% and 25% of the difference from two and one year ago, respectively, is recognized in the current year.

Theoretically, if the actual return is as expected, no new difference or deferral gain or loss base is created. If the actual returns on MVA are exactly equal to expected returns on MVA for each of the previous four years, it would result in no deferral of gains or losses during this period. In this case, the AVA should equal the MVA since all differences that occurred prior to this four-year period have been recognized. We find this method reasonable since it leads to full recognition of all gain and losses occurring in any given year over this year and the next three years in equal amounts.

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We find one minor flaw with GRS's application of this method. There is no reflection of expected interest or return on the future phase-in amounts. Essentially, the expected return is taken on the AVA instead of the MVA. Theoretically, this amount is part of the MVA and is invested. If the MVA returns 8% as expected, a small phase-in base will be created unless interest on the unrecognized phase-in amounts is immediately recognized. To illustrate the impact of this methodology, we have projected the funding value with and without interest on the future phase-in amounts using estimated non-investment cash flow. The results of this projection can be found in Exhibit 2 in the Appendix. It shows that even if the assumed rate of 8% is earned on the MVA, a small residual base is created under the current methodology. By immediately recognizing 8% interest on the future phase-in amounts, no new phase-in is created and the AVA will equal the MVA when all current phase-in amounts are fully recognized after three years. We recommend the asset valuation method be changed to reflect the expected return on the unrecognized phase-in amounts.

The methodology that GRS employs to determine the AVA is to adjust the expected AVA as of the valuation date by 25% of the gains and losses for the prior four years. To verify the GRS methodology, we independently calculated the AVA for New Mexico PERA for the fiscal year ending 2009 using an alternative approach. This approach adjusts the MVA as of the valuation date by the amounts deferred from the previous three years. As mentioned above, the deferred amount is the sum of the appropriate percentage of the original differences from the prior three years that have not been yet recognized. Theoretically, we should get the same answer, and we do. See Exhibit 1 in the Appendix.

New Mexico ERB: The asset valuation method used by New Mexico ERB to develop the AVA is generally referred to as a Five-Year Smoothed Market Value method. The difference between the actual return on MVA and the expected return on MVA is determined each year. Twenty percent of this difference is recognized in the AVA each year, so that after five years, the entire difference has been recognized. This becomes a rolling process where the differences from the four previous years are partially recognized.

The methodology that GRS employs to determine the AVA is to adjust the MVA as of the valuation date by the amounts deferred from the previous four years.

To verify the GRS methodology, we independently calculated the AVA for New Mexico ERB for the fiscal year ending 2009 using an alternative approach. This approach adjusts the expected AVA as of the valuation date by 20% of the gains and losses for the previous five years. Theoretically, we should get the same answer, and we do. See Exhibit 1 in the Appendix.

Five years is the most common smoothing period among public plans (57%) based on the 2009 NASRA Public Fund survey. A four-year smoothing period was used by 17% of the plans. New Mexico PERA may want to consider changing to a five-year smoothing period.

Corridor: There are two basic features of an asset smoothing method: the number of years in the smoothing period and the corridor around MVA. The table below details these two features for each plan:

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Asset Smoothing Method		
Plan	Smoothing Period	Corridor
PERA Fund	4 years	N/A
ERB	5 years	N/A
Judicial	4 years	20%
Magistrate	4 years	20%
Volunteer Firefighters	4 years	N/A

The corridor essentially puts a firm limit on the AVA/MVA ratio. The corridor prevents the AVA from being too far from the MVA by forcing the recognition of gains or losses that the smoothing method would ordinarily defer. Here is how a 20% corridor would work for the plans that do not currently have a corridor:

New Mexico PERA and ERB (\$ in millions)

	PERA Fund	ERB	Volunteer Firefighters
1. Market Value at End of Year	\$ 8,796	\$ 7,114	\$ 34.0
2. Preliminary Actuarial Value at End of Year	\$ 12,575	\$ 9,366	\$ 48.2
3. Preliminary AVA / MVA ratio (2 / 1)	143%	132%	142%
4. 80% of Market Value	\$ 7,037	\$ 5,691	\$ 27.2
5. 120% of Market Value	\$ 10,555	\$ 8,536	\$ 40.8
6. Final Actuarial Value at End of Year (2, not less than 4 and not greater than 5)	\$ 10,555	\$ 8,536	\$ 40.8
7. Final AVA / MVA ratio (6 / 1)	120%	120%	120%
8. Increase to the Unfunded Liability	\$ 2,020	\$ 830	\$ 7.4

Actuarial standards of practice indicate that a smoothing method for assets should produce smoothed values within a reasonable range around the MVA. A corridor is not a requirement under actuarial standards but it is suggested. When the AVA/MVA ratio becomes about 132% like New Mexico ERB's ratio, more than 30% of the investment losses are not being recognized in the AVA. At a ratio of 120%, over 20% of investment losses are not being recognized in AVA.

Although we are not recommending New Mexico PERA and ERB adopt a corridor, we think the Legislature Council Service should be aware of the significant difference that exists between MVA and AVA for the plans and whether the Legislature Council Service is comfortable with this difference.

