New Mexico Educational Retirement Board

Actuarial Terms

Investments and Pensions Oversight Committee

Representative Tomás Salazar, Chair

George Muñoz, Vice-Chair

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Areas Covered

- What is an Actuary and what do they do?
- Valuation Establishment
- Actuarial Metrics
- Plan Design

What is an Actuary?

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What is an Actuary?

An actuary is a professional that uses mathematical skills to evaluate the likelihood of future events and their potential financial consequences. This evaluation includes statistics and calculus-based probability, and can include economics, computer science, finance and business.

Their efforts are focused on identifying ways to measure and mitigate or manage risk associated with future events. In the case of pension actuaries, much of the attention is on:

- Mortality risk, or death rate
- Morbidity risk, or disease, disability or poor health
- Investment risk, or the probability of losses relative to the expected return on investment of assets
- Other considerations include politics, budget, demographics, and inflation

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Life Actuary

Long-term Care Insurance

Health Savings Accounts

Health Insurance

Long-term Disability Insurance

Pension

Annuities

Life Insurance

Deals with investment risk, mortality risk and morbidity risk

Non-Life Actuary

Deals with legal & physical risk that affects people & property

Vehicle Insurance

Commercial Property Insurance

Workers' Compensation

Homeowners Insurance

Malpractice Insurance

Marine Insurance

Terrorism Insurance

Product Liability Insurance

Valuation Establishment

- **Actuarial Valuation**- the determination as of a valuation date of a plan's normal cost, Actuarial Accrued Liability and the Actuarial Value of Assets based on a set of actuarial assumptions.

- **Valuation Date-** the date as of which the value of assets and liabilities are determined. The expected benefits to be paid in the future are discounted to this date. NMERB's valuation date is the close of its fiscal year, June 30.

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Valuation Establishment

- **Normal cost-** the percent of payroll that is needed to fund the benefits accrued during the year for current employees. NMERB’s normal cost is 13%.

- **Actuarial Accrued Liability (AAL)** - the present value of all plan benefits payable to terminated and retired members as well as the present value of the plan benefits currently accrued by current employees. NMERB’s AAL as of June 30, 2016 was $18.5 billion.

Valuation Establishment

- **Actuarial Value of Assets-** the value of the plan's assets as of a certain date. Actuaries use a smoothed value to reduce the year-to-year volatility of metrics. NMERB's actuaries smooth the unexpected investment gains and losses over a five-year period. As of June 30, 2016, NMERB's Actuarial Value of Assets was $11.9 billion.

Valuation Establishment

- **Actuarial assumptions-** the actuaries use these assumptions, which are approved by the plan's board, to assess the plan's liabilities. Assumptions include: mortality, withdrawal, disability and retirement; inflation; future increases in salary; future rates of investment earnings; and member demographics such as gender, starting age and marital status.

Valuation Establishment

- **Actuarial cost method-** a method used to calculate the normal cost and the Actuarial Accrued Liability. Both NMERB and PERA use the Entry Age Normal method, which is designed to create level normal cost contributions throughout the working career of the employee.

Valuation Establishment

- **Contribution rate**- statutory rate required to be paid by the employer and the employee. Part of the contribution is used to pay the normal cost and the rest is used to pay down the unfunded actuarial accrued liability.

- **Unfunded Actuarial Accrued Liability**- the excess of the Actuarial Accrued Liability over the Actuarial Valuation of Assets. NMERB's UAAL as of June 30, 2016 was $6.6 billion.

Valuation Establishment

- **Actuarial Gain or Actuarial Loss-** changes in the unfunded actuarial accrued liability based on the difference between actual experience in the past year and the actuarial assumption. Actuarial gains are due to favorable experience, e.g., the Plan's assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results that produce actuarial liabilities which are larger than projected.

Valuation Establishment

- **Annual Required Contribution (ARC)**- the employer's periodic contribution, stated as a percentage of plan compensation, to fund the normal cost and amortize the Unfunded Actuarial Accrued Liability within a set time, often 30 years. This has been a standard for measuring pension plans since the 1990s. The ARC consists of the normal cost and amortization payment. This terminology was primarily associated with recently expired accounting standards and the current industry term is now Actuarially Determined Contribution.

Valuation Establishment

- **Actuarially Determined Contribution or Funding Policy Contribution**- similar to the ARC and generally based on the Board's funding policy. NMERB's ADC for the fiscal year ending June 30, 2017 was 17.30% of pay, which includes the Board's goal of eliminating the unfunded actuarial accrued liability by June 30, 2042.

- **Amortization Payment**- the portion of the pension plan contributions or ADC, which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

Valuation Establishment

- **Closed Amortization Period**- a set point in time by which the plan will amortize the Unfunded Actuarial Accrued Liability. NMERB set a goal of paying off its UAAL within 30 years from June 30, 2012 (26 years from June 30, 2016).

- **Experience Study**- a periodic review and analysis of a plan's actual experience to see if any of the plan's actuarial assumptions should be modified. NMERB has an experience study prepared every two years to identify emerging trends.

Valuation Establishment

- **Open group projections**- generally refer to dynamic projections of actuarial valuation results where the number of active members is assumed to remain unchanged and the active members who leave employment are assumed to be replaced by new entrants each year. For NMERB, the open group projections also take into account future expectations such as reduced cost of living adjustments, lower cost of benefits for new tier members, and returns on the market value of assets at the assumed rate of return.

