NEW MEXICO EDUCATIONAL RETIREMENT BOARD

Actuarial Experience Study for the Six-Year Period Ending June 30, 2016

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Agenda

- Assumption setting process
- Economic assumptions
  - Inflation
  - Investment return
  - Related assumptions

Assumption Setting Process

- General process for setting assumptions
  - Actuary recommends assumptions
  - Board considers actuary's recommendation and makes the final decision for the system
- Experience Study is a periodic review of the assumptions and methods used by the actuary
  - ERB has one prepared every two years
    - Last one performed after June 30, 2014 actuarial valuation
  - Two-year interval is a best practice for ERB
    - GFOA recommends at least once every five years

Assumption Setting Process

- Assumptions are not static and must stay current
  - Should be appropriate in each actuarial valuation
  - Can change even without a formal experience study
  - Actuarial Standards of Practice (ASOPs) now require the actuary attest to the reasonableness of the actuarial assumptions in every actuarial valuation report
- Incredibly low levels of current inflation and expectations of future inflation are prompting conversations about the inflation assumption across the country

Procedure

- Compared economic assumptions to:
  - General US price inflation and wage inflation statistics
  - ERB specific salary increases
  - Expected return using seven investment consultants' 2016 capital market assumption sets, including NEPC's
  - Economic assumptions should be consistent
- Analyzed demographic assumptions
  - Retirement, mortality, disability, other terminations
  - Compared to ERB's actual experience
  - Used Actual-to-Expected (A/E) Ratio as analysis tool
  - Looked at patterns by age and service
- If A/E = 100% at all ages, assumption is "perfect"
  - Although we may want to build in some margin

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Demographic Assumptions

- Reviewed all demographic assumptions
  - Mortality, retirement, termination, etc
- Each assumption tracked well with actual experience over the past six years
- Made notable changes to each of these assumptions in the past four years
- Changes may be necessary in the future if certain trends continue
- Not recommending any changes with this experience study

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Economic Assumptions

- Investment Return
  - Current Assumption: 7.75%
  - Description: Long-term expected return on plan assets based on asset allocation
  - Purpose: (1) Anticipate the level of investment earnings that will be available to help pay plan benefits in the future, and (2) discount future benefit payments to the valuation date
  - Impact: Lower assumption will increase plan liabilities
  - *Dependent on each system's investment policy*
- Core Inflation
  - Current Assumption: 3.00%
  - Description: Long-term assumption for price inflation (CPI-U)
  - Purpose: Base "building block" of every economic assumption
  - Impact: Lower assumption would trigger a similar shift in most other economic assumptions