SECTION V. ACTUARIAL METHODS

AMORTIZATION METHODOLOGY

The Annual Required Contribution (ARC) currently defined under Governmental Accounting Standards No. 25 is calculated as the sum of normal cost plus an amount that will pay off the unfunded accrued liability over a period not to exceed 30 years for fiscal years beginning after June 15, 2006. The unfunded liability for New Mexico PERA is amortized over an open 30-year period, using payments that rise 4.5% (no increase for Volunteer Firefighters and Legislative) per annum. For ERB, the unfunded liability is amortized over an open 30-year period, using payments that rise 3.75% per annum. Such payments should remain a level percentage of aggregate salaries for the pay-related benefit plans (level dollar for the non-pay related plans), since covered payroll is assumed to increase at the same rate.

The current contributions being paid into the system are not sufficient to pay the normal cost and amortize the net unfunded liability over 30 years for New Mexico PERA, Magistrate, Judicial and New Mexico ERB. The current appropriations are sufficient for Volunteer Firefighters and this plan is in surplus. We recommend New Mexico PERA and ERB develop a long-term solution to the funding problem for the plans affected.

SECTION VI. ACTUARIAL VALUATION RESULTS REVIEW

This section of our review discusses the following aspects of the actuarial valuation results:

- Results of Buck's review of sample member calculations.
- Results of Buck's review of projections.
- Content of the actuarial report with regard to disclosure of actuarial assumptions, plan provisions, data considered, actuarial methods, valuation procedures, assets, and other information that another actuary, unfamiliar with the situation, would require to appraise the finding.
- Adequacy of the information provided in the actuarial report with regard to analysis of gains and/or losses and the effect of changes in plan provisions, actuarial assumptions, and actuarial methods.
- Compliance with the disclosure requirements of Governmental Accounting Standards Board.

SAMPLE MEMBER CALCULATIONS

Generally accepted actuarial standards and practices provide actuaries with the basic mathematics and the framework for calculating the actuarial results. When it comes to applying those actuarial standards to complex calculations, differences may exist due to individual opinion on the best way to make those complex calculations. Although this may lead to differences in the calculated results, these differences may not be material. There is no generally accepted degree to which results can differ to be considered material. However, we generally look for liability (present value) results that differ from another actuary's calculations by no more than 1%. Actuaries can differ on how the liability values should be determined, split between past and future service, so we will typically accept a higher difference of 5% for normal cost.

New Mexico PERA: We received sample member calculations for several actives and inactive members from GRS for the June 30, 2009 PERA valuation. The sample calculations provided for active members were not complete results. We received calculations by decrement for different members but not one complete calculation for a single active member. Because of this, we are unable to render an opinion on the accuracy of GRS's calculations of active member liabilities. In addition, we were unable to obtain responses to our questions regarding differences between our results and GRS for the active sample calculations. Our results for the inactive sample calculations were a close match. Our conclusions for this review and items that need further review are summarized as follows:

- Decrements generally correctly coded for retirement, disability, death, and withdrawal.
 - Appears that the retirement decrement is being calculated in the middle of the year, but the report states that it is beginning of the year.
- Death and disability benefits need to be reviewed to determine if valuing non-duty benefits. Report indicates that all disability benefits are assumed to be non-duty related.

SECTION VI. ACTUARIAL VALUATION RESULTS REVIEW

- For Municipal Fire and State Police, the death benefit was valued as the minimum of 50% (instead of 30%) of pay and the accrued benefit. The report states that all deaths benefits are assumed to be non-duty related which has a minimum of 30% of pay.
- For Municipal Police and Fire, the disability benefit was valued as the minimum of 40% of pay and the accrued benefit. It appears the benefit may have been valued as a duty disability benefit and used projected service instead of service at the decrement date.
- For State General, the disability benefit was valued as the minimum of 35% of pay and the accrued benefit. The report does not describe the disability benefit as having a minimum of 35% of pay.
- For Municipal General and State Police, the disability benefit was valued as the minimum of 65% of pay and the accrued benefit.
- Various calculated benefits appear to use different service amounts but we were unable to confirm how these amounts were used. For example, for Municipal Fire, the normal retirement liability for a Plan 2 member was shown with 10.33 years of service at age 60 and with 25.33 years at age 60. We believe 25.33 years is correct. This situation should be reviewed for all PERA plans.
- Eligibility for the different benefits generally calculated correctly.
 - For State Police, it does not appear that the enhanced service credit (1.2 years of credited service per year) was included for eligibility purposes.
- Salaries properly projected.
- Retired benefits for optional forms of payment valued correctly.
- COLA for retired benefits is valued correctly except for Judicial Plan.
 - The summary of the liability did not match the detailed calculation for the Judicial retired member. In the detailed calculation, it appears the COLA was applying on the valuation date instead of being delayed for 2 calendar years.
 - We did not match the liability for the Judicial terminated vested member. It appears the COLA was delayed too long.
- Minor change to termination benefit valuation for active members for benefits paid upon death after termination could improve accuracy. GRS is not valuing any death benefits for actives who die after termination but before retirement or deferred vesteds who die before retirement.

