

**WISCONSIN RETIREMENT SYSTEM**  
GASB STATEMENT NO. 68 EMPLOYER REPORTING  
ACCOUNTING SCHEDULES  
DECEMBER 31, 2015

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October 27, 2016

Employee Trust Funds Board  
Wisconsin Department of Employee  
Trust Funds  
801 West Badger Road  
Madison, Wisconsin 53713

This report provides certain information requested by the Wisconsin Retirement System (“WRS”) in connection with the Governmental Accounting Standards Board (GASB) Statement No. 68 “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. 68. These calculations have been made on a basis that is consistent with our understanding of this Statement.

The total pension liability shown in this report is based on a roll-forward of the December 31, 2014 valuation liabilities to December 31, 2015. 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. 68 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.

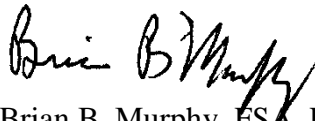
This report complements the actuarial valuation report that we provided to the Board and should be considered in conjunction with that report. Please see the actuarial valuation report as of December 31, 2014 for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

This system-wide 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.

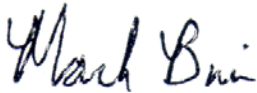
Employee Trust Funds Board  
Wisconsin Department of Employee Trust Funds  
October 27, 2016  
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To the best of our knowledge, the information contained in this report is accurate, and fairly represents the actuarial position of WRS. All calculations 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. Brian B. Murphy, Mark Buis and James D. Anderson are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the Academy of Actuaries to render the actuarial opinions herein. The signing actuaries are independent of the plan sponsor.

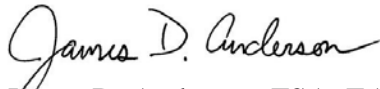
Respectfully submitted,



Brian B. Murphy, FSA, EA, FCA, MAAA



Mark Buis, FSA, EA, MAAA



James D. Anderson, FSA, EA, MAAA

BBM/MB/JDA:ah

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**SECTION A**  
EXECUTIVE SUMMARY

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**EXECUTIVE SUMMARY**  
**AS OF DECEMBER 31, 2015**

	<u>2015</u>	
Actuarial Valuation Date	December 31, 2014	
Measurement Date of the Net Pension Liability	December 31, 2015	
<b>Membership as of December 31, 2014</b>		
Number of		
- Retirees and Beneficiaries		185,605
- Inactive, Nonretired Members		154,286
- Active Members		256,100
- Total		<u>595,991</u>
Covered Payroll <sup>^</sup>	\$	13,530,500,000
<b>Net Pension Liability</b>		
Total Pension Liability	\$	90,129,650,901
Plan Fiduciary Net Position		<u>88,504,670,309</u>
Net Pension Liability	\$	1,624,980,592
Plan Fiduciary Net Position as a Percentage of Total Pension Liability		98.20%
Net Pension Liability as a Percentage of Covered Payroll		12.01%
<b>Development of the Single Discount Rate</b>		
Single Discount Rate		7.20%
Long-Term Expected Rate of Investment Return		7.20%
Long-Term Municipal Bond Rate*		3.57%
Last year ending December 31 in the 2016 to 2115 projection period for which projected benefit payments are fully funded		2115
<b>Total Pension Expense</b>	\$	1,959,183,005
<b>Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses</b>		
	<b>Deferred Outflows of Resources</b>	<b>Deferred Inflows of Resources</b>
Difference between expected and actual experience	\$ 274,900,604	\$ 3,419,743,940
Changes in assumptions	1,136,907,162	-
Net difference between projected and actual earnings on pension plan investments	6,653,135,688	-
Total	<u>\$ 8,064,943,454</u>	<u>\$ 3,419,743,940</u>

\*Based on the '20-Bond GO Index' rate from the Bond Buyer Index as of December 30, 2015  
(i.e., the weekly rate closest to but not later than the Measurement Date).

<sup>^</sup>Covered payroll is for 2014 and was provided by DETF.

## DISCUSSION

### Accounting Standard

For state and local government employers (as well as certain non-employers) that contribute to a Defined Benefit (DB) pension plan administered through a trust or equivalent arrangement, Governmental