

# NORTH CAROLINA RETIREMENT SYSTEMS

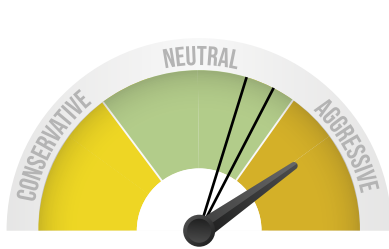
## EXPERIENCE STUDY SUPPLEMENT FOR DEC. 31, 2014, THROUGH DEC. 31, 2019

### DASHBOARD OF CURRENT & RECOMMENDED ASSUMPTIONS & METHODS

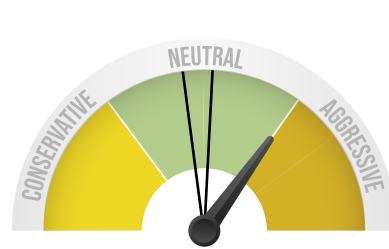


There is a reasonable range of assumptions and funding methods. Best practice is to select a reasonable set of internally consistent assumptions. Once the assumptions are adopted, a funding policy can be crafted that is budgetable while achieving 100% funding in a reasonable period of time.

#### Economic Assumptions are assumptions about money:

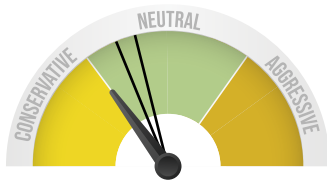


**INFLATION**  
The current 3.00% inflation assumption is high. The Social Security Administration anticipates 2.40% as it and we recommend lowering to 2.50%. While the inflation assumption is not directly used in the valuation, the building block approach results in a direct impact on investment return and salary increases. Absent new information on real return, this change reduced the investment return by 0.50%.

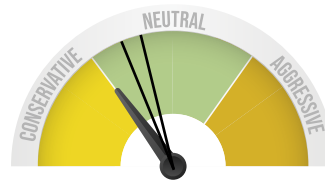


**INVESTMENT RETURN**  
The current assumption of 7.00% is based on assumed inflation of 3.00% plus real return of 4.00%. Adjusting the inflation assumption to 2.50%, but leaving real return at 4.00%, would imply an assumption of 6.50%. Staff has provided further reasons supporting reasonableness of an assumption of 6.50%.

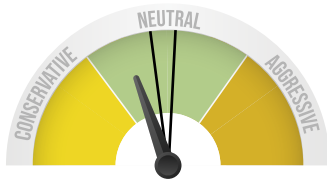
#### Demographic Assumptions are assumptions about people:



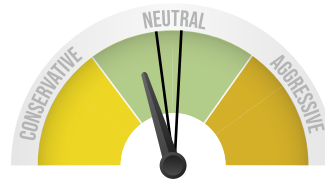
**MORTALITY**  
Fully Generational Mortality has not been adopted by all public retirement systems, resulting in the conservative slant. Mortality Improvement has decreased over the past several years. Adopting the current MP-2019 mortality projection table reflects that decrease and prudently removes some of the conservatism seen in the current assumption.



**SALARY INCREASES**  
Current assumption was best estimate at last study, but has proven to be slightly conservative overall based on actual experience over the last five years. Recommendation is to adjust in light of the last five years of data.

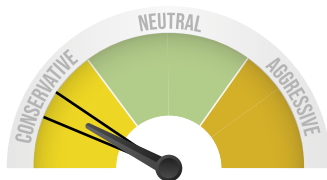


**SERVICE RETIREMENT**  
Current assumption was best estimate at last study, but has proven to be slightly conservative overall based on actual experience over the last five years. Recommendation is to adjust in light of the last five years of data.

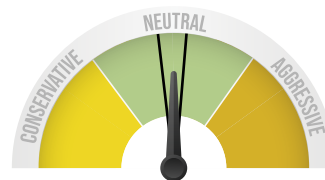


**TERMINATION**  
Current assumption was best estimate at last study, but has proven to be slightly conservative overall based on actual experience over the last five years. Recommendation is to adjust in light of the last five years of data.

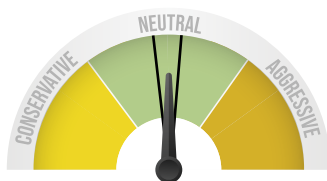
#### Actuarial Cost Methods are the components of the Funding Policy:



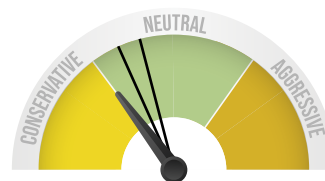
**AMORTIZATION METHOD**  
The 12-year level dollar amortization pays down the UAAL faster than the national average of 24 years. Note that direct rate smoothing effectively increases the period to 17 years.



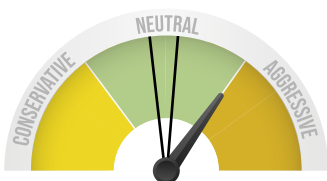
**ACTUARIAL COST METHOD**  
The entry age normal cost method is an industry standard for Public Sector Retirement Systems in the United States.



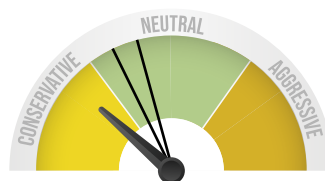
**ASSET VALUATION METHOD**  
The current 5-year asset smoothing with a 20% corridor around market is a common and acceptable approach for Public Sector Retirement Systems in the United States.



**ADMINISTRATIVE EXPENSES**  
The ADEC includes a component for administrative expenses. The recommended amount has been reduced almost to the level observed.



**NEW ENTRANT NORMAL COST**  
Public Sector Industry practice is to include normal cost for members hired after the valuation date. We implemented this for the December 31, 2017, valuation and have updated to reflect recent experience.



**DEFERRED VESTED VALUATION**  
Census information necessary to calculate liability for deferred vested members is not available. The method used to approximate this liability has been updated to be closer to a more standard calculation.

Current Assumption/Method:   
Recommended Assumption/Method:

- Conservative:** Denotes that the assumption/method results in a contribution in the next few years that is higher than what would be required using the median assumption/method used by peers and/or indicated in the observation of the experience review.
- Neutral:** Denotes that the assumption/method results in a contribution in the next few years that is consistent with what would be required using the median assumption/method used by peers and/or indicated in the observation of the experience review.
- Aggressive:** Denotes that the assumption/method results in a contribution in the next few years that is lower than what would be required using the median assumption/method used by peers and/or indicated in the observation of the experience review.