After our review, we received the June 30, 2010 valuation report from PERA's current actuary, Cavanaugh Macdonald Consulting, LLC. Below is a summary of the results of their replication of the June 30, 2009 valuation performed by GRS from the Cavanaugh Macdonald report as a percentage change.

SECTION VI. ACTUARIAL VALUATION RESULTS REVIEW

Percent Change in Value Due to Transition		
	Actuarial Accrued Liability	Normal Cost Amount
State General	(0.7)%	(2.7)%
State Police	(2.8)%	(7.7)%
Municipal General	(1.3)%	(5.4)%
Municipal Police	(1.4)%	(4.2)%
Municipal Fire	(0.7)%	(3.7)%

Based on these results, it appears that GRS's valuation results were conservative and in some cases materially greater when compared to the results of PERA's current actuary. Our understanding is that Cavanaugh Macdonald was also unable to get detailed sample member liability calculations from GRS to reconcile the differences between the results.

New Mexico ERB: We reviewed sample member calculations from the June 30, 2009 ERB actuarial valuation to ensure that they valued the correct benefit levels, used the correct assumptions and calculated the liabilities correctly on an individual basis.

We reviewed sample member calculations sent to us by GRS for ERB for several active and inactive members and found our results were a close match. Our conclusions for this review are summarized as follows:

- Decrements correctly coded for retirement, disability, death, and withdrawal.
- Benefit levels correctly calculated for retirement, disability, death, and withdrawal.
- Eligibility for the different benefits correctly calculated.
- Salaries properly projected.
- Service was calculated and projected correctly.
- Retired benefits for each optional form of payment valued correctly.
- COLA for retired benefits is valued correctly.
- Minor change to termination benefit valuation for active members for benefits paid upon death after termination could improve accuracy. GRS is not valuing any termination death benefits for actives or deferred vesteds.
- Minor change to death benefit valuation for active members. GRS assumes a beneficiary of an active member will elect a refund of contributions if the member was not retirement eligible. GRS may consider valuing the greater of the refund or the annuity as they do for active members upon termination.

SECTION VI. ACTUARIAL VALUATION RESULTS REVIEW

REVIEW OF PROJECTIONS

New Mexico PERA: We reviewed limited output from a 5-year projection of the plan's funded ratio and contribution rate beginning June 30, 2008 based on the statutes in place at that time and an open group 30-year projection based on the June 30, 2009 valuation. The results appeared reasonable.

New Mexico ERB: We reviewed the output from a 30-year projection of the plan's funded ratio and amortization period beginning June 30, 2009 based on the current statutes, which include the change in retirement eligibility for future new hires. The results appeared reasonable. There are two assumptions we suggest modifying. First, it appears that GRS assumes all non-vested terminated members will take a refund in the first year of the projection. While this is a reasonable approach, we would recommend assuming a slower payout of refunds to this group for projections over a period of five to ten years. Second, the active population is assumed to grow at 1.5% per year over the projection period. Based on population projections from Proximity One, New Mexico's total population and number of school age children is expected to decline slightly in the next 20 years. Therefore, we believe that an assumption of 1.5% growth per year is not reasonable and is an aggressive assumption. As a result, we recommend ERB projections be performed with no population growth (stable population only). We also recommend analyzing the sensitivity of ERB's projection results to the active population growth assumption.

CONTENT OF THE ACTUARIAL REPORT

The American Academy of Actuaries has stated, "The form and content of any actuarial communication should meet the needs of the particular circumstances, taking into account the knowledge and understanding of the users and the actuary's relationship to the users." Therefore, the form and content of an actuarial report may vary considerably from one actuary or plan to another.

However, the Academy has issued the Actuarial Standard of Practice No. 4, which deals with measuring pension obligations and communicating the results. They list specific elements to be included, either directly or by references to prior communication, in pension actuarial communications. Some of the elements would not be pertinent in all communications, but since an actuarial valuation report is the most complete picture of the actuarial status of the plan, all the elements listed should be covered in the report, even if only briefly.

The following is a list of the specific elements:

- The name of the person or firm retaining the actuary and the purposes that the communication is intended to serve.
- An outline of the benefits being discussed or valued and of any significant benefits not included in the actuarial determinations.
- A statement as to the effective date of the calculations, the date as of which the member and financial information were compiled, and the sources and adequacy of such information.
- A summary of the member information, separated into significant categories such as active, retired, and terminated-vested. Actuaries are encouraged to include a detailed display of the characteristics of each category and reconciliation with prior reported data.

SECTION VI. ACTUARIAL VALUATION RESULTS REVIEW

- A summary of asset information and derivation of the actuarial value of assets. Actuaries are encouraged to include an asset summary by category of investment and reconciliation with prior reported assets showing total contributions, benefits, investment return, and any other reconciliation items.
- A description of the actuarial assumptions and cost method and the asset valuation method. Changes in assumptions and methods from those used in previous communications should be stated and their effects noted. If the actuary expects that the long-term trend of costs resulting from the continued use of present assumptions and methods would result in a significantly increased or decreased cost basis, this should also be communicated.
- A statement of the findings, conclusions, or recommendations necessary to satisfy the purpose of the communication and a summary of the actuarial determinations upon which these are based. The communication should include applicable actuarial information regarding financial reporting. Actuaries are encouraged to include derivation of the items underlying these actuarial determinations.
- A disclosure of any facts which, if not disclosed, might reasonably be expected to lead to an incomplete understanding of the communication.