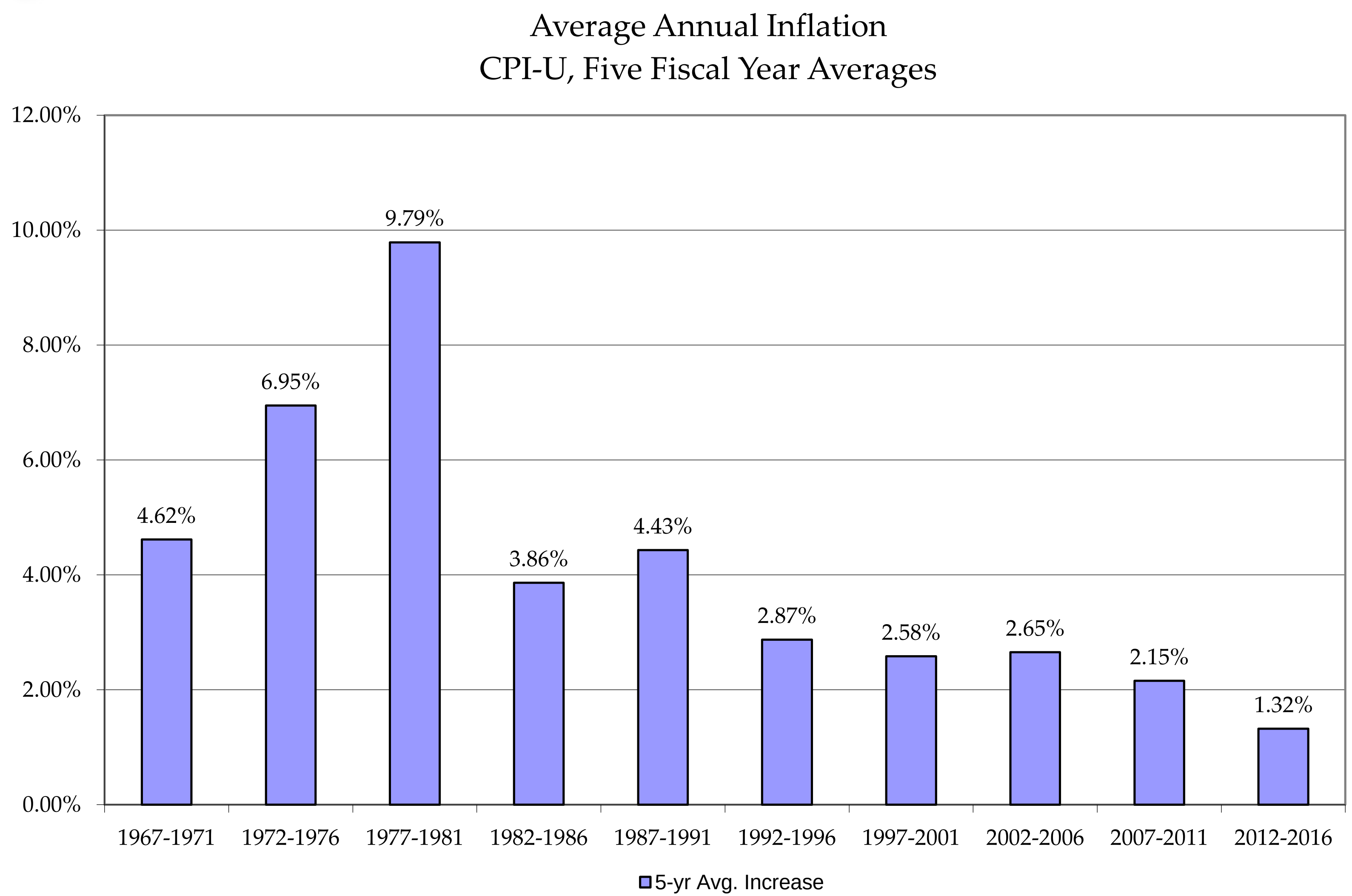
Economic Assumptions

- Wage Inflation
  - Current Assumption: 3.75%
  - Description: Long-term assumption for across-the-board pay increases
  - Purpose: Project individual member compensation through career end
  - Impact: Lower assumption will reduce projected retirement benefits AND future contributions
- Payroll Growth
  - Current Assumption: 3.50%
  - Description: Long-term assumption for total payroll growth
  - Purpose: (1) Project future payroll and the resulting contribution stream into the plan, and (2) assist with development of Actuarially Determined Employer Contribution (ADEC)
  - Impact: Lower assumption will increase the contributions, as a percentage of payroll, necessary to properly fund the plan

Inflation

- The assumed inflation rate is not used directly in the actuarial valuation, but it impacts the development of:
  - Future COLA assumption
  - Investment return assumption
  - Wage inflation assumption
  - Payroll growth rate
- The current inflation assumption is 3.00% per year
- Actual inflation (measured by the CPI-U) during
  - Last 5 years: 1.32%
  - Last 20 years: 2.18%
  - Last 30 years: 2.66%
  - Since 1913: 3.16%

Inflation



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Inflation

- 2016 Capital Market Assumption Sets for Investment Consultants
  - Surveyed seven investment consulting firms and long-term inflation expectations ranged from 1.56% to 2.50%
  - All consultants have approximately 10-year outlooks
- Social Security Administration's 2016 Trustees Report
  - Office of the Chief Actuary projecting a long-term average annual inflation rate of 2.6% under the intermediate cost assumption
  - Low cost assumption was 2.0% and high cost was 3.2%
- Recommend lowering assumption to 2.50%
  - Key change because inflation is key "building block" for all remaining economic assumptions

Annual COLA

- Unreduced COLA is a function of CPI increases
  - If change in CPI is greater than 2%, COLA=50% of change in CPI, maximum COLA=4%, minimum COLA=2%
  - If change in CPI is 2% or less, then COLA=100% of change in CPI
- The current COLA assumption is 2.00% per year
  - Based on current price inflation assumption of 3.00%
  - Prior to reductions of COLA when funded ratio less than 100%
- Stochastically modeled future inflation scenarios based on recommended inflation assumption of 2.50%
- Recommend COLA assumption of 1.90%
  - Average COLA paid based on stochastic modeling

