

Wisconsin Retirement System

GASB Statement No. 67 Plan Reporting and
Accounting Schedules
December 31, 2023



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July 22, 2024

Employee Trust Funds Board
Wisconsin Department of Employee Trust Funds
4822 Madison Yards Way
Madison, WI 53705-9100

This report provides certain information requested by the Wisconsin Retirement System (“WRS”) in connection with the Governmental Accounting Standards Board (GASB) Statement No. 67 “Accounting and Financial Reporting for Pension Plans.”

The actuarial calculations in connection with this report were prepared for the purpose of complying with the requirements of GASB Statement No. 67. These calculations have been made on a basis that is consistent with our understanding of this Statement.

The calculation of the plan’s liability for this report is not applicable for funding purposes of the plan. A calculation of the plan’s liability for purposes other than satisfying the requirements of GASB Statement No. 67 may produce significantly different results. This report may be provided to parties other than the WRS only in its entirety and only with the permission of the WRS. GRS is not responsible for unauthorized use of this report.

The report was based upon information, furnished by the Department of Employee Trust Funds (DETF), concerning Retirement System benefits, financial transactions, and active members, terminated members, retirees and beneficiaries. We checked for internal and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of any data provided by DETF.

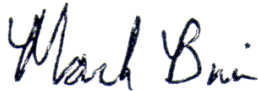
This report complements the actuarial valuation report that we provided to the Board and should be considered in conjunction with that report. Please see the actuarial valuation report as of December 31, 2023 for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

This report is intended to assist in preparation of the financial statements of WRS and its participating employers. Financial statements are the responsibility of the reporting entity and not the actuary. The statements are subject to an auditor’s review. Please let us know if the plan’s auditor recommends any changes.

This report was prepared using our proprietary valuation model and related software which, in our professional judgment, has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

To the best of our knowledge, the information contained in this report is accurate, and fairly represents the actuarial position of WRS. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board. Mark Buis, James D. Anderson and Richard C. Koch Jr. are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the Academy of Actuaries to render the actuarial opinions contained herein. The signing actuaries are independent of the plan sponsor.

Respectfully submitted,
Gabriel, Roeder, Smith & Company



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SECTION A

EXECUTIVE SUMMARY

Executive Summary as of December 31, 2023

	2023	2022
Actuarial Valuation Date	December 31, 2023	December 31, 2022
Pension Plan's Fiscal Year Ending Date (Measurement Date & Reporting Date)	December 31, 2023	December 31, 2022
Membership		
Number of		
- Retirees and Beneficiaries	238,111	233,804
- Inactive, Nonretired Members	186,977	181,758
- Active Members	263,737	259,592
- Total	688,825	675,154
Covered Payroll ⁽¹⁾	\$ 17,435,263,354	\$ 16,361,316,730
Net Pension Liability/(Asset)		
Total Pension Liability	\$ 130,648,559,965	\$ 122,538,998,583
Plan Fiduciary Net Position	127,697,808,319	118,368,225,822
Net Pension Liability/(Asset)	\$ 2,950,751,646	\$ 4,170,772,761
Plan Fiduciary Net Position as a Percentage of Total Pension Liability/(Asset)	97.74%	96.60%
Net Pension Liability/(Asset) as a Percentage of Covered Payroll	16.92%	25.49%
Development of the Single Discount Rate		
Single Discount Rate	6.80%	6.80%
Long-Term Expected Rate of Return	6.80%	6.80%
Long-Term Municipal Bond Rate ⁽²⁾	3.77%	4.05%
Last year ending December 31 in the 2024 to 2123 projection period for which projected benefit payments are fully funded	2123	2122

⁽¹⁾ Covered Payroll is for 2023 and was provided by DETF.

⁽²⁾ Source: Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-year Municipal GO AA Index" as of December 29, 2023. In describing this index, Fidelity notes that the Municipal Curves are constructed using option-adjusted analytics of a diverse population of over 10,000 tax-exempt securities. The municipal bond rate is used as the discount rate in years where assets are not projected to be sufficient to meet benefit payments.



Discussion

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67, “Financial Reporting for Pension Plans,” replaces the requirements of GASB Statement No. 25, “Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans,” and GASB Statement No. 50, “Pension Disclosures.” GASB Statement No. 67 establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability of employers and non-employer contributing entities for benefits provided through the pension plan.

The following discussion provides a summary of the information that is required to be disclosed under this accounting standard. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report, and your internal staff will be responsible for preparing that information to comply with this accounting standard.

Financial Statements

GASB Statement No. 67 requires defined benefit pension plans to present two financial statements – a statement of fiduciary net position and a statement of changes in fiduciary net position.

The *statement of fiduciary net position* presents the following items as of the end of the pension plan’s reporting period, such as:

- Assets;
- Deferred inflows and outflows of resources;
- Liabilities; and
- Fiduciary net position (assets, plus deferred outflows, minus liabilities, minus deferred inflows).

The *statement of changes in fiduciary net position* presents the following for the plan’s reporting period:

- Additions, such as contributions and investment income;
- Deductions, such as benefit payments and expenses; and
- Net increase or decrease in the fiduciary net position (the difference between additions and deductions).

Notes to Financial Statements

GASB Statement No. 67 also requires the notes of the plan's financial statements to include additional disclosure information. This disclosure information should include:

- A description of the types of benefits provided by the plan, as well as automatic or ad hoc COLAs;
- The number and classes of employees covered by the benefit terms;
- The composition of the pension plan's Board and the authority under which benefit terms may be amended;
- A description of the plan's funding policy, which includes member and employer contribution requirements;
- The pension plan's investment policies;
- A description of how fair value is determined;
- Concentrations of investments greater than or equal to 5%;
- Annual money-weighted rate of return on pension plan investments;
- The portion of the present value of benefits to be provided through the pension plan to current active and inactive plan members;
- The pension plan's fiduciary net position;
- The net pension liability/(asset);
- The pension plan's fiduciary net position as a percentage of the total pension liability;
- Significant assumptions and methods used to calculate the total pension liability;
- Inputs to the discount rates; and
- Certain information about mortality assumptions and the dates of experience studies.

Required Supplementary Information

GASB Statement No. 67 requires a 10-year fiscal history of:

- Sources of changes in the net pension liability/(asset);
- Information about the components of the net pension liability/(asset) and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability/(asset) as a percent of covered-employee payroll;
- Comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy; and
- The annual money-weighted rate of return on pension plan investments for each year.

These tables may be built prospectively.

Measurement of the Net Pension Liability/(Asset)

The net pension liability/(asset) is to be measured as the total pension liability, less the amount of the pension plan's fiduciary net position. In actuarial terms, this will be the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 6.8% on the actuarial value of assets), it is expected that:

1. The employer normal cost as a percentage of pay will decrease to the level of the future service normal cost as time passes.
2. The unfunded liability is expected to decrease in dollar amount until it is fully funded.
3. The funded status of the plan will remain very close to a 100% funded ratio.

This funding policy results in the expectation that the plan's assets will be able to fully pay for promised benefits through at least 2123. The projections in this report are strictly for the purpose of determining the GASB single discount rate and are different from a funding projection for the ongoing plan.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the total pension liability and the market value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

1. The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations; in other words, of transferring the obligations to an unrelated third party in an arm's length market value type transaction.
2. The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
3. The measurement would produce a different result if the actuarial value of assets were used instead of the market value of assets.

Limitation of Project Scope

Actuarial standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entity to make required contributions to the plan when due. Such an evaluation was not within the scope of this project and is not within the actuary's domain of expertise. Consequently, the actuary performed no such evaluation.

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. If the actuarial valuation is not calculated as of the plan's fiscal year end, the total pension liability is required to be rolled forward from the actuarial valuation date to the pension plan's fiscal year end.

The total pension liability shown in this report is based on an actuarial valuation performed as of December 31, 2023 and a measurement date of December 31, 2023.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a single discount rate that reflects: (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits); and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 6.80%; the municipal bond rate is 3.77% (based on the weekly rate closest to but not later than the measurement date of the Fidelity "20-Year Municipal GO AA Index"); and the resulting single discount rate is 6.80%.

Actuarial Assumptions and Methods and Member Census Data

The asset values used in this study are taken from the December 31, 2023 actuarial valuation report of the Wisconsin Retirement System. Therefore, the actuarial assumptions and methods employed for purposes of our Actuarial Study are the same actuarial assumptions and methods shown in the actuarial valuation report.

The member census data employed for purposes of our Actuarial Study was provided by DETF and is the same member census data used for the December 31, 2023 actuarial valuation report of the Retirement System.

The Wisconsin Retirement System uses the Frozen Entry Age cost method for determining funding requirements. GASB Statement No. 67 requires the use of the Entry Age Normal cost method for accounting purposes. Therefore, we developed the Entry Age Normal Accrued Liability to reflect the Total Pension Liability for GASB purposes.