We have reviewed the June 30, 2009 actuarial valuation reports prepared by GRS. The GRS reports contained most of the elements required by ASOP No. 4. Some reports included historical information and several additional summaries of the member data and asset information. The reports did not contain the following required element:

New Mexico PERA:

- Changes in assumptions and methods from those used in previous communications should be stated and their effects noted. For PERA, Legislative Division and Volunteer Firefighters, the liability impact was noted for changes in assumptions but a description of those changes was not included in the June 30, 2009 valuation reports.

RECOMMENDATIONS FOR THE REPORT

We have the following suggestions we believe will improve the communication of actuarial valuation results to interested parties:

New Mexico PERA Fund:

- Show detailed gain/loss analysis by source.
- Show historical Market Value of Assets and returns on Market Value and Actuarial Value of Assets.
- Clarify if payroll shown in valuation report is actual reported (annualized) by New Mexico or projected in the valuation process.
- We recommend including a reconciliation of the participant data from the prior year.
- The active mortality table used should be described as a prescribed table or table based on plan experience.
- Describe the assumed commencement age for deferred vested members.

SECTION VI. ACTUARIAL VALUATION RESULTS REVIEW

Magistrate:

- Show detailed gain/loss analysis by source.
- Show historical Market Value of Assets and returns on Market Value and Actuarial Value of Assets.
- Clarify if payroll shown in valuation report is actual reported (annualized) by New Mexico or projected in the valuation process.
- Clarify if 2% load for data corrections is applied to normal cost as well as active liability.
- Describe the assumed commencement age for deferred vested members.

Judicial:

- Show detailed gain/loss analysis by source.
- Show historical Market Value of Assets and returns on Market Value and Actuarial Value of Assets.
- Clarify if payroll shown in valuation report is actual reported (annualized) by New Mexico or projected in the valuation process.
- Clarify if 2% load for data corrections is applied to normal cost as well as active liability.
- Describe the assumed commencement age for deferred vested members.

Volunteer Firefighters:

- Show detailed gain/loss analysis by source.
- Show historical Market Value of Assets and returns on Market Value and Actuarial Value of Assets.
- We recommend including a reconciliation of the participant data from the prior year.
- Describe the assumed commencement age for deferred vested members.

New Mexico ERB:

- Show detailed gain/loss analysis by source.

SECTION VII. SOLVENCY

In addition to the actuarial review of New Mexico PERA and New Mexico ERB, the Retirement Systems Solvency Task Force (RSSTF) asked Buck to assist with a determination of whether or not PERA and ERB were “solvent”. The results of the June 30, 2009 actuarial valuations for both systems indicated that statutory contributions would no longer be sufficient to fund the normal cost (cost of accruing benefits for active members) and amortize the unfunded liability over a 30 year period in accordance with the funding policy adopted by the Retirement Boards of each plan.

In Buck’s opinion, the inability of a retirement system to meet its funding policy is a concern and should be addressed, but that does not mean the retirement system is insolvent. It is possible that although the 30 year amortization requirement is not met, future contributions may still be sufficient to amortize the unfunded liability over a longer, finite period of time. If this is the case, sufficient assets are still expected to be available to meet all future benefit obligations. If the unfunded liability is not expected to be amortized over any period, then at some point in the future, assets can be expected to be fully depleted if all assumptions are fully realized.

Another test for insolvency is whether or not assets are expected to be sufficient to meet future benefit payments, and if not, when assets are expected to be completely depleted. In this case, the retirement systems would no longer be able to meet the benefit obligations, and employers would then be responsible for meeting benefit payments on a pay-as-you-go basis. This could lead to serious financial hardships for employers if benefit payments significantly exceed budgetable retirement contributions.