Investment Return

- The investment return rate is used to:
  - Anticipate the level of investment earnings that will be available to help pay plan benefits in the future
    - 60-70% of the benefit payments for many systems are paid with accumulated investment returns
  - Discount future expected cash flows (benefits and refunds) in order to determine the actuarial present values (liabilities)
    - Time value of money
- The current assumption is 7.75%
  - This is intended to be the return, net of all administrative and investment expenses
  - Critical assumption since even small changes in the assumption could have a big impact on the funded status of the plan
  - Building Blocks: 3.00% inflation + 4.75% real return

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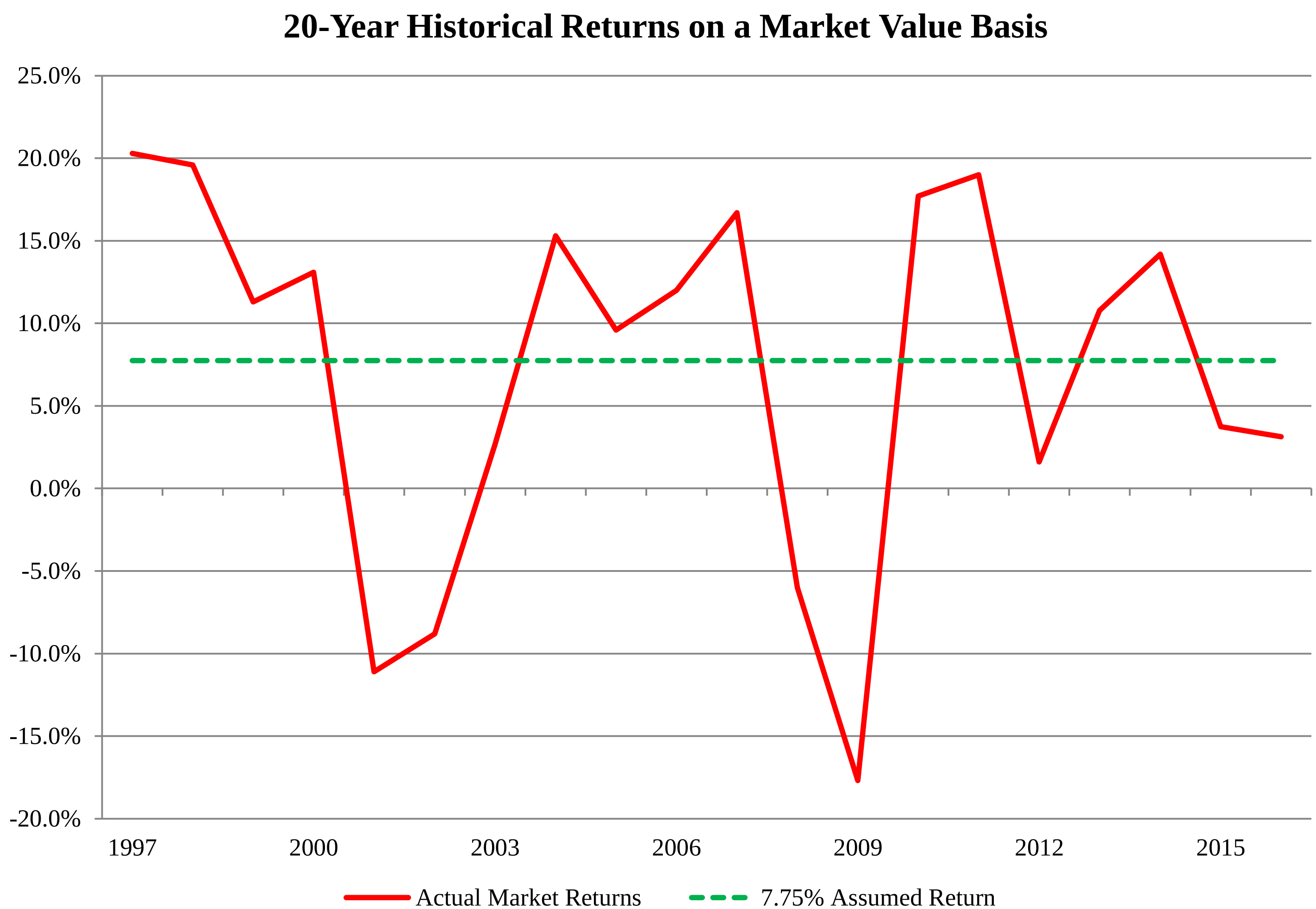
History of Market Returns (Net)