SECTION B

FINANCIAL STATEMENTS

Statement of Fiduciary Net Position as of December 31, 2023

	2023
Assets	
Cash and Deposits	\$ 6,867,672,749
Receivables	
Accounts Receivable - Sale of Investments	\$ 6,297,494,787
Accrued Interest and Other Dividends	555,572,282
Contributions	241,663,289
Accounts Receivable - Other	11,146,383
Total Receivables	\$ 7,105,876,741
Investments	
Fixed Income	\$ 49,967,338,883
Domestic and International Equities	63,919,632,226
Real Estate	-
Other	44,284,950,418
Total Investments	\$ 158,171,921,527
Total Assets	\$ 172,145,471,017
Liabilities	
Payables	
Accounts Payable - Purchase of Investments	\$ 43,724,053,896
Accrued Expenses	7,239,599
Accounts Payable - Other	716,369,203
Total Liabilities	\$ 44,447,662,698
Net Position Restricted for Pensions	\$ 127,697,808,319

Statement of Changes in Fiduciary Net Position for Year Ended December 31, 2023

	2023
Additions	
Contributions	
Employer	\$ 1,327,552,576
Employee	1,204,469,156
Other	-
Total Contributions	\$ 2,532,021,732
Investment Income	
Net Appreciation in Fair Value of Investments	\$ 13,661,020,775
Interest and Dividends	2,420,390,197
Less Investment Expense	(2,005,213,277)
Net Investment Income	\$ 14,076,197,695
Other	\$ -
Total Additions	\$ 16,608,219,427
 Deductions	
Benefit payments, including refunds of employee contributions	\$ 7,249,575,609
Pension Plan Administrative Expense	29,061,321
Other Benefit Expenses	-
Total Deductions	\$ 7,278,636,930
Net Increase in Net Position	\$ 9,329,582,497
 Net Position Restricted for Pensions	
Beginning of Year	\$ 118,368,225,822
End of Year	\$ 127,697,808,319

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedules of Required Supplementary Information

Multiyear Schedule of Changes in Net Pension Liability/(Asset) and Related Ratios

Last 10 Fiscal Years

Fiscal year ending December 31,	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Total Pension Liability										
Service Cost	\$ 2,278,256,377	\$ 2,178,921,078	\$ 2,019,309,706	\$ 1,975,773,133	\$ 1,902,507,977	\$ 1,860,937,125	\$ 1,842,879,321	\$ 1,814,134,799	\$ 1,787,870,316	\$ 1,757,020,910
Interest on the Total Pension Liability	8,163,627,050	8,961,006,689	8,208,246,306	7,552,358,592	6,846,131,206	7,194,603,494	6,604,529,732	6,363,034,249	6,349,703,745	6,089,287,273
Benefit Changes	-	-	-	-	-	-	-	-	-	-
Experience ⁽¹⁾	4,917,253,564	(15,789,020,591)	8,748,236,745	6,006,411,525	7,137,987,427	(5,980,346,708)	5,142,055,157	318,473,379	(4,488,825,613)	473,101,546
Assumption Changes	-	-	2,162,583,701	-	-	404,242,989	-	-	1,484,977,863	-
Benefit Payments	(7,195,376,514)	(6,949,119,380)	(6,352,709,068)	(5,939,365,686)	(5,646,263,647)	(5,516,188,518)	(5,211,266,989)	(5,022,920,827)	(4,823,586,513)	(4,540,247,874)
Refunds	(54,199,095)	(54,796,982)	(42,041,646)	(38,857,677)	(44,106,052)	(40,234,768)	(38,358,098)	(39,275,602)	(37,642,404)	(34,401,181)
Net Change in Total Pension Liability	8,109,561,382	(11,653,009,186)	14,743,625,744	9,556,319,887	10,196,256,911	(2,076,986,386)	8,339,839,123	3,433,445,998	272,497,394	3,744,760,674
Total Pension Liability - Beginning	122,538,998,583	134,192,007,769	119,448,382,025	109,892,062,138	99,695,805,227	101,772,791,613	93,432,952,490	89,999,506,492	89,727,009,098	85,982,248,424
Total Pension Liability - Ending (a)⁽²⁾	\$ 130,648,559,965	\$ 122,538,998,583	\$ 134,192,007,769	\$ 119,448,382,025	\$ 109,892,062,138	\$ 99,695,805,227	\$ 101,772,791,613	\$ 93,432,952,490	\$ 89,999,506,492	\$ 89,727,009,098
Plan Fiduciary Net Position										
Employer Contributions ⁽³⁾	\$ 1,327,552,576	\$ 1,175,881,349	\$ 1,164,586,150	\$ 1,133,315,516	\$ 1,046,942,283	\$ 1,030,507,544	\$ 1,017,558,990	\$ 963,121,911	\$ 977,733,921	\$ 987,792,834
Employee Contributions	1,204,469,156	1,082,039,863	1,086,781,945	1,053,242,596	987,662,027	972,950,131	965,452,633	921,863,806	937,225,184	941,903,267
Pension Plan Net Investment Income	14,076,197,695	(18,702,308,045)	21,056,558,127	16,698,556,768	19,049,541,932	(4,049,354,577)	14,875,414,636	7,273,069,087	(673,122,812)	4,891,014,826
Benefit Payments	(7,195,376,514)	(6,949,119,380)	(6,352,709,068)	(5,939,365,686)	(5,646,263,647)	(5,516,188,518)	(5,211,266,989)	(5,022,920,827)	(4,823,586,513)	(4,540,247,874)
Refunds	(54,199,095)	(54,796,982)	(42,041,646)	(38,857,677)	(44,106,052)	(40,234,768)	(38,358,098)	(39,275,602)	(37,642,404)	(34,401,181)
Pension Plan Administrative Expense	(29,061,321)	(31,171,842)	(31,868,580)	(33,256,008)	(34,197,722)	(31,612,198)	(26,132,873)	(20,426,189)	(22,708,614)	(24,036,951)
Other	-	-	-	-	(3,901,654)	(25,448,686)	-	-	-	-
Net Change in Plan Fiduciary Net Position	9,329,582,497	(23,479,475,037)	16,881,306,928	12,873,635,509	15,355,677,167	(7,659,381,072)	11,582,668,299	4,075,432,186	(3,642,101,238)	2,222,024,921
Plan Fiduciary Net Position - Beginning⁽⁴⁾	118,368,225,822	141,847,700,859	124,966,393,931	112,092,758,422	96,737,081,255	104,396,462,327	92,813,794,028	88,504,670,309	92,146,771,547	89,924,746,626
Plan Fiduciary Net Position - Ending (b)	\$ 127,697,808,319	\$ 118,368,225,822	\$ 141,847,700,859	\$ 124,966,393,931	\$ 112,092,758,422	\$ 96,737,081,255	\$ 104,396,462,327	\$ 92,580,102,495	\$ 88,504,670,309	\$ 92,146,771,547
Net Pension Liability/(Asset) - Ending (a) - (b)	2,950,751,646	4,170,772,761	(7,655,693,090)	(5,518,011,906)	(2,200,696,284)	2,958,723,972	(2,623,670,714)	852,849,995	1,494,836,183	(2,419,762,449)
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	97.74 %	96.60 %	105.71 %	104.62 %	102.00 %	97.03 %	102.58 %	99.09 %	98.34 %	102.70 %
Covered-Employee Payroll⁽⁵⁾	\$ 17,435,263,354	\$ 16,361,316,730	\$ 15,780,837,258	\$ 15,359,928,023	\$ 14,832,491,878	\$ 14,301,446,269	\$ 13,943,116,649	\$ 13,706,000,000	\$ 13,530,500,000	\$ 13,219,500,000
Net Pension Liability/(Asset) as a Percentage of Covered-Employee Payroll	16.92 %	25.49 %	(48.51)%	(35.92)%	(14.84)%	20.69 %	(18.82)%	6.22 %	11.05 %	(18.30)%

Notes to Schedule:

⁽¹⁾ Starting with 2015, this item includes the impact of known Market Recognition Account deferred gains/losses on the liability for dividend payments. See page 23 for a full description.

⁽²⁾ In 2017, end of year liabilities were adjusted to reflect the Long Term Disability Insurance (LTDI) program.

⁽³⁾ Employer contributions shown in the above table includes Employer Required Contributions in addition to contributions paid by specific employers for unique circumstances such as Prior Service Contributions, Early Retirement Contributions, and Employer Additional Contributions.

⁽⁴⁾ As of calendar year 2017, the LTDI program is reported within the Wisconsin Retirement System (WRS). Accordingly, there is an adjustment to the calendar year 2017 beginning net position of \$233,691,533 to reflect LTDI assets.

⁽⁵⁾ Covered payroll provided by DETF.



Schedules of Required Supplementary Information

Multiyear Schedule of the Net Pension Liability/(Asset)

Last 10 Fiscal Years

FY Ending December 31,	Total Pension Liability	Plan Net Position	Net Pension Liability/(Asset)	Plan Net Position as a % of Total Pension Liability	Covered Payroll ⁽¹⁾	Net Pension Liability/(Asset) as a % of Covered Payroll
2014	\$ 89,727,009,098	\$ 92,146,771,547	\$ (2,419,762,449)	102.70%	\$ 13,219,500,000	(18.30)%
2015	89,999,506,492	88,504,670,309	1,494,836,183	98.34%	13,530,500,000	11.05 %
2016	93,432,952,490	92,580,102,495	852,849,995	99.09%	13,706,000,000	6.22 %
2017	101,772,791,613	104,396,462,327	(2,623,670,714)	102.58%	13,943,116,649	(18.82)%
2018	99,695,805,227	96,737,081,255	2,958,723,972	97.03%	14,301,446,269	20.69 %
2019	109,892,062,138	112,092,758,422	(2,200,696,284)	102.00%	14,832,491,878	(14.84)%
2020	119,448,382,025	124,966,393,931	(5,518,011,906)	104.62%	15,359,928,023	(35.92)%
2021	134,192,007,769	141,847,700,859	(7,655,693,090)	105.71%	15,780,837,258	(48.51)%
2022	122,538,998,583	118,368,225,822	4,170,772,761	96.60%	16,361,316,730	25.49 %
2023	130,648,559,965	127,697,808,319	2,950,751,646	97.74%	17,435,263,354	16.92 %

⁽¹⁾ Covered payroll provided by DETF.

Multiyear Schedule of Contributions

Last 10 Fiscal Years

<u>FY Ending December 31,</u>	<u>Actuarially Determined Contribution^{(1),(2)}</u>	<u>Actual Contribution</u>	<u>Contribution Deficiency (Excess)</u>	<u>Covered Payroll⁽³⁾</u>	<u>Actual Contribution as a % of Covered Payroll</u>
2014	\$ 977,068,988	\$ 977,068,988	-	\$ 13,219,500,000	7.39%
2015	967,730,052	967,730,052	-	13,530,500,000	7.15%
2016	954,159,009	954,159,009	-	13,706,000,000	6.96%
2017	1,014,870,679	1,014,870,679	-	13,943,116,649	7.28%
2018	1,028,390,526	1,028,390,526	-	14,301,446,269	7.19%
2019	1,044,964,610	1,044,964,610	-	14,832,491,878	7.05%
2020	1,131,486,002	1,131,486,002	-	15,359,928,023	7.37%
2021	1,162,794,127	1,162,794,127	-	15,780,837,258	7.37%
2022	1,174,661,864	1,174,661,864	-	16,361,316,730	7.18%
2023	1,326,113,389	1,326,113,389	-	17,435,263,354	7.61%

⁽¹⁾ Since it is the actuary's understanding that the System's practice is to require employers to contribute the percent-of-payroll employer contribution rate shown in the actuarial valuation report, the Actuarially Determined Contributions shown in the Schedule of Contributions are the actual contributions made by the participating employers in the fiscal year.