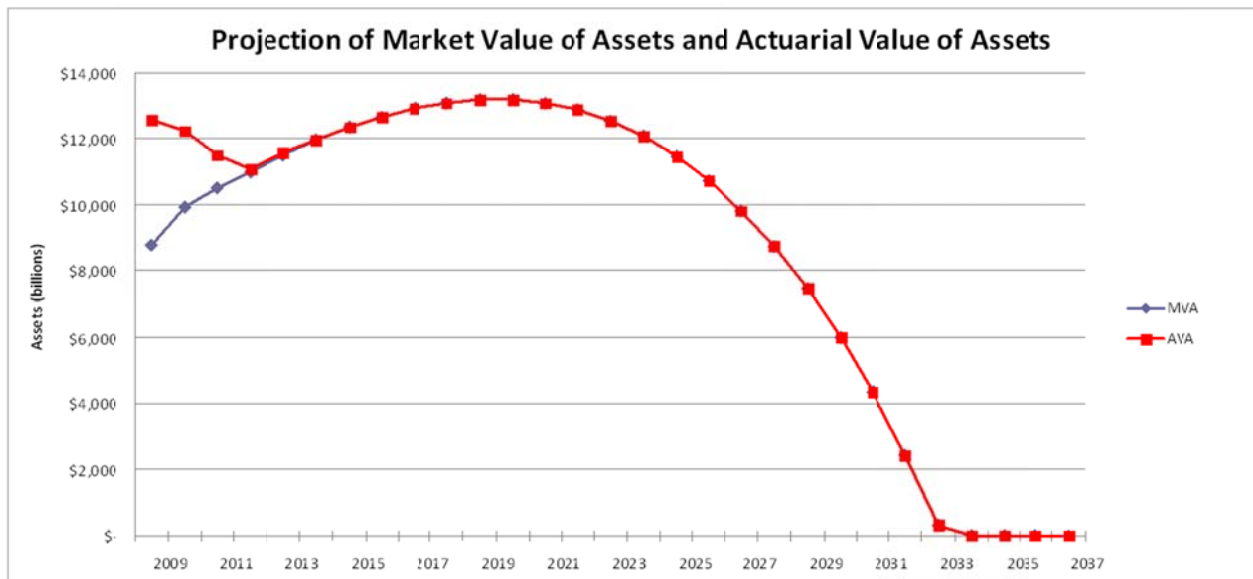
In order to determine if PERA or ERB could be expected to reach insolvency by fully depleting assets, Buck requested and received information from GRS from projections that were completed for both PERA and ERB. We received information on ERB for both closed and open group projections. For PERA, we received open group projection information only and estimated the closed group population. A closed group projection includes liability and benefit payment projections for only current active and retired members. Benefits for new entrants are assumed to be funded separately. An open group projection includes an assumed group of new entrants who are likely to replace retiring and terminating members over the projection period. Either approach can be used to test for insolvency. An open group approach will extend the solvency period because assets are accumulated to pay for the benefits of new entrants, but may instead be used to pay benefits of current members if needed to meet benefit payments.

Our projections are based on a projection of the market value of assets earning the assumed rate of return of 8.00% per year. This assumption has the effect of realizing deferred losses on the actuarial value of assets, causing a lower than expected return on the actuarial value until all prior losses are realized. This explains the reduction in the actuarial value of assets in the short term until all prior losses are realized, at which time market and actuarial values are expected to equalize. The results of our projections of fund assets measured on a market and actuarial basis follow.

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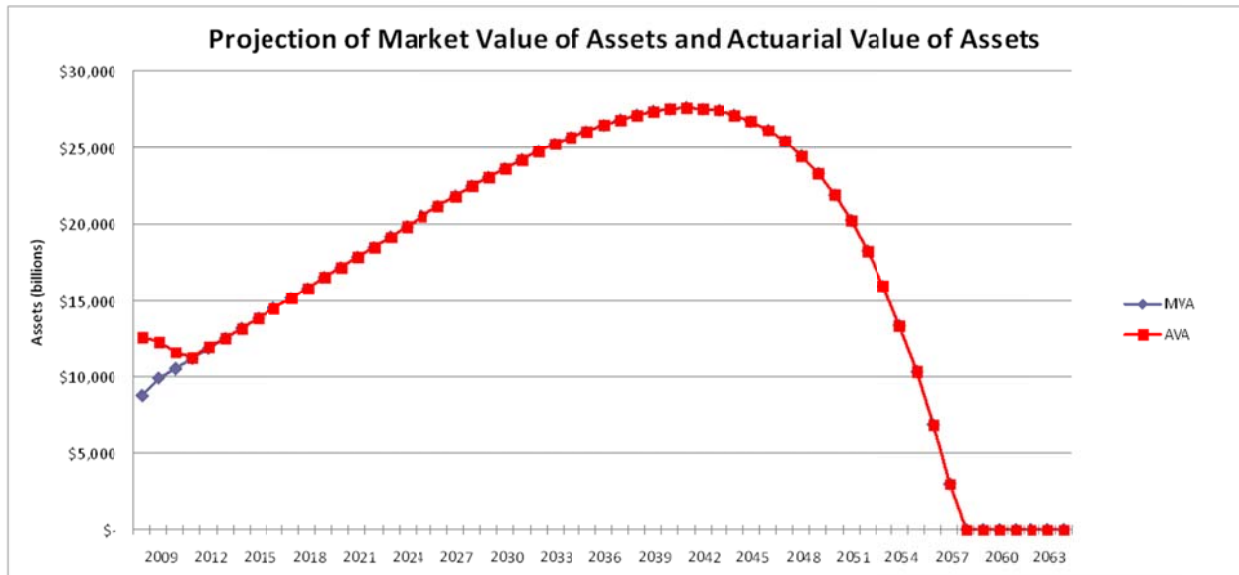
New Mexico PERA

The following graph is based on estimated closed group projections using data provided by GRS and a 4.5% payroll growth assumption. The projection includes the unfunded liability payment on new entrant payroll for members hired after June 30, 2010, but does not include the benefit payments or normal cost contributions for new hired members. The asset projection includes the actual rate of return of 15.02% for FY 2010 and 8.00% for all years thereafter. Employee contributions were assumed to be 10.99% for FY 2010 and 2011, and 10.25% for all years thereafter. Employer contributions were assumed to be 13.97% for FY 2010 and 2011, and 14.71% for all years thereafter.