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Investment Return

- The geometric average of the market returns, net of investment and administrative expenses:
  - Last 10 years has been 5.7%
  - Last 20 years has been 6.8%
  - Includes returns through FY2016
- Actual past experience is not always a good indicator of future returns
- Impacted by trust asset allocation
- February 2017 NASRA Survey
  - Median return assumption is 7.50%
  - Average investment return assumption is 7.52%
  - Assumption in use, or announced for use, as of survey date

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Investment Return

- Based analysis on ERB's current target asset allocation
- Modeled target allocation against capital market assumptions for seven investment consulting firms
  - Arithmetic average expected <u>nominal return</u> of seven investment firms is 7.73% based on 2016 capital market assumption sets
    - Expected geometric average 7.01%
  - We generally consider anything between the expected arithmetic and geometric returns (7.01% to 7.73%) to be reasonable
  - Measured net of administrative and investment expenses
- We recommend a nominal return assumption of 7.25%
  - Maintains current real return of 4.75%
  - Building Blocks: 2.50% inflation + 4.75% real return

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Salary Increases

- Used for projecting individual member's pay and benefits
  - Unisex
  - Service-related
- This assumption is meant to reflect all factors:
  - Across-the-board increases for all teachers
  - Increases to legally mandated minimum salaries
  - Step or service-related increases
  - Increases for acquisition of advanced degrees or specialized training
  - Promotions
  - Merit increases, if applicable
  - Extra duties, if included in plan's compensation definition

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Salary Increases

- The assumptions are meant to reflect average expected increases for all members, including:
  - Classroom teachers (K-12)
  - Administrators
  - Higher Ed members not in ARP
  - Support staff (both professional and non-professional)

Salary Increases

- Used for projecting individual member's pay and benefits
- Current assumption consists of three components
  - Price inflation (3.00%)
  - Additional across-the-board increases (0.75%)
    - Combined with price inflation equals 3.75% wage inflation
  - Service-related increases for first 10 years
    - Meant to reflect additional increases above wage inflation received by shorter-service members
- Inflation is primary "building block" for all elements of pay increases
- We recommend incorporating recommended inflation assumption

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Payroll Growth

- Assumed increase in aggregate payroll
  - Does not include anticipated population growth
- Estimates increases in employer contributions towards unfunded liability
  - The higher the payroll growth assumption, the lower the contribution rate needed to amortize the UAAL
- Generally less than assumed wage inflation
  - When older, longer-service members terminate, retire or die, they are generally replaced with new teachers with lower salary
  - Large number of retirements expected in the next 10-15 years due to baby boomers
- Current assumption is 3.50%
- Recommend lowering the assumption to 3.00%

Actuarial Impact

- Results to changes in the assumed rate of inflation:

Item	Current Assumptions and Methods	Impact of Recommended Assumptions
Normal Cost % (member and employer)	13.00%	13.62%
Unfunded actuarial accrued liability (UAAL)	$ 6,630 million	$ 7,438 million
Funded Ratio	64.2%	61.5%
Funding Policy Contribution (employer only)	17.30%	19.85%
Funding Period – Actuarial Valuation	44.9 years	139.4 years
Funding Period – Open Group Projection	46 years	84 years

Comparison of results based on the valuation as of June 30, 2016.

Conclusion

- Recommend following assumption changes:
  - Decrease inflation assumption from 3.00% to 2.50%
  - Decrease nominal investment return assumption from 7.75% to 7.25%
    - Maintain real rate of return assumption of 4.75%
  - Decrease wage inflation from 3.75% to 3.25%
  - Decrease payroll growth assumption from 3.50% to 3.00%
  - Decrease the annual assumed COLA from 2.00% to 1.90%
- Recommend the Board adopt proposed assumptions for valuations as of June 30, 2017 and thereafter, until next experience study

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