⁽²⁾ Starting with 2016, Actuarially Determined Contributions includes Employer Required Contributions, paid by each employer based on a percentage of payroll. This amount excludes contributions paid by specific employers for unique circumstances such as Prior Service Contributions, Early Retirement Contributions, and Employer Additional Contributions.

⁽³⁾ Covered payroll provided by DETF.

Notes to Schedule of Contributions

Valuation Date: December 31, 2021

Methods and Assumptions used to Determine Actuarial Contribution on prior page:

Actuarial Cost Method	Frozen Entry Age
Amortization Method	Level Percentage of Payroll - Closed Amortization Period
Amortization Period	30-Year closed from date of participation in WRS
Asset Valuation Method	5-Year smoothed value
Inflation	2.0% to 2.5% -- approximate; No explicit price inflation assumption is used in this valuation.
Salary Increases	3.1% to 8.6% including inflation
Net Investment Rate of Return	5.40%
Weighted based on assumed rate for:	
Retired participants	5.00%
Active participants	
Post-retirement participants	5.00%
Pre-retirement participants	6.80%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2021 valuation pursuant to an experience study of the period 2018-2020.
Mortality	Wisconsin 2020 Mortality Table adjusted for future mortality improvements using the MP-2021 fully generational improvement scale.

Other Information:

Notes The actuarially determined contribution for calendar 2023 was determined from the December 31, 2021 actuarial valuation.

Multiyear Schedule of Investment Returns

Last 10 Fiscal Years

<u>FY Ending December 31,</u>	<u>Core Annual Return¹</u>	<u>Variable Annual Return¹</u>
2014	5.44 %	7.24 %
2015	(0.63)%	(1.11)%
2016	8.29 %	10.49 %
2017	15.85 %	23.27 %
2018	(3.56)%	(7.61)%
2019	19.49 %	28.80 %
2020	15.06 %	17.05 %
2021	17.03 %	19.98 %
2022	(12.94)%	(18.02)%
2023	11.69 %	22.42 %

¹ Annual money-weighted rate of return, net of investment expenses.

The money weighted rate of return expresses investment performance net of pension plan investment expense, adjusted for the changing amounts actually invested.

SECTION D

NOTES TO FINANCIAL STATEMENTS

Long-Term Expected Return on Plan Assets

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. The long-term expected rate of return is reviewed every three years in conjunction with the WRS experience study. For each major asset class that is included in the pension plan's target asset allocation as of December 31, 2023, these best estimates of geometric real rates of return were provided by DETF and are summarized in the following tables:

Core Asset Allocation

<u>Asset Class</u>	<u>Target Allocation</u>	<u>Long-Term Expected Real Rate of Return</u>
Public Equity	40.00%	4.50%
Public Fixed Income	27.00%	3.00%
Inflation Sens. Assets	19.00%	1.70%
Real Estate	8.00%	3.00%
Private Equity/Debt	18.00%	6.70%
Cash	-12.00%	1.00%
Total	100.00%	

Variable Asset Allocation

<u>Asset Class</u>	<u>Target Allocation</u>	<u>Long-Term Expected Real Rate of Return</u>
U.S. Equity	70.00%	4.00%
International Equity	30.00%	4.80%
Total	100.00%	

Single Discount Rate

A single discount rate of 6.80% was used to measure the total pension liability. This single discount rate was based on the expected rate of return on pension plan investments of 6.80% and a long-term bond rate of 3.77%. Because of the unique structure of WRS, the 6.80% expected rate of return implies that a dividend of approximately 1.7% will always be paid. For purposes of the single discount rate, it was assumed that the dividend would always be paid. The projection of cash flows used to determine this single discount rate assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments (including expected dividends) of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Regarding the sensitivity of the net pension liability/(asset) to changes in the single discount rate, the following presents the plan's net pension liability/(asset), calculated using a single discount rate of 6.80%, as well as what the plan's net pension liability/(asset) would be if it were calculated using a single discount rate that is 100 basis points lower or 100 basis points higher:

Sensitivity of Net Pension Liability/(Asset) to the Single Discount Rate Assumption

	Current Single Discount		
	1% Decrease	Rate Assumption	1% Increase
Discount Rate	5.80%	6.80%	7.80%
Ultimate Dividend Rate	1.70%	1.70%	1.70%
Total Pension Liability	\$ 143,887,164,846	\$ 130,648,559,965	\$ 121,224,124,305
Plan Fiduciary Net Position	127,697,808,319	127,697,808,319	127,697,808,319
Net Pension Liability/(Asset)	\$ 16,189,356,527	\$ 2,950,751,646	\$ (6,473,684,014)

This schedule is presented because it is required by GASB standards. Users of this report should not conclude that the authors view the upper end of the range as reasonable.

For the WRS, the determination of liabilities also depends on the assumed dividend, which is linked to the interest rate used in the liability calculation. Therefore, we have also shown an alternative set of Sensitivity Analysis, which varies the assumed dividend in conjunction with the change in the discount rate. For the liabilities shown below, the assumed dividend was 0.80% for the 5.8% discount rate, 1.70% for the 6.8% discount rate, and 2.70% for the 7.8% discount rate.

	Current Single Discount		
	1% Decrease	Rate Assumption	1% Increase
Discount Rate	5.80%	6.80%	7.80%
Ultimate Dividend Rate	0.80%	1.70%	2.70%
Total Pension Liability	\$ 135,961,147,198	\$ 130,648,559,965	\$ 126,732,462,207
Plan Fiduciary Net Position	127,697,808,319	127,697,808,319	127,697,808,319
Net Pension Liability/(Asset)	\$ 8,263,338,879	\$ 2,950,751,646	\$ (965,346,112)



Summary of Population Statistics

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	238,111
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	186,977
Active Plan Members	<u>263,737</u>
Total Plan Members	688,825

SECTION E

CALCULATION OF THE SINGLE DISCOUNT RATE

Calculation of the Single Discount Rate

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the assumed valuation discount rate is used. In years where assets are not projected to be sufficient to meet benefit payments, the use of a municipal bond rate is required, as described in the following paragraph.

The *Single Discount Rate* (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects: (1) the long-term expected rate of return on pension plan investments (during the period in which the fiduciary net position is projected to be sufficient to pay benefits); and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating (which is published by the Bond Buyer Index) as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 6.80%; the municipal bond rate is 3.77%; and the resulting single discount rate is 6.80%.

The tables in this section provide background for the development of the single discount rate.

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their liabilities). The contribution rate for the first year was developed from the 2022 actuarial valuation (14.70%) and the second-year contribution was developed from the 2023 actuarial valuation (14.85%). Expected contribution rates gradually increase as the unrecognized asset losses from the Market Recognition Account are phased-in over the next 5 years. The expected contribution rate then decreases over time as the Experience Amortization Reserve (EAR) component is paid down and is assumed to migrate to the ultimate contribution rate of 14.08% once the Experience Amortization Reserve (EAR) component is paid down.

The **Projection of Plan Fiduciary Net Position** table shows the development of expected asset levels in future years.

The **Present Values of Projected Benefit Payments** table shows the development of the Single Discount Rate (SDR). It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

The WRS funding policy as it affects the closed group cannot be modeled with 100% accuracy. In reality, assets that appear to be left over after all benefit obligations are satisfied would be assigned to the funding benefits of people who enter the plan after the measurement date.

Single Discount Rate Development

Projection of Contributions Ending December 31, 2123

Year	Payroll for Current Employees	Contributions from Current Employees	Normal Cost Contributions	UAL Contributions	Total Contributions
0	\$ 17,136,158,397				
1	17,060,488,533	\$ 1,173,693,369	\$ 1,334,198,445	\$ -	\$ 2,507,891,814
2	16,461,895,671	1,144,068,825	1,300,522,682	-	2,444,591,507
3	15,946,287,538	1,102,514,808	1,253,286,064	-	2,355,800,872
4	15,466,461,027	1,090,221,677	1,239,311,821	-	2,329,533,498
5	15,005,765,059	1,109,038,573	1,260,701,968	-	2,369,740,541
6	14,559,562,553	1,060,539,570	1,205,570,623	-	2,266,110,193
7	14,124,535,200	1,025,343,932	1,165,561,906	-	2,190,905,838
8	13,696,064,132	990,960,255	1,126,476,187	-	2,117,436,442
9	13,270,077,102	957,074,503	1,087,956,487	-	2,045,030,990
10	12,845,180,369	923,569,877	1,049,870,031	-	1,973,439,908
11	12,417,828,723	890,177,322	1,011,910,973	-	1,902,088,295
12	11,978,898,837	856,232,683	973,324,333	-	1,829,557,016
13	11,526,646,264	821,605,542	933,961,855	-	1,755,567,397
14	11,062,453,277	786,389,170	893,929,570	-	1,680,318,740
15	10,586,413,150	750,584,440	853,228,466	-	1,603,812,906
16	10,100,220,851	714,305,508	811,988,312	-	1,526,293,820
17	9,606,151,154	677,706,354	770,384,146	-	1,448,090,500
18	9,104,272,737	640,784,326	728,412,951	-	1,369,197,277
19	8,591,976,821	603,348,944	685,858,201	-	1,289,207,145
20	8,066,896,596	565,228,528	642,524,738	-	1,207,753,266
21	7,529,430,486	526,446,292	598,438,947	-	1,124,885,239
22	6,984,016,426	487,307,136	553,947,428	-	1,041,254,564
23	6,435,156,337	448,118,034	509,399,133	-	957,517,167
24	5,886,494,921	409,124,187	465,072,793	-	874,196,980
25	5,342,387,568	370,618,554	421,301,434	-	791,919,988
26	4,806,231,485	332,826,002	378,340,669	-	711,166,671
27	4,282,007,807	296,010,655	336,490,745	-	632,501,400
28	3,771,349,673	260,273,339	295,866,275	-	556,139,614
29	3,272,452,139	225,477,917	256,312,504	-	481,790,421
30	2,789,564,185	191,906,162	218,149,740	-	410,055,902
31	2,337,336,320	160,553,160	182,509,148	-	343,062,308
32	1,926,709,131	132,154,321	150,226,707	-	282,381,028
33	1,559,916,191	106,845,387	121,456,722	-	228,302,109
34	1,241,066,595	84,890,660	96,499,639	-	181,390,299
35	973,045,565	66,470,452	75,560,429	-	142,030,881
36	754,578,139	51,481,353	58,521,539	-	110,002,892
37	579,092,347	39,460,523	44,856,833	-	84,317,356
38	438,821,426	29,866,921	33,951,287	-	63,818,208
39	327,832,145	22,287,407	25,335,257	-	47,622,664
40	241,698,757	16,413,641	18,658,242	-	35,071,883
41	176,397,831	11,966,381	13,602,810	-	25,569,191
42	127,242,159	8,622,947	9,802,154	-	18,425,101
43	90,615,081	6,134,734	6,973,673	-	13,108,407
44	64,094,560	4,335,128	4,927,967	-	9,263,095
45	45,145,511	3,050,671	3,467,856	-	6,518,527
46	31,598,271	2,133,330	2,425,067	-	4,558,397
47	21,890,401	1,476,644	1,678,578	-	3,155,222
48	14,868,582	1,002,149	1,139,194	-	2,141,343
49	9,833,464	662,250	752,814	-	1,415,064
50	6,231,929	419,376	476,726	-	896,102