Valuation Establishment

- **Closed group projections**- are based on the makeup of the current members and plan design elements. For NMERB, the closed group projections take into account the benefits payable to current members, 2% cost of living adjustments, and returns on the actuarial value of assets at the assumed rate of return.

- **Market value of assets**- the fair market value of assets. Certain actuarial calculations, including GASB 67, use this for valuation purposes, rather than the AVA. As of June 30, 2016 NMERB's market value of assets was $11.5 billion.

Actuarial Metrics

- **Funded Ratio**- the ratio of the Actuarial Value of Assets to the Actuarial Accrued Liability. As of June 30, 2016, NMERB's funded ratio was 64.2%.

- **Funding Period**- how long it will take a plan, with the current percent of contributions, to be 100% funded. As of June 30, 2016, NMERB's funded period was 46 years based on open group projections.

Actuarial Metrics

- **Society of Actuaries and American Academy of Actuaries**- professional organizations of actuaries that set reporting standards for actuaries.

- **Governmental Accounting Standards Board (GASB)**- the private, nongovernmental board that determines generally accepted accounting principles (what must be reported and how) for public entities.

Plan Design

- **Defined Benefit Plan**- an employer-sponsored retirement plan that provides workers, when eligible for retirement, with a monthly benefit based on the employee's salary and length of service. In the public sector, employees and employers generally contribute to the plan.

Plan Design

- **Defined contribution plan**- an employer-sponsored retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, and the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance. The employee is usually responsible for the investment decisions and asset allocation.

Plan Design

- **Vesting period**- how long an employee must work for a plan employer to be eligible for plan benefits such as retirement or disability benefits. For NMERB the vesting period is 5 years.

- **Final Average Salary (FAS)**- period over which employee’s salary is considered when calculating retirement benefit. For NMERB the FAS is 5 years.

Plan Design

- **Multiplier**- the pension formula factor that when multiplied by the number of years of service determines the income replacement percentage. The multiplier for NMERB is 2.35%.

- **Service Credit**- the number of years worked, or purchased, that an employee has that are included in the calculation of benefits.

Plan Design

- **Income replacement ratio**- the percent of the Final Average Salary the member will have in retirement. For NMERB members with 25 years of service the ratio is 58.75%, for 30 years 70.5% and for 35 years 82.25%.

- **Cost of Living Adjustment (COLA)**- an annual or ad hoc adjustment to retirees' benefits. NMERB's annual COLA is based on the change in the Consumer Price Index. For 2017, NMERB's COLA is 1.3%, 1.17% or 1.04% (depending on years of service and income level) and will cost approximately $8 million.

Plan Design

- **Benefit Spiking**- manipulation of earnings to increase retirement benefit.
- **Social Security-** a pension plan administered by the federal government. Retirement benefits are based on a 35-year work history and income replacement ranges from 53% for low income earners to 26% for high income earners (capped at the Social Security contribution earnings limit of $127,200 for 2017). Social Security also provides disability and survivor benefits.

What does an Actuary do?

ERB Schedule of Contribution Rates

Fiscal Year	wage category	Date Range	Member Rate	Employer Rate	Total Contribution	% of Total Contribution that Employee Pays
58-59		7/1/1957 -6/30/1959	3.00%	4.00%	7.00%	**42.86%**
60-74		7/1/1959 -6/30/1974	4.00%	6.50%	10.50%	**38.10%**
75-79		7/1/1974 -6/30/1979	5.50%	6.50%	12.00%	**45.83%**
80-81		7/1/1979 -6/30/1981	6.50%	6.50%	13.00%	**50.00%**
82-84		7/1/1981 -6/30/1984	6.80%	6.80%	13.60%	**50.00%**
85-93		7/1/1984 -6/30/1993	7.60%	7.60%	15.20%	**50.00%**
94-2005		7/1/1993 -6/30/2005	7.60%	8.65%	16.25%	**46.77%**
2006		7/1/2005 -6/30/2006	7.675%	9.40%	17.075%	**44.95%**
2007		7/1/2006 -6/30/2007	7.75%	10.15%	17.90%	**43.30%**
2008		7/1/2007 -6/30/2008	7.825%	10.90%	18.725%	**41.79%**
2009		7/1/2008 -6/30/2009	7.90%	11.65%	19.55%	**40.41%**
2010 & 2011	$20k or less	7/1/2009 -6/30/2011	7.90%	12.40%	20.30%	**38.92%**
2010 & 2011	Over $20K	7/1/2009 -6/30/2011	9.40%	10.90%	20.30%	**46.31%**
2012	$20k or less	7/1/2011 - 6/30/2012	7.90%	12.40%	20.30%	**38.92%**
2012	Over $20K	7/1/2011 - 6/30/2012	11.15%	9.15%	20.30%	**54.93%**
2013	$20k or less	7/1/2012 - 6/30/2013	7.90%	12.40%	20.30%	**38.92%**
2013	Over $20K	7/1/2012 - 6/30/2013	9.40%	10.90%	20.30%	**46.31%**
2014	$20k or less	7/1/2013 - 6/30/2014	7.90%	13.15%	21.05%	**37.53%**
2014	Over $20K	7/1/2013 - 6/30/2014	10.10%	13.15%	23.25%	**43.44%**
2015	$20k or less	7/1/2014 - future	7.90%	13.90%	21.80%	**36.24%**
2015	Over $20K	7/1/2014 - future	10.70%	13.90%	24.60%	**43.50%**

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