SECTION VII. SOLVENCY

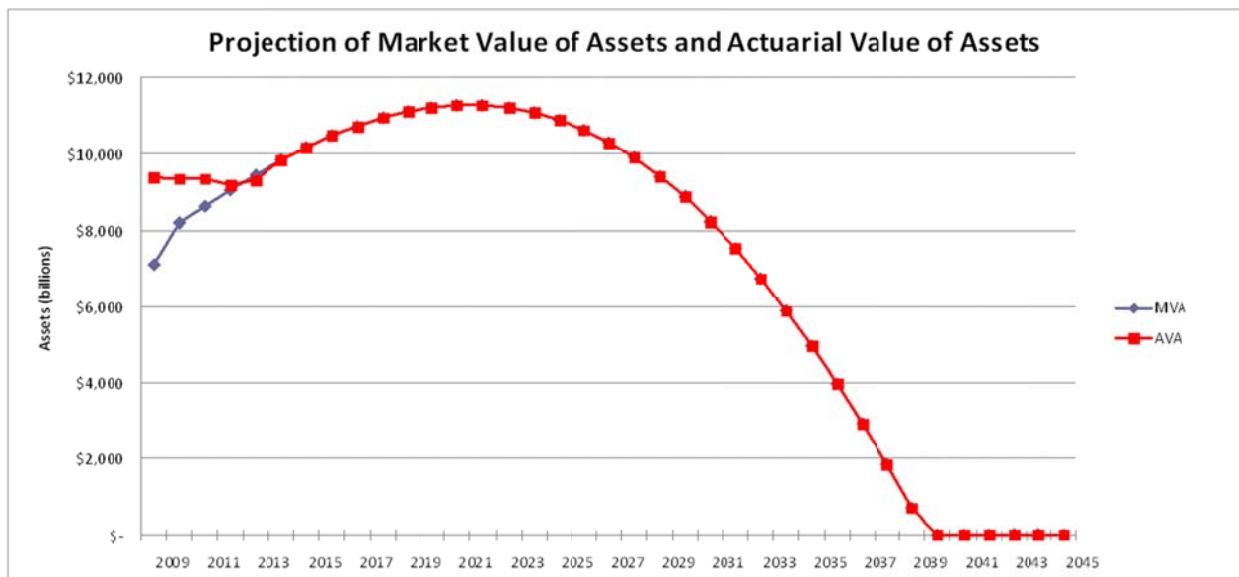
The following graph is based on open group projections with no population growth provided by GRS and includes the new benefit structure for members hired after June 30, 2010. The asset projection includes the actual rate of return of 15.02% for FY 2010 and 8.00% for all years thereafter. Employee contributions were assumed to be 10.99% for FY 2010 and 2011, and 10.25% for all years thereafter. Employer contributions were assumed to be 13.97% for FY 2010 and 2011, and 14.71% for all years thereafter.