Single Discount Rate Development

Projection of Contributions Ending December 31, 2123

(Concluded)

Year	Payroll for Current Employees	Contributions from Current Employees	Normal Cost Contributions	UAL Contributions	Total Contributions
51	\$ 3,649,075	\$ 245,380	\$ 278,937	\$ -	\$ 524,317
52	1,887,243	126,816	144,158	-	270,974
53	854,566	57,384	65,231	-	122,615
54	386,026	25,904	29,447	-	55,351
55	182,443	12,235	13,908	-	26,143
56	69,057	4,628	5,261	-	9,889
57	15,340	1,027	1,168	-	2,195
58	395	27	30	-	57
59	6	-	1	-	1
60	-	-	-	-	-
61	-	-	-	-	-
62	-	-	-	-	-
63	-	-	-	-	-
64	-	-	-	-	-
65	-	-	-	-	-
66	-	-	-	-	-
67	-	-	-	-	-
68	-	-	-	-	-
69	-	-	-	-	-
70	-	-	-	-	-
71	-	-	-	-	-
72	-	-	-	-	-
73	-	-	-	-	-
74	-	-	-	-	-
75	-	-	-	-	-
76	-	-	-	-	-
77	-	-	-	-	-
78	-	-	-	-	-
79	-	-	-	-	-
80	-	-	-	-	-
81	-	-	-	-	-
82	-	-	-	-	-
83	-	-	-	-	-
84	-	-	-	-	-
85	-	-	-	-	-
86	-	-	-	-	-
87	-	-	-	-	-
88	-	-	-	-	-
89	-	-	-	-	-
90	-	-	-	-	-
91	-	-	-	-	-
92	-	-	-	-	-
93	-	-	-	-	-
94	-	-	-	-	-
95	-	-	-	-	-
96	-	-	-	-	-
97	-	-	-	-	-
98	-	-	-	-	-
99	-	-	-	-	-
100	-	-	-	-	-



Single Discount Rate Development

Projection of Plan Fiduciary Net Position Ending December 31, 2123

Year	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments Including Dividends	Projected Investment Earnings at 6.80%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)=(a)+(b)-(c)+(d)
1	\$ 127,697,808,319	\$ 2,507,891,814	\$ 7,823,045,907	\$ 8,505,707,670	\$ 130,888,361,897
2	130,888,361,897	2,444,591,507	8,239,350,661	8,706,626,911	133,800,229,653
3	133,800,229,653	2,355,800,872	8,329,789,441	8,898,640,333	136,724,881,417
4	136,724,881,417	2,329,533,498	8,340,518,348	9,096,279,466	139,810,176,033
5	139,810,176,033	2,369,740,541	8,584,055,174	9,299,279,978	142,895,141,378
6	142,895,141,378	2,266,110,193	8,813,363,858	9,497,923,856	145,845,811,569
7	145,845,811,569	2,190,905,838	9,043,026,518	9,688,374,415	148,682,065,305
8	148,682,065,305	2,117,436,442	9,270,461,085	9,871,177,184	151,400,217,845
9	151,400,217,845	2,045,030,990	9,496,352,783	10,046,036,245	153,994,932,297
10	153,994,932,297	1,973,439,908	9,720,719,570	10,212,579,743	156,460,232,379
11	156,460,232,379	1,902,088,295	9,958,055,710	10,369,897,367	158,774,162,330
12	158,774,162,330	1,829,557,016	10,198,920,941	10,516,764,356	160,921,562,761
13	160,921,562,761	1,755,567,397	10,436,241,331	10,652,377,113	162,893,265,940
14	162,893,265,940	1,680,318,740	10,663,912,518	10,776,323,030	164,685,995,191
15	164,685,995,191	1,603,812,906	10,874,700,712	10,888,621,262	166,303,728,647
16	166,303,728,647	1,526,293,820	11,079,535,112	10,989,184,995	167,739,672,350
17	167,739,672,350	1,448,090,500	11,287,354,724	11,077,264,315	168,977,672,441
18	168,977,672,441	1,369,197,277	11,495,969,626	11,151,833,804	170,002,733,896
19	170,002,733,896	1,289,207,145	11,713,776,849	11,211,579,385	170,789,743,577
20	170,789,743,577	1,207,753,266	11,937,788,988	11,254,880,999	171,314,588,853
21	171,314,588,853	1,124,885,239	12,155,447,561	11,280,520,611	171,564,547,143
22	171,564,547,143	1,041,254,564	12,367,554,308	11,287,628,063	171,525,875,461
23	171,525,875,461	957,517,167	12,578,008,563	11,275,160,368	171,180,544,433
24	171,180,544,433	874,196,980	12,777,967,567	11,242,204,760	170,518,978,606
25	170,518,978,606	791,919,988	12,960,975,522	11,188,346,928	169,538,270,000
26	169,538,270,000	711,166,671	13,124,649,485	11,113,484,886	168,238,272,072
27	168,238,272,072	632,501,400	13,281,530,718	11,017,208,150	166,606,450,905
28	166,606,450,905	556,139,614	13,439,853,521	10,898,396,258	164,621,133,255
29	164,621,133,255	481,790,421	13,576,803,535	10,756,328,632	162,282,448,773
30	162,282,448,773	410,055,902	13,653,624,577	10,592,330,262	159,631,210,360
31	159,631,210,360	343,062,308	13,676,801,762	10,409,030,662	156,706,501,568
32	156,706,501,568	282,381,028	13,676,404,788	10,208,134,505	153,520,612,313
33	153,520,612,313	228,302,109	13,641,961,743	9,990,837,396	150,097,790,075
34	150,097,790,075	181,390,299	13,556,457,357	9,759,376,052	146,482,099,069
35	146,482,099,069	142,030,881	13,422,026,440	9,516,688,336	142,718,791,846
36	142,718,791,846	110,002,892	13,258,393,868	9,265,184,414	138,835,585,284
37	138,835,585,284	84,317,356	13,074,493,644	9,006,417,203	134,851,826,198
38	134,851,826,198	63,818,208	12,871,892,923	8,741,611,217	130,785,362,701
39	130,785,362,701	47,622,664	12,651,252,355	8,471,928,515	126,653,661,525
40	126,653,661,525	35,071,883	12,413,322,884	8,198,509,692	122,473,920,216
41	122,473,920,216	25,569,191	12,157,981,628	7,922,508,334	118,264,016,114
42	118,264,016,114	18,425,101	11,882,373,152	7,645,212,534	114,045,280,597
43	114,045,280,597	13,108,407	11,578,836,652	7,368,311,244	109,847,863,595
44	109,847,863,595	9,263,095	11,245,873,123	7,093,892,882	105,705,146,449
45	105,705,146,449	6,518,527	10,892,544,712	6,823,911,939	101,643,032,204
46	101,643,032,204	4,558,397	10,524,909,778	6,559,916,649	97,682,597,472
47	97,682,597,472	3,155,222	10,143,667,233	6,303,309,240	93,845,394,700
48	93,845,394,700	2,141,343	9,749,719,254	6,055,519,504	90,153,336,293
49	90,153,336,293	1,415,064	9,345,248,136	5,817,961,105	86,627,464,326
50	86,627,464,326	896,102	8,932,130,001	5,591,999,480	83,288,229,907



Single Discount Rate Development

Projection of Plan Fiduciary Net Position Ending December 31, 2123 (Concluded)

