

**State of Wisconsin  
Legislative Audit Bureau**

## **Actuarial Audit of the Wisconsin Retirement System**

**December 31, 2018 Actuarial Valuation  
Three-Year Experience Study (January 1, 2015 – December 31, 2017)**

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*March 26, 2020*

# Agenda

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- Project scope
- Data validity
- Comments on actuarial assumptions
- Replication of December 31, 2018 actuarial valuation
- Comments on actuarial valuation reports and risk assessment disclosures
- Summary



# Project Scope

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- Assess the validity of data used in the actuarial valuation
- Review the actuarial assumptions and methods
  - Peer review of the Three-Year Experience Study (January 1, 2015 – December 31, 2017)
- Replicate the December 31, 2018 actuarial valuation
- Review the actuarial reports to determine if there is consistency in the presentation of results and if the reports are consistent with professional standards
- We acknowledge and appreciate the helpful assistance from the Legislative Audit Bureau, ETF, and GRS on this project

**Segal's audit validates the findings of the December 31, 2018 actuarial valuation and the Three-Year Experience Study**

# Data Validity

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- Data files provided are comprehensive enough to perform actuarial valuations and develop conclusions from the results
- Most counts and statistics matched to within 1%

# Economic Assumptions

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- **Price Inflation** – Report recommended reducing the price inflation assumption from 2.7% to 2.5%
  - Data cited is based on published forward-looking price inflation forecasts that generally point to a range of 2.2% to 2.3%
  - However, the 2018 Social Security Trustees report uses 2.6%
  - Segal believes the 2.5% assumption is reasonable
- **Wage Inflation** – Report recommended reducing the wage inflation from 3.2% to 3%
  - Segal believes the 3% assumption is reasonable
- **Investment Return** – Based on our analysis, we believe the 7% recommendation is reasonable
  - **We recommend that GRS consider showing results based on capital market assumptions over a time horizon longer than 10 years**

# Demographic Assumptions

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- Segal believes that the demographic assumptions are generally reasonable. Our recommendations for consideration are below.
- **Mortality**
  - The Society of Actuaries recent report concluded that there are three broad categories of retirees that demonstrate different post-retirement mortality: general employees, teachers, and public safety
    - Study confirmed that teachers live longer than non-teachers
    - **Recommend that consideration be given to analyzing mortality experience separately for each category**
  - To reflect anticipated improvements in future mortality, GRS recommended using **60%** of the MP-2018 Projection Scale, until the projection scale begins to stabilize:
    - Segal believes changes to the published projection scales had stabilized by the release of MP-2018
    - **Segal recommends that GRS provide a basis for use of the 60% factor applied to the projection scale**

## Demographic Assumptions (cont'd)

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- **Disability Incidence** – Segal recommends that the data for Public School, University, and Executive and Elected members be analyzed together in order to increase the credibility of the experience
- **Withdrawal** – The same 10-year select period is used for all member groups. Segal recommends that GRS consider studying the employee groups independently to see if alternative assumption formats would yield a better fit for a particular group.
- **Other Assumptions** – There are a number of assumptions and methods that do not fall into the demographic or economic categories (e.g., marriage assumption, assumed retirement for deferred members, contingency loads, etc.)
  - Segal recommends that the Three-Year Experience Study reports include some acknowledgement of these assumptions and that GRS believes they continue to be reasonable
  - Segal recommends that these assumptions be studied periodically in more detail

# Replication of December 31, 2018 Actuarial Valuation

- Segal matched the valuation results within an acceptable range.

## Total Plan

|   | \$ Millions |             | Ratio of Segal/GRS |
|---|-------------|-------------|--------------------|
|   | GRS         | Segal       |                    |
| <b>1. Present Value of Future Benefits For:</b> |             |             |                    |
| <b>a. Active</b>                                | \$52,457.9  | \$52,066.9  | 99.25%             |
| <b>b. Inactive, Not Retired</b>                 | \$6,981.6   | \$6,672.1   | 95.57%             |
| <b>c. Variable Adjustment</b>                   | \$365.3     | \$365.7     | 100.11%            |
| <b>d. Additional Contributions</b>              | \$201.1     | \$201.1     | 100.00%            |
| <b>e. Retirees and Beneficiaries</b>            | \$60,836.9  | \$61,510.1  | 101.11%            |
| <b>f. Total</b>                                 | \$120,842.8 | \$120,815.9 | 99.98%             |
| <b>2. PV Future Entry Age Normal Costs</b>      | \$17,425.5  | \$17,354.9  | 99.59%             |
| <b>3. PV Future Earnings</b>                    | \$130,163.2 | \$129,099.0 | 99.18%             |
| <b>4. Entry Age Accrued Liability (1f - 2)</b>  | \$103,417.3 | \$103,461.0 | 100.04%            |



# Comments on Actuarial Valuation Reports

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- Detailed comments are included in our report. Highlights are shown below:
  - Include commentary in the Retired Lives valuation report on how the Core and Variable annuities function within WRS
  - Assumption changes should be highlighted in the Executive Summary of both valuation reports
  - We believe that the investment return assumption for calendar 2018 was 7.2%, not 7.0%, and 7.2% should have been reflected in the Market Recognition Account calculations
  - Consider modifying the discussion of risk measures in both reports to allow intended users to understand risks specific to WRS

# Summary

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- This audit validates the findings of the December 31, 2018 actuarial valuation
  - Data appears complete
  - Assumptions and methods are reasonable and comply with Actuarial Standards of Practice
  - Segal matched the valuation results to within a reasonable range
- We believe the Three-Year Experience Study provides a reasonable basis for setting the actuarial assumptions
  - In general, recommendations appear reasonable and appropriate
- We have provided some suggestions to improve usefulness of the reports and setting of actuarial assumptions

# Questions?

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