SECTION VII. SOLVENCY

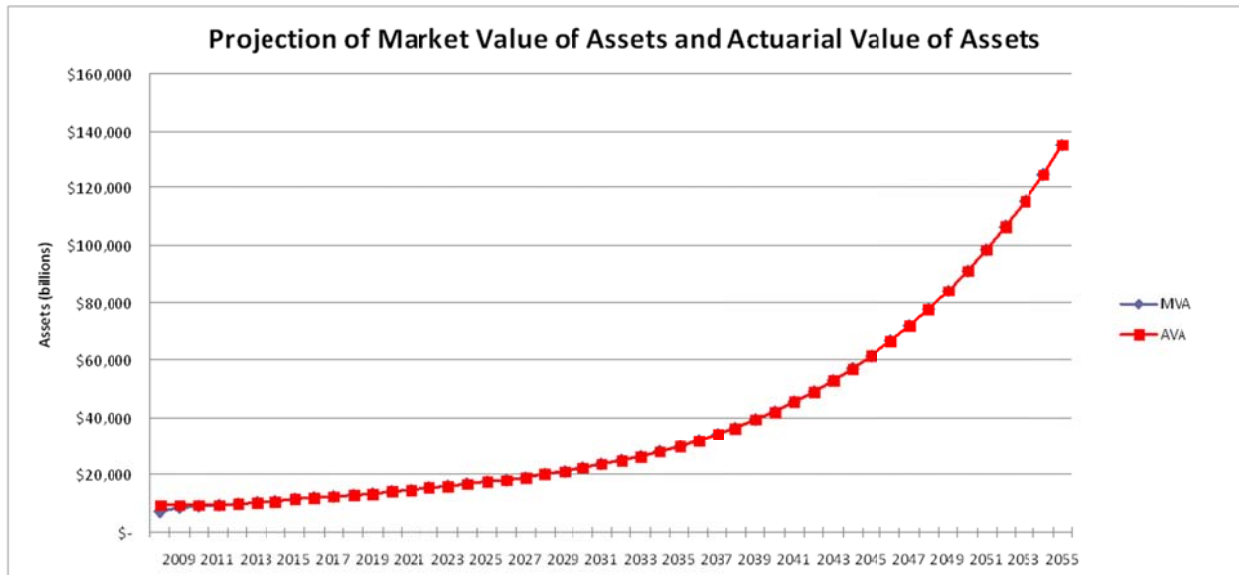
New Mexico ERB

The following graph is based on closed group projections using data supplied by GRS and a 3.75% payroll growth assumption. The projection includes the unfunded liability payment on new entrant payroll for members hired after June 30, 2010, but does not include the benefit payments or normal cost contributions for members hired after June 30, 2010. The asset projection includes the actual rate of return of 18.60% for FY 2010 and 8.00% for all years thereafter. Employee contributions were assumed to be 9.40% for FY 2010 and 2011, and 7.90% for all years thereafter. Employer contributions were assumed to be 10.90% for FY 2010 and 2011, 13.15% for FY 2012 and 2013, and 13.90% for all years thereafter.



SECTION VII. SOLVENCY

The following graph is based on open group projections with 1.50% population growth provided by GRS and includes the new benefit structure for members hired after June 30, 2010. The asset projection includes the actual rate of return of 18.60% for FY 2010 and 8.00% for all years thereafter. Employee contributions were assumed to be 9.40% for FY 2010 and 2011, and 7.90% for all years thereafter. Employer contributions were assumed to be 10.90% for FY 2010 and 2011, 13.15% for FY2012 and 13.90% for all years thereafter.



We believe that the 1.5% per year population growth assumption is very aggressive. Asset accumulation would be less if lower population growth is experienced.

SECTION VII. CONCLUSION

As independent reviewing actuary, Buck has been asked to provide an opinion and recommendations for the improvement of the actuarial valuations performed by the retained actuaries. The purpose of this review is to provide assurance to the New Mexico Legislative Council Service that the valuations were conducted using complete and valid information, the actuarial assumptions and methods were consistent with generally accepted actuarial standards and procedures, the sample member calculations are accurate, and the actuarial report fully and fairly discloses the actuarial position of New Mexico PERA and ERB retirement funds.

From our review of the plan, we believe the actuarial valuation of New Mexico ERB prepared by GRS fairly represents the actuarial position and funding requirements of the retirement system. We have made suggestions throughout this report that we believe will enhance the actuarial valuation process and reports of the actuaries. For New Mexico PERA, we were unable to get the information necessary to render an opinion on the accuracy of GRS's 2009 valuation results.

The solvency review indicates that if there are no changes to statutory contribution rates or benefit levels and all assumptions are exactly realized, both PERA and ERB can be expected to reach insolvency at some point in the future. This is dependent on meeting the assumptions in the long term, and assumes an investment return of 8.00% per year. For PERA, the point of insolvency is reached in 2033 under the closed group approach, and in 2058 under the open group approach. For ERB, the point of insolvency under a closed group approach is reached in 2039, and is not insolvent under the open group approach, with assets expected to grow throughout the projection period. This is a result of an active membership growth assumption of 1.5% per year. As we discussed in Section VI, we believe a 1.5% membership growth assumption is unrealistic, and this leads to an optimistic projection of future salaries and contributions that result in a solvent open group projection. We recommend that GRS provide ERB with an open group projection using a no growth (i.e. stable population) assumption for comparison purposes.

APPENDIX

Exhibit 1

Development of Actuarial Value of Assets as of June 30, 2009 Using Alternative Method

PERA Fund

1. Actual MVA at EOY	\$ 8,795,819,080
2. 75% of prior year (gain)/loss	3,040,473,176
3. 50% of second prior year (gain)/loss	1,018,853,020
4. 25% of third prior year (gain)/loss	<u>(280,003,152)</u>
5. Total unrecognized (gain)/loss (2 + 3 + 4)	\$ 3,779,323,044
6. AVA at EOY (1 + 5)	12,575,142,124
7. GRS AVA at EOY	12,575,142,126
8. Difference (7 - 6)	2

Magistrate

1. Actual MVA at EOY	\$ 26,270,170
2. 75% of prior year (gain)/loss	8,989,760
3. 50% of second prior year (gain)/loss	3,071,369
4. 25% of third prior year (gain)/loss	<u>(882,631)</u>
5. Total unrecognized (gain)/loss (2 + 3 + 4)	\$ 11,178,498
6. AVA at EOY (1 + 5)	37,448,668
7. GRS AVA at EOY (before corridor)	37,448,668
8. Difference (7 - 6)	0

Judicial

1. Actual MVA at EOY	\$ 60,967,627
2. 75% of prior year (gain)/loss	19,889,855
3. 50% of second prior year (gain)/loss	6,789,840
4. 25% of third prior year (gain)/loss	<u>(1,902,685)</u>
5. Total unrecognized (gain)/loss (2 + 3 + 4)	\$ 24,777,010
6. AVA at EOY (1 + 5)	85,744,637
7. GRS AVA at EOY (before corridor)	85,744,639
8. Difference (7 - 6)	2