Year	Projected Beginning	Projected Total	Projected Benefit	Projected	Projected Ending Plan
	Plan Net Position	Contributions	Payments Including	Investment	Net Position
	(a)	(b)	Dividends	Earnings at 6.80%	(e)=(a)+(b)-(c)+(d)
51	\$ 83,288,229,907	\$ 524,317	\$ 8,511,366,662	\$ 5,378,989,792	\$ 80,156,377,354
52	80,156,377,354	270,974	8,084,093,572	5,180,303,724	77,252,858,479
53	77,252,858,479	122,615	7,651,609,399	4,997,322,119	74,598,693,815
54	74,598,693,815	55,351	7,215,358,354	4,831,425,281	72,214,816,092
55	72,214,816,092	26,143	6,776,921,442	4,683,982,324	70,121,903,117
56	70,121,903,117	9,889	6,338,016,061	4,556,341,069	68,340,238,014
57	68,340,238,014	2,195	5,900,463,308	4,449,819,723	66,889,596,623
58	66,889,596,623	57	5,466,172,488	4,365,699,093	65,789,123,285
59	65,789,123,285	1	5,037,139,534	4,305,214,133	65,057,197,885
60	65,057,197,885	-	4,615,425,439	4,269,545,685	64,711,318,130
61	64,711,318,130	-	4,203,136,109	4,259,813,169	64,767,995,191
62	64,767,995,191	-	3,802,395,812	4,277,068,307	65,242,667,686
63	65,242,667,686	-	3,415,304,396	4,322,290,705	66,149,653,995
64	66,149,653,995	-	3,043,903,138	4,396,385,749	67,502,136,606
65	67,502,136,606	-	2,690,141,955	4,500,184,643	69,312,179,294
66	69,312,179,294	-	2,355,834,312	4,634,447,079	71,590,792,061
67	71,590,792,061	-	2,042,620,164	4,799,866,896	74,348,038,793
68	74,348,038,793	-	1,751,939,530	4,997,080,283	77,593,179,545
69	77,593,179,545	-	1,484,989,959	5,226,676,876	81,334,866,462
70	81,334,866,462	-	1,242,675,900	5,489,214,775	85,581,405,337
71	85,581,405,337	-	1,025,564,134	5,785,239,822	90,341,081,025
72	90,341,081,025	-	833,824,418	6,115,309,709	95,622,566,315
73	95,622,566,315	-	667,163,232	6,480,024,001	101,435,427,084
74	101,435,427,084	-	524,780,684	6,880,059,927	107,790,706,327
75	107,790,706,327	-	405,361,765	7,316,212,386	114,701,556,948
76	114,701,556,948	-	307,137,213	7,789,434,942	122,183,854,676
77	122,183,854,676	-	228,001,399	8,300,877,556	130,256,730,834
78	130,256,730,834	-	165,631,538	8,851,918,837	138,943,018,132
79	138,943,018,132	-	117,604,857	9,444,192,426	148,269,605,701
80	148,269,605,701	-	81,517,407	10,079,607,176	158,267,695,470
81	158,267,695,470	-	55,091,327	10,760,360,991	168,972,965,134
82	168,972,965,134	-	36,257,641	11,488,949,143	180,425,656,635
83	180,425,656,635	-	23,210,808	12,268,168,462	192,670,614,290
84	192,670,614,290	-	14,436,613	13,101,118,999	205,757,296,676
85	205,757,296,676	-	8,714,840	13,991,204,742	219,739,786,578
86	219,739,786,578	-	5,100,861	14,942,134,910	234,676,820,628
87	234,676,820,628	-	2,892,334	15,957,927,081	250,631,855,375
88	250,631,855,375	-	1,587,881	17,042,913,065	267,673,180,559
89	267,673,180,559	-	843,865	18,201,748,058	285,874,084,752
90	285,874,084,752	-	434,233	19,439,423,242	305,313,073,762
91	305,313,073,762	-	216,467	20,761,281,777	326,074,139,072
92	326,074,139,072	-	104,606	22,173,037,959	348,247,072,425
93	348,247,072,425	-	49,043	23,680,799,285	371,927,822,666
94	371,927,822,666	-	22,335	25,291,091,194	397,218,891,525
95	397,218,891,525	-	9,886	27,010,884,293	424,229,765,932
96	424,229,765,932	-	4,237	28,847,623,942	453,077,385,637
97	453,077,385,637	-	1,737	30,809,262,165	483,886,646,066
98	483,886,646,066	-	676	32,904,291,910	516,790,937,300
99	516,790,937,300	-	254	35,141,783,728	551,932,720,774
100	551,932,720,774	-	119	37,531,425,009	589,464,145,665



Single Discount Rate Development

Present Values of Projected Benefits Ending December 31, 2123

Year	Projected Beginning Plan Net Position	Projected Benefit		Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
		Payments Including Dividends	Funded Portion of Benefit Payments				
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v ⁿ ((a)-.5)	(g)=(e)*vf ⁿ ((a)-.5)	(h)=(c)/((1+sdr) ⁿ ((a)-.5)
1	\$ 127,697,808,319	\$ 7,823,045,907	\$ 7,823,045,907	\$ -	\$ 7,569,901,917	\$ -	\$ 7,569,901,917
2	130,888,361,897	8,239,350,661	8,239,350,661	-	7,465,108,211	-	7,465,108,211
3	133,800,229,653	8,329,789,441	8,329,789,441	-	7,066,524,871	-	7,066,524,871
4	136,724,881,417	8,340,518,348	8,340,518,348	-	6,625,118,606	-	6,625,118,606
5	139,810,176,033	8,584,055,174	8,584,055,174	-	6,384,426,084	-	6,384,426,084
6	142,895,141,378	8,813,363,858	8,813,363,858	-	6,137,617,373	-	6,137,617,373
7	145,845,811,569	9,043,026,518	9,043,026,518	-	5,896,586,338	-	5,896,586,338
8	148,682,065,305	9,270,461,085	9,270,461,085	-	5,660,006,631	-	5,660,006,631
9	151,400,217,845	9,496,352,783	9,496,352,783	-	5,428,766,872	-	5,428,766,872
10	153,994,932,297	9,720,719,570	9,720,719,570	-	5,203,211,913	-	5,203,211,913
11	156,460,232,379	9,958,055,710	9,958,055,710	-	4,990,871,616	-	4,990,871,616
12	158,774,162,330	10,198,920,941	10,198,920,941	-	4,786,133,622	-	4,786,133,622
13	160,921,562,761	10,436,241,331	10,436,241,331	-	4,585,676,931	-	4,585,676,931
14	162,893,265,940	10,663,912,518	10,663,912,518	-	4,387,374,051	-	4,387,374,051
15	164,685,995,191	10,874,700,712	10,874,700,712	-	4,189,229,463	-	4,189,229,463
16	166,303,728,647	11,079,535,112	11,079,535,112	-	3,996,383,170	-	3,996,383,170
17	167,739,672,350	11,287,354,724	11,287,354,724	-	3,812,119,483	-	3,812,119,483
18	168,977,672,441	11,495,969,626	11,495,969,626	-	3,635,370,557	-	3,635,370,557
19	170,002,733,896	11,713,776,849	11,713,776,849	-	3,468,396,757	-	3,468,396,757
20	170,789,743,577	11,937,788,988	11,937,788,988	-	3,309,668,302	-	3,309,668,302
21	171,314,588,853	12,155,447,561	12,155,447,561	-	3,155,442,524	-	3,155,442,524
22	171,564,547,143	12,367,554,308	12,367,554,308	-	3,006,089,407	-	3,006,089,407
23	171,525,875,461	12,578,008,563	12,578,008,563	-	2,862,587,038	-	2,862,587,038
24	171,180,544,433	12,777,967,567	12,777,967,567	-	2,722,935,432	-	2,722,935,432
25	170,518,978,606	12,960,975,522	12,960,975,522	-	2,586,080,261	-	2,586,080,261
26	169,538,270,000	13,124,649,485	13,124,649,485	-	2,452,001,717	-	2,452,001,717
27	168,238,272,072	13,281,530,718	13,281,530,718	-	2,323,324,834	-	2,323,324,834
28	166,606,450,905	13,439,853,521	13,439,853,521	-	2,201,329,666	-	2,201,329,666
29	164,621,133,255	13,576,803,535	13,576,803,535	-	2,082,173,102	-	2,082,173,102
30	162,282,448,773	13,653,624,577	13,653,624,577	-	1,960,631,622	-	1,960,631,622
31	159,631,210,360	13,676,801,762	13,676,801,762	-	1,838,913,686	-	1,838,913,686
32	156,706,501,568	13,676,404,788	13,676,404,788	-	1,721,779,317	-	1,721,779,317
33	153,520,612,313	13,641,961,743	13,641,961,743	-	1,608,092,827	-	1,608,092,827
34	150,097,790,075	13,556,457,357	13,556,457,357	-	1,496,267,515	-	1,496,267,515
35	146,482,099,069	13,422,026,440	13,422,026,440	-	1,387,106,708	-	1,387,106,708
36	142,718,791,846	13,258,393,868	13,258,393,868	-	1,282,955,066	-	1,282,955,066
37	138,835,585,284	13,074,493,644	13,074,493,644	-	1,184,606,619	-	1,184,606,619
38	134,851,826,198	12,871,892,923	12,871,892,923	-	1,091,994,478	-	1,091,994,478
39	130,785,362,701	12,651,252,355	12,651,252,355	-	1,004,940,363	-	1,004,940,363
40	126,653,661,525	12,413,322,884	12,413,322,884	-	923,259,044	-	923,259,044
41	122,473,920,216	12,157,981,628	12,157,981,628	-	846,692,570	-	846,692,570
42	118,264,016,114	11,882,373,152	11,882,373,152	-	774,811,753	-	774,811,753
43	114,045,280,597	11,578,836,652	11,578,836,652	-	706,946,726	-	706,946,726
44	109,847,863,595	11,245,873,123	11,245,873,123	-	642,900,387	-	642,900,387
45	105,705,146,449	10,892,544,712	10,892,544,712	-	583,053,768	-	583,053,768
46	101,643,032,204	10,524,909,778	10,524,909,778	-	527,504,761	-	527,504,761
47	97,682,597,472	10,143,667,233	10,143,667,233	-	476,027,172	-	476,027,172
48	93,845,394,700	9,749,719,254	9,749,719,254	-	428,408,035	-	428,408,035
49	90,153,336,293	9,345,248,136	9,345,248,136	-	384,490,029	-	384,490,029
50	86,627,464,326	8,932,130,001	8,932,130,001	-	344,094,735	-	344,094,735



Single Discount Rate Development

Present Values of Projected Benefits Ending December 31, 2123(Concluded)

Year	Projected Beginning Plan Net Position	Projected Benefit		Unfunded Portion of Benefit Payments	Present Value of	Present Value of	Present Value of
		Payments Including Dividends	Funded Portion of Benefit Payments		Funded Benefit Payments using Expected Return Rate (v)	Unfunded Benefit Payments using Municipal Bond Rate (vf)	Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v ^{-(a)-5}	(g)=(e)*vf ^{-(a)-5}	(h)=(c)/(1+sdr) ^{-(a)-5}
51	\$ 83,288,229,907	\$ 8,511,366,662	\$ 8,511,366,662	\$ -	\$ 307,008,952	\$ -	\$ 307,008,952
52	80,156,377,354	8,084,093,572	8,084,093,572	-	273,030,911	-	273,030,911
53	77,252,858,479	7,651,609,399	7,651,609,399	-	241,970,279	-	241,970,279
54	74,598,693,815	7,215,358,354	7,215,358,354	-	213,646,551	-	213,646,551
55	72,214,816,092	6,776,921,442	6,776,921,442	-	187,888,059	-	187,888,059
56	70,121,903,117	6,338,016,061	6,338,016,061	-	164,531,407	-	164,531,407
57	68,340,238,014	5,900,463,308	5,900,463,308	-	143,420,204	-	143,420,204
58	66,889,596,623	5,466,172,488	5,466,172,488	-	124,404,561	-	124,404,561
59	65,789,123,285	5,037,139,534	5,037,139,534	-	107,341,015	-	107,341,015
60	65,057,197,885	4,615,425,439	4,615,425,439	-	92,092,063	-	92,092,063
61	64,711,318,130	4,203,136,109	4,203,136,109	-	78,525,854	-	78,525,854
62	64,767,995,191	3,802,395,812	3,802,395,812	-	66,515,871	-	66,515,871
63	65,242,667,686	3,415,304,396	3,415,304,396	-	55,940,472	-	55,940,472
64	66,149,653,995	3,043,903,138	3,043,903,138	-	46,682,734	-	46,682,734
65	67,502,136,606	2,690,141,955	2,690,141,955	-	38,630,417	-	38,630,417
66	69,312,179,294	2,355,834,312	2,355,834,312	-	31,675,807	-	31,675,807
67	71,590,792,061	2,042,620,164	2,042,620,164	-	25,715,757	-	25,715,757
68	74,348,038,793	1,751,939,530	1,751,939,530	-	20,651,878	-	20,651,878
69	77,593,179,545	1,484,989,959	1,484,989,959	-	16,390,519	-	16,390,519
70	81,334,866,462	1,242,675,900	1,242,675,900	-	12,842,685	-	12,842,685
71	85,581,405,337	1,025,564,134	1,025,564,134	-	9,924,063	-	9,924,063
72	90,341,081,025	833,824,418	833,824,418	-	7,554,923	-	7,554,923
73	95,622,566,315	667,163,232	667,163,232	-	5,659,998	-	5,659,998
74	101,435,427,084	524,780,684	524,780,684	-	4,168,605	-	4,168,605
75	107,790,706,327	405,361,765	405,361,765	-	3,014,980	-	3,014,980
76	114,701,556,948	307,137,213	307,137,213	-	2,138,961	-	2,138,961
77	122,183,854,676	228,001,399	228,001,399	-	1,486,746	-	1,486,746
78	130,256,730,834	165,631,538	165,631,538	-	1,011,279	-	1,011,279
79	138,943,018,132	117,604,857	117,604,857	-	672,329	-	672,329
80	148,269,605,701	81,517,407	81,517,407	-	436,351	-	436,351
81	158,267,695,470	55,091,327	55,091,327	-	276,120	-	276,120
82	168,972,965,134	36,257,641	36,257,641	-	170,154	-	170,154
83	180,425,656,635	23,210,808	23,210,808	-	101,991	-	101,991
84	192,670,614,290	14,436,613	14,436,613	-	59,397	-	59,397
85	205,757,296,676	8,714,840	8,714,840	-	33,573	-	33,573
86	219,739,786,578	5,100,861	5,100,861	-	18,399	-	18,399
87	234,676,820,628	2,892,334	2,892,334	-	9,769	-	9,769
88	250,631,855,375	1,587,881	1,587,881	-	5,021	-	5,021
89	267,673,180,559	843,865	843,865	-	2,499	-	2,499
90	285,874,084,752	434,233	434,233	-	1,204	-	1,204
91	305,313,073,762	216,467	216,467	-	562	-	562
92	326,074,139,072	104,606	104,606	-	254	-	254
93	348,247,072,425	49,043	49,043	-	112	-	112
94	371,927,822,666	22,335	22,335	-	48	-	48
95	397,218,891,525	9,886	9,886	-	20	-	20
96	424,229,765,932	4,237	4,237	-	8	-	8
97	453,077,385,637	1,737	1,737	-	3	-	3
98	483,886,646,066	676	676	-	1	-	1
99	516,790,937,300	254	254	-	0	-	0
100	551,932,720,774	119	119	-	0	-	0
Totals					\$ 151,491,587,300	\$ -	\$ 151,491,587,300



SECTION F

SUMMARY OF ASSUMPTIONS

Summary of Assumptions Used to Develop Total Pension Liability Assumptions Adopted by ETF Board after Consulting with Actuary

The actuarial assumptions were developed based on an Experience Study covering January 1, 2018 through December 31, 2020. Separate demographic assumptions were developed for State and Non-State employees for the first time with this Experience Study. While sample rates are illustrated in this section, please refer to the Wisconsin Experience Study report dated November 19, 2021, which supplies a full listing of actuarial assumptions at every age and a rationale for the selection of assumptions.

Economic Assumptions

In determining plan liabilities for accounting purposes, a discount rate of 6.80% is used for both actives and retirees. However, a long-term assumed dividend of 1.7% is also assumed. For retirees, this produces the same result as assuming a 5% discount rate. Dividends are not guaranteed, and this valuation develops dividends that reflect known entries (phased-in gains and losses) in the Market Recognition Account (MRA), based on the 6.80% return assumption. The dividend rates used in developing the Total Pension Liability for accounting purposes is as follows:

2024: 3.6% Core, 15.0% Variable
2025: 1.9% Core, 1.7% Variable
2026: 0.0% Core, 1.7% Variable
2027: -1.2% Core, 1.7% Variable
2028: 2.2% Core, 1.7% Variable
2029 and later: 1.7% Core, 1.7% Variable

The **Wage Inflation Rate** assumed in this valuation was 3.00% per year. The wage inflation rate is defined to be the portion of total pay increases for an individual that are due to macro-economic forces including productivity, price inflation, and labor market conditions. The wage inflation rate does not include pay changes rated to individual merit and seniority effects.

No specific **Price Inflation** assumption is required to perform this valuation. The price inflation assumption used to evaluate the investment return assumption is 2.4%.

The assumed **Real Rate of Return** over wage inflation is defined to be the portion of total investment return that is more than the assumed total wage growth rate. Considering other economic assumptions, the 6.8% pre-retirement investment return rate translates to an assumed real rate of return over wage inflation of 3.8%. The assumed real rate of return over price inflation would be 4.4%, considering an inflation assumption of 2.4%.

Merit and Longevity pay increase assumptions for individual active members are shown for sample services below. An additional 3.0% recognizes wage inflation, including price inflation, productivity increases, and other macroeconomic forces.

Service	% Merit Increases in Salaries Next Year								
	General Non-State (Not Including Schools)	General State (Not Including Schools)	Executive & Elected Non-State	Executive & Elected State	University Teachers State	Public School Teachers Non-State	Protective With SS Non-State	Protective With SS State	Protective Without SS Non-State
1	3.5%	3.5%	2.5%	2.5%	3.0%	5.6%	4.8%	4.8%	5.5%
2	3.5%	3.5%	2.5%	2.5%	3.0%	5.6%	4.8%	4.8%	5.5%
3	3.1%	3.1%	2.0%	2.0%	2.9%	5.2%	4.1%	4.1%	4.7%
4	2.8%	2.8%	1.6%	1.6%	2.8%	4.7%	3.5%	3.5%	3.8%
5	2.5%	2.5%	1.1%	1.1%	2.7%	4.3%	2.8%	2.8%	3.0%
10	1.5%	1.5%	0.2%	0.2%	2.2%	2.6%	1.1%	1.1%	0.9%
15	1.1%	1.1%	0.2%	0.2%	1.7%	1.4%	0.8%	0.8%	0.5%
20	0.9%	0.9%	0.2%	0.2%	1.2%	0.6%	0.7%	0.7%	0.4%
25	0.6%	0.6%	0.2%	0.2%	0.9%	0.3%	0.6%	0.6%	0.3%
30	0.4%	0.4%	0.2%	0.2%	0.7%	0.2%	0.5%	0.5%	0.2%

Decrement Probabilities

The mortality table used was the 2020 WRS Experience Mortality Table adopted by the Board in connection with the 2018-2020 Experience Study. The rates in this table were based on actual WRS experience adjusted for future mortality improvements using the MP-2021 fully generational improvement scale from a base year of 2010. Sample retirement values from this table are shown below. This assumption is used to measure the probabilities of participants dying before retirement and the probabilities of each benefit payment being made after retirement.

**Single Life Retirement Values
2020 WRS Experience Mortality Table with 5% Interest**

Sample Attained Ages in 2023	Present Value of \$1 Monthly for Life		Future Life Expectancy (years)		Mortality Rates ¹	
	Males	Females	Males	Females	Males	Females
40	\$216.74	\$219.82	47.2	49.3	0.000652	0.000433
45	208.80	212.54	42.0	44.0	0.000831	0.000546
50	198.73	203.22	36.8	38.8	0.001224	0.000862
55	186.28	191.78	31.7	33.7	0.002419	0.002222
60	171.45	178.39	26.7	28.8	0.004164	0.003473
65	154.03	162.27	22.0	24.0	0.006785	0.004964
70	133.88	142.87	17.5	19.3	0.011257	0.007859
75	111.37	120.45	13.4	15.0	0.020453	0.014926
80	87.79	96.46	9.8	11.0	0.039021	0.029941
85	65.19	73.04	6.8	7.8	0.075327	0.059093

¹ With a fully generational mortality table, the mortality rate depends on the year of birth. Later years of birth will typically correspond to a lower mortality rate at a given age.

The values shown above are for non-disabled participants in 2023. For disabled participants, the following table was used:

Sample Attained Ages in 2023	Present Value of \$1 Monthly for Life		Future Life Expectancy (years)		Mortality Rates ¹	
	Males	Females	Males	Females	Males	Females
40	\$175.71	\$182.52	32.3	35.1	0.010009	0.008791
45	165.16	172.90	28.3	31.0	0.012486	0.011210
50	153.72	162.61	24.6	27.3	0.017241	0.015782
55	142.05	152.43	21.3	23.8	0.022935	0.020053
60	130.34	142.10	18.3	20.7	0.029197	0.023669
65	118.28	130.04	15.5	17.6	0.034886	0.025111
70	104.86	114.54	12.9	14.4	0.041042	0.029211
75	89.25	96.25	10.2	11.3	0.052285	0.040895
80	72.37	77.37	7.8	8.5	0.074551	0.063825
85	56.23	60.33	5.7	6.3	0.112584	0.102376

¹ With a fully generational mortality table, the mortality rate depends on the year of birth. Later years of birth will typically correspond to a lower mortality rate at a given age.

Active Participant Mortality Rates

Sample Attained Ages in 2023	Mortality Rates ¹	
	Males	Females
20	0.000400	0.000166
25	0.000215	0.000130
30	0.000353	0.000227
35	0.000521	0.000330
40	0.000652	0.000433
45	0.000831	0.000546
50	0.001192	0.000777
55	0.001866	0.001232
60	0.003079	0.001948
65	0.004985	0.003006
70	0.007459	0.004950
75	0.010846	0.009409
80	0.021611	0.019401

¹ With a fully generational mortality table, the mortality rate depends on the year of birth. Later years of birth will typically correspond to a lower mortality rate at a given age.