APPENDIX

**Exhibit 1
(continued)**

**Development of Actuarial Value of Assets as of June 30, 2009
Using Alternative Method**

Volunteer Firefighters

1. Actual MVA at EOY	\$	34,036,300
2. 75% of prior year (gain)/loss		11,412,239
3. 50% of second prior year (gain)/loss		3,787,235
4. 25% of third prior year (gain)/loss		<u>(1,043,513)</u>
5. Total unrecognized (gain)/loss (2 + 3 + 4)	\$	14,155,961
6. AVA at EOY (1 + 5)		48,192,261
7. GRS AVA at EOY		48,192,255
8. Difference (7 - 6)		(6)

ERB

1. AVA at BOY	\$	9,272,828,135
2. MVA at BOY		8,770,044,039
3. Contributions		538,793,240
4. Benefit Payments		(647,391,550)
5. Expected return at 8%		<u>697,259,591</u>
6. Expected MVA at EOY (2 + 3 + 4 + 5)	\$	9,358,705,320
7. Expected AVA at EOY (1 + 3 + 4 + 5)		9,861,489,416
8. Actual MVA at EOY		<u>7,113,651,700</u>
9. Gain / (Loss) on MVA (8 - 6)	\$	(2,245,053,620)
10. 20% recognition for current year (20% x 9)		(449,010,724)
11. 20% of 2008 gain / (loss)		(265,137,838)
12. 20% of 2007 gain / (loss)		140,369,391
13. 20% of 2006 gain / (loss)		58,098,017
14. 20% of 2005 gain / (loss)		<u>20,463,050</u>
15. Total Recognized (10 + 11 + 12 + 13 + 14)	\$	(495,218,104)
16. AVA at EOY (7 + 15)		9,366,271,312
17. GRS AVA at EOY		9,366,271,312
18. Difference (17 - 16)		0

APPENDIX

Exhibit 2

New Mexico PERA (including Judicial)

Year Ending June 30th	Current Asset Valuation Method				Asset Valuation Method Recognizing Expected Return on Existing Bases*				Difference in Actuarial Value
	Existing Bases	Market Value	Actuarial Value	Difference	Existing Bases	Market Value	Actuarial Value	Difference	
2009	\$ (3,779,323,046)	\$ 8,795,819,080	\$ 12,575,142,126	\$ (3,779,323,046)	\$ (3,775,200,559)	\$ 8,795,819,080	\$ 12,571,019,639	\$ (3,775,200,559)	\$ (4,122,487)
2010	(2,763,168,013)	9,338,076,771	12,101,244,783	(2,763,168,012)	(2,521,838,967)	9,338,076,771	11,859,915,736	(2,521,838,965)	(241,329,047)
2011	(1,330,454,064)	9,897,228,367	11,227,682,431	(1,330,454,064)	(995,496,643)	9,897,228,367	10,892,725,010	(995,496,643)	(334,957,421)
2012	(265,940,427)	10,469,847,175	10,735,787,602	(265,940,427)	-	10,469,847,175	10,469,847,175	-	(265,940,427)
2013	(124,437,950)	11,053,421,729	11,177,859,679	(124,437,950)	-	11,053,421,729	11,053,421,729	-	(124,437,950)
2014	(44,712,977)	11,642,987,619	11,687,700,596	(44,712,977)	-	11,642,987,619	11,642,987,619	-	(44,712,977)
2015	(12,979,107)	12,235,414,906	12,248,394,014	(12,979,108)	-	12,235,414,906	12,235,414,906	-	(12,979,108)
2016	(5,056,027)	12,828,075,819	12,833,131,846	(5,056,027)	-	12,828,075,819	12,828,075,819	-	(5,056,027)
2017	(1,716,788)	13,419,725,936	13,421,442,724	(1,716,788)	-	13,419,725,936	13,419,725,936	-	(1,716,788)
2018	(564,833)	14,009,349,935	14,009,914,768	(564,833)	-	14,009,349,935	14,009,349,935	-	(564,833)
2019	(203,684)	14,594,221,572	14,594,425,256	(203,684)	-	14,594,221,572	14,594,221,572	-	(203,684)
2020	(69,151)	15,170,975,241	15,171,044,392	(69,151)	-	15,170,975,241	15,170,975,241	-	(69,151)
2021	(23,595)	15,737,825,053	15,737,848,648	(23,595)	-	15,737,825,053	15,737,825,053	-	(23,595)
2022	(8,258)	16,294,632,271	16,294,640,529	(8,258)	-	16,294,632,271	16,294,632,271	-	(8,258)
2023	(2,825)	16,839,841,591	16,839,844,416	(2,825)	-	16,839,841,591	16,839,841,591	-	(2,825)
2024	(974)	17,370,694,620	17,370,695,594	(974)	-	17,370,694,620	17,370,694,620	-	(974)
2025	(339)	17,885,328,818	17,885,329,157	(339)	-	17,885,328,818	17,885,328,818	-	(339)
2026	(118)	18,382,884,918	18,382,885,036	(118)	-	18,382,884,918	18,382,884,918	-	(118)
2027	(42)	18,862,424,390	18,862,424,432	(42)	-	18,862,424,390	18,862,424,390	-	(42)
2028	(16)	19,321,388,855	19,321,388,871	(16)	-	19,321,388,855	19,321,388,855	-	(16)
2029	-	19,755,640,467	19,755,640,467	-	-	19,755,640,467	19,755,640,467	-	-