This assumption is used to measure the probability of participants dying while in service.

Rates of Retirement for Those Eligible to Retire

Normal Retirement

Age	% of Active Participants Retiring												
	General Non-State		General State		Executive & Elected Non-State	Executive & Elected State	University State		Public Schools Non-State		Protective		
	Male	Female	Male	Female			Male	Female	Male	Female	With SS Non-State *	With SS State *	Without SS Non-State*
50											6.0%	7.5%	3.0%
51											8.0%	9.0%	3.5%
52											11.0%	11.0%	4.5%
53											34.0%	25.0%	17.0%
54											32.0%	20.0%	24.0%
55											26.0%	20.0%	29.0%
56											23.0%	20.0%	32.0%
57	20.0%	17.0%	19.0%	19.0%	10.0%	12.0%	12.0%	10.0%	31.0%	27.5%	27.0%	20.0%	23.0%
58	20.0%	18.0%	19.0%	19.0%	10.0%	12.0%	16.0%	20.0%	29.0%	27.5%	21.0%	20.0%	27.0%
59	20.0%	14.0%	19.0%	19.0%	10.0%	12.0%	9.0%	12.0%	28.0%	26.0%	23.0%	20.0%	40.0%
60	20.0%	20.0%	19.0%	21.0%	10.0%	12.0%	15.0%	14.0%	27.0%	29.0%	22.0%	20.0%	25.0%
61	20.0%	18.0%	19.0%	25.0%	10.0%	12.0%	9.0%	13.0%	26.0%	27.0%	30.0%	20.0%	25.0%
62	30.0%	24.0%	28.0%	29.0%	10.0%	18.0%	10.0%	15.0%	39.0%	36.0%	35.0%	25.0%	31.0%
63	30.0%	29.0%	30.0%	28.0%	10.0%	18.0%	11.0%	19.0%	33.0%	31.0%	27.0%	25.0%	40.0%
64	30.0%	23.0%	25.0%	31.0%	15.0%	18.0%	15.5%	17.0%	30.0%	30.0%	30.0%	36.0%	40.0%
65	30.0%	35.0%	27.0%	31.0%	15.0%	18.0%	15.5%	21.0%	32.0%	38.5%	34.0%	38.0%	40.0%
66	40.0%	39.0%	35.0%	36.0%	15.0%	18.0%	21.0%	25.0%	35.0%	44.0%	35.0%	38.0%	100.0%
67	32.0%	33.0%	32.0%	33.0%	15.0%	18.0%	18.0%	25.0%	31.0%	31.0%	35.0%	38.0%	100.0%
68	32.0%	30.0%	21.0%	25.0%	10.0%	18.0%	19.0%	18.0%	28.0%	30.0%	35.0%	38.0%	100.0%
69	28.0%	22.0%	21.0%	27.0%	10.0%	18.0%	14.0%	16.5%	20.0%	30.0%	35.0%	38.0%	100.0%
70	28.0%	26.0%	21.0%	29.0%	10.0%	18.0%	21.0%	22.0%	30.0%	32.0%	100.0%	100.0%	100.0%
71	28.0%	28.0%	21.0%	34.0%	10.0%	15.0%	24.0%	16.5%	25.0%	25.0%	100.0%	100.0%	100.0%
72	28.0%	30.0%	21.0%	33.0%	10.0%	15.0%	24.0%	17.0%	25.0%	25.0%	100.0%	100.0%	100.0%
73	18.0%	30.0%	30.0%	24.0%	20.0%	15.0%	24.0%	21.0%	25.0%	25.0%	100.0%	100.0%	100.0%
74	18.0%	16.0%	30.0%	18.0%	20.0%	15.0%	24.0%	14.0%	25.0%	25.0%	100.0%	100.0%	100.0%
75	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

* Includes reduced retirements for Protective with 20+ years of service.

Reduced Retirement

Age	% of Active Participants Retiring									
	General Non-State		General State		Executive & Elected Non-State	Executive & Elected State	University State		Public Schools Non-State	
	Male	Female	Male	Female			Male	Female	Male	Female
55	7.3%	7.0%	5.5%	6.0%	2.5%	6.0%	3.3%	5.0%	12.0%	11.0%
56	6.0%	7.0%	6.5%	8.0%	2.5%	6.0%	3.3%	5.0%	13.0%	13.0%
57	5.2%	5.5%	5.5%	6.0%	2.5%	6.0%	4.0%	5.0%	13.0%	12.0%
58	5.6%	6.5%	5.5%	9.0%	2.5%	6.0%	4.0%	5.5%	12.0%	13.0%
59	5.9%	7.0%	6.5%	7.5%	2.5%	6.0%	4.4%	6.0%	14.3%	13.5%
60	9.3%	9.5%	9.0%	10.0%	5.0%	6.0%	4.8%	7.5%	16.0%	17.0%
61	8.0%	9.5%	12.5%	11.0%	5.0%	6.0%	4.8%	9.0%	16.0%	17.0%
62	19.0%	16.0%	16.0%	18.0%	1.0%	6.0%	7.0%	11.0%	23.0%	24.0%
63	20.0%	18.0%	17.0%	19.5%	1.0%	3.0%	8.3%	12.0%	21.0%	24.0%
64	18.0%	18.0%	21.0%	18.0%	1.0%	3.0%	11.5%	14.5%	21.0%	24.0%

The assumed rates of separation from employment prior to service retirement due to disability and other causes are shown below for sample ages. For other terminations it was assumed that a percentage, depending on age of participants terminating after age 35 with 5 or more years of service, will leave their contributions on deposit and be paid a benefit at normal retirement age and that the remaining participants would take a separation benefit. The percentage taking a separation benefit is 25% at age 35, grading downward to 0% at retirement eligibility. All participants terminating prior to normal retirement age with less than five years of service were assumed to take a separation benefit.

Assumed Termination Rates by Attained Age and Years of Service

Age	Service	% of Active Participants Withdrawing												
		General Non-State		General State		Executive & Elected Non-State	Executive & Elected State	University State		Public Schools Non-State		Protective		
		Male	Female	Male	Female			Male	Female	Male	Female	With SS Non-State	With SS State	Without SS Non-State
Under 30	0-1	17.7%	20.0%	17.2%	19.5%	25.0%	19.0%	14.0%	14.1%	12.6%	12.0%	15.6%	18.8%	4.5%
	1-2	12.5%	15.0%	12.9%	15.5%	20.0%	16.0%	13.8%	14.0%	11.6%	10.0%	9.4%	15.5%	4.0%
	2-3	9.0%	11.5%	9.5%	12.5%	17.0%	13.0%	12.6%	12.7%	8.5%	8.5%	5.3%	10.5%	2.0%
	3-4	7.1%	9.6%	7.4%	10.0%	16.0%	12.5%	11.0%	10.0%	6.0%	6.2%	4.4%	6.5%	1.8%
	4-5	6.6%	9.0%	7.3%	8.7%	13.0%	12.0%	8.6%	9.3%	5.6%	5.8%	4.2%	5.5%	1.7%
	5-6	5.3%	7.4%	6.1%	7.8%	4.0%	6.0%	8.5%	8.1%	4.5%	4.8%	3.3%	5.0%	1.3%
	6-7	4.8%	6.3%	5.2%	6.9%	4.0%	6.0%	7.0%	7.0%	3.7%	4.1%	3.2%	4.5%	1.2%
	7-8	4.6%	6.0%	5.1%	6.0%	4.0%	6.0%	5.6%	5.6%	2.9%	3.5%	3.0%	4.0%	0.9%
	8-9	4.1%	5.7%	4.5%	5.6%	4.0%	6.0%	4.6%	4.9%	2.6%	3.4%	2.7%	3.5%	0.8%
	9-10	4.0%	5.0%	3.6%	5.5%	4.0%	6.0%	4.3%	4.3%	2.5%	3.0%	2.3%	3.3%	0.7%
	10 & Up	3.2%	4.9%	3.1%	4.8%	4.5%	4.5%	4.2%	4.0%	2.0%	2.2%	2.1%	2.9%	0.7%
	35	2.8%	4.1%	2.7%	3.9%	4.5%	4.5%	4.0%	4.0%	1.6%	1.9%	1.8%	2.4%	0.6%
	40	2.4%	3.2%	2.6%	3.0%	4.2%	4.5%	3.4%	3.7%	1.4%	1.6%	1.5%	1.8%	0.6%
	45	2.0%	2.9%	2.4%	2.7%	3.7%	4.2%	2.8%	3.2%	1.4%	1.4%	1.4%	1.4%	0.5%
50	1.7%	2.5%	1.9%	2.1%	3.2%	3.7%	2.3%	2.7%	1.3%	1.2%	1.3%	1.2%	0.5%	
54	1.6%	2.2%	1.7%	1.8%	3.0%	3.5%	2.2%	2.5%	1.3%	1.2%	1.3%	1.2%	0.5%	

Disability Rates

Age	% of Active Participants Becoming Disabled												
	General Non-State		General State		Executive & Elected Non-State	Executive & Elected State	University State		Public Schools Non-State		Protective		
	Male	Female	Male	Female			Male	Female	Male	Female	With SS Non-State	With SS State	Without SS Non-State
20	0.01%	0.00%	0.01%	0.01%	0.00%	0.00%	0.00%	0.01%	0.01%	0.01%	0.02%	0.02%	0.03%
25	0.01%	0.00%	0.01%	0.01%	0.00%	0.00%	0.00%	0.01%	0.01%	0.01%	0.02%	0.02%	0.03%
30	0.01%	0.02%	0.01%	0.04%	0.00%	0.00%	0.00%	0.01%	0.01%	0.01%	0.02%	0.02%	0.03%
35	0.01%	0.02%	0.01%	0.05%	0.01%	0.01%	0.00%	0.03%	0.01%	0.01%	0.03%	0.03%	0.03%
40	0.03%	0.03%	0.03%	0.07%	0.01%	0.01%	0.01%	0.04%	0.01%	0.02%	0.04%	0.05%	0.05%
45	0.06%	0.05%	0.06%	0.10%	0.01%	0.01%	0.02%	0.04%	0.03%	0.05%	0.05%	0.07%	0.10%
50	0.13%	0.07%	0.13%	0.16%	0.02%	0.02%	0.03%	0.07%	0.08%	0.10%	0.09%	0.11%	0.55%
55	0.24%	0.13%	0.24%	0.29%	0.09%	0.09%	0.08%	0.11%	0.14%	0.14%	1.39%	1.73%	0.41%
60	0.43%	0.18%	0.43%	0.41%	0.11%	0.11%	0.11%	0.17%	0.24%	0.21%	2.34%	2.92%	0.12%

SECTION G

PLAN PROVISIONS

Summary of Benefit Provisions

Normal Retirement Eligibility

The age a participant becomes eligible for an unreduced age and service annuity is:

General, Public School, and University		Protective		Executive & Elected [#]	
Age	Service	Age	Service	Age	Service
65	Any*	54	Any*	62	Any*
57	30	53	25	57	30

* Participants first employed after 1989 and terminated before April 24, 1998 must have creditable service in 5 calendar years.

These conditions apply to those people hired on or before December 31, 2016. For others, the General eligibility conditions apply.

Normal Retirement Annuity

The age and service annuity payable at Normal Retirement Age is based on Final Average Earnings (FAE) and Creditable Service (CS) as follows:

Multiplier for Service Rendered			Group
Before 2000	Between 2000 and 2011	After 2011	
2.165%	2.0%	1.6%	Executive group and elected officials
2.165%	2.0%	2.0%	Protective occupation participants covered by Social Security
2.665%	2.5%	2.5%	Protective occupation participants not covered by Social Security
1.765%	1.6%	1.6%	All other participants

FAE is generally the average of the 3 highest years of earnings (July 1 - June 30 for teachers, educational support staff, and judges; calendar year for others) preceding retirement. These years do not have to be consecutive. For legislators and state constitutional officers who are ineligible to receive pay increases during their term, FAE is the statutory rate of earnings at termination.

Maximum formula annuity is 85% of FAE for protective occupation participants not covered by Social Security, 65% of FAE for protectives covered by Social Security, and 70% for all other participants. If greater than the formula amount, an annuity equal to the actuarial equivalent of two times the required accumulated contributions is paid in lieu of the formula amount (i.e., the Money Purchase Minimum).



Reduced Retirement. Any participant who has attained age 55 and any Protective occupation participant who has attained age 50 may apply for a reduced retirement annuity. The benefit is reduced 0.4% for each month that the annuity effective date precedes the Normal Retirement Age. For Non-Protective participants terminating after 6/30/90, the 0.4% is reduced for months after the attainment of age 57 and before the annuity effective date by .001111% for each month of creditable service.

Voluntary Termination before Immediate Benefit Eligibility. Participant may either (i) receive a refund of accumulated contributions, or (ii) leave contributions on deposit and apply for a retirement annuity on or after the minimum retirement age based upon age and accrued service at time of termination.

Post-Retirement Adjustments. Annuities are increased annually if the investment income credited to retired life funds is in excess of the assumed benefit rate (presently 5%), other plan experiences are within projected ranges, and the resulting adjustment would be at least 0.5% (2.0% for the variable fund).

Disability Benefits. Generally, disability means the inability to engage in any substantial gainful activity by reason of a medically determinable physical or mental impairment which can be expected to result in death or to be of long-continued and indefinite duration. Disability applicants must be participating employees who are under normal retirement age, have not already taken a WRS benefit and who meet a service requirement.

For this purpose **normal retirement age** is:

- 65 for general employees and executives and elected officials hired after December 31, 2016;
- 62 for executives and elected officials hired on or before December 31, 2016;
- 53 for protective occupation employees with 25 or more years of creditable service; and
- 54 for other protective occupation employees.

The **service requirement** is that during the 7 years preceding application the individual must have earned:

- At least 6 months of service credit in 5 of those years; or
- A total of 5 years of service credit.

Protective occupation employees who become disabled between the ages of 50 and 55, who have at least 15 years of service, and who can no longer perform the duties of their position may apply for a special disability benefit until age 55.

Disability Amount: The disability benefit is the WRS formula benefit based upon service projected to normal retirement age as described above, without regard to the reduced retirement reduction.

Death-in-Service.

- (a) Prior to age 50 for Protective participants, age 55 for others, the benefit is the equivalent of twice the accumulated employee contributions required and all additional contributions and employer amounts contributed prior to 1974 for teachers, or 1966 for others.
- (b) After age 50 for Protective participants, age 55 for others, the benefit is the amount that would have been paid if participant had retired and elected 100% survivor option. Benefit is payable to any natural living person. If there is no eligible beneficiary, a refund of contributions is paid to the estate.

Interest Credits. For years after 1999, and for people with some active service after 1999, participant core accounts (including the variable at core accounts) are credited with interest at the full (core) effective rate. For others, accounts are credited with interest as follows:

Date of Participation	Rate Credited For Purpose of	
	Money Purchase Minimum	Refunds
Prior to 1982	Actual	Actual
January 1, 1982 & Later	5%	3%

Participant variable accounts are credited with interest based on the earnings in the variable portfolio.

Contribution Rates. The financial objective of WRS is to establish and receive contributions that will remain level from year to year and decade to decade.

Statutory required participant contributions prior to July 1, 2011 were as follows:

General, Public School, and University	5.0%
Executives & Elected Officials	5.5
Protectives	
- With Social Security	6.0
- Without Social Security	8.0

Statutory required participant contributions after July 1, 2011 are set equal to one-half of the actuarially determined rate for General participants and Executive and Elected Officials. Participant contributions for Protective participants are set equal to the participant contribution for General members.

Normal Form of Benefit. The normal form of benefit is a straight life annuity with no death benefits. Optional forms of benefit which are actuarially reduced are listed below:

- A life annuity with 60 or 180 monthly payments guaranteed.
- A joint survivorship annuity with 75% continued to beneficiary.
- A joint survivorship annuity with 100% continued to beneficiary.
- A joint survivorship annuity reduced 25% upon either your death or your beneficiary's death.
- A joint survivorship annuity with 100% continued to beneficiary combined with 180 monthly payments guaranteed.

For formula benefit calculations, optional forms are calculated at the lower of the current age or age 62 (Normal Retirement Age for Protective occupations). If a retiree (and beneficiary if in receipt of a joint survivorship annuity) dies prior to receiving benefits which, in total, are at least equal to the members contributions, a "residual refund" for the difference is paid.

Vesting. Participants hired prior to July 1, 2011 vest immediately. After July 1, 2011, participants vest after 5 years of service.



SECTION H

GLOSSARY OF TERMS

Glossary of Terms

<i>Accrued Service</i>	Service credited under the system which was rendered before the date of the actuarial valuation.
<i>Actuarial Accrued Liability (AAL)</i>	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability."
<i>Actuarial Assumptions</i>	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
<i>Actuarial Cost Method</i>	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
<i>Actuarial Equivalent</i>	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
<i>Actuarial Gain (Loss)</i>	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
<i>Actuarial Present Value (APV)</i>	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future payments at predetermined rates of interest and probabilities of payment.
<i>Actuarial Valuation</i>	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions.
<i>Actuarial Valuation Date</i>	The date as of which an actuarial valuation is performed.
<i>Actuarially Determined Contribution (ADC) or Annual Required Contribution (ARC)</i>	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically, the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

Glossary of Terms

<i>Amortization Method</i>	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be “open” (meaning, reset each year) or “closed” (the number of years remaining will decline each year).
<i>Amortization Payment</i>	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
<i>Cost-of-Living Adjustments</i>	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
<i>Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)</i>	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
<i>Covered-Employee Payroll</i>	The payroll of covered employees, which is typically only the pensionable pay and does not include pay above any pay cap.
<i>Deferred Inflows and Outflows</i>	The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.
<i>Deferred Retirement Option Program (DROP)</i>	A program that permits a plan member to elect a calculation of benefit payments based on service credits and salary, as applicable, as of the DROP entry date. The plan member continues to provide service to the employer and is paid for the service by the employer after the DROP entry date; however, the pensions that would have been paid to the plan member are credited to an individual member account within the defined benefit pension plan until the end of the DROP period. Other variations for DROP exist and will be more fully detailed in the plan provision section of the valuation report.
<i>Discount Rate</i>	For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically: <ol style="list-style-type: none">1. The benefit payments to be made while the pension plans’ fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period and;2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.

Glossary of Terms

<i>Entry Age Actuarial Cost Method (EAN)</i>	The EAN is a funding method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit age(s). The portion of the actuarial present value allocated to a valuation year is 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 the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.
<i>Fiduciary Net Position</i>	The fiduciary net position is the value of the assets of the trust.
<i>GASB</i>	The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.
<i>Long-Term Expected Rate of Return</i>	The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.
<i>Money-Weighted Rate of Return</i>	The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.
<i>Multiple-Employer Defined Benefit Pension Plan</i>	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
<i>Municipal Bond Rate</i>	The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.
<i>Net Pension Liability (NPL)</i>	The NPL is the liability of employers and non-employer contribution entities to plan members for benefits provided through a defined benefit pension plan.
<i>Non-Employer Contribution Entities</i>	Non-employer contribution entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB Accounting statement, plan members are not considered non-employer contribution entities.
<i>Normal Cost</i>	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method.

Glossary of Terms

<i>Other Postemployment Benefits (OPEB)</i>	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment health care benefits regardless of the manner in which they are provided. Other postemployment benefits do not include termination benefits.
<i>Real Rate of Return</i>	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
<i>Service Cost</i>	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.
<i>Total Pension Expense</i>	The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year: <ol style="list-style-type: none">1. Service Cost2. Interest on the Total Pension Liability3. Current-Period Benefit Changes4. Employee Contributions (made negative for addition here)5. Projected Earnings on Plan Investments (made negative for addition here)6. Pension Plan Administrative Expense7. Other Changes in Plan Fiduciary Net Position8. Recognition of Outflow (Inflow) of Resources due to Liabilities9. Recognition of Outflow (Inflow) of Resources due to Assets
<i>Total Pension Liability (TPL)</i>	The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.
<i>Unfunded Actuarial Accrued Liability (UAAL)</i>	The UAAL is the difference between actuarial accrued liability and valuation assets.
<i>Valuation Assets</i>	The valuation assets are the assets used in determining the unfunded liability of the plan. For purposes of the GASB Statement No. 67, the valuation asset is equal to the market value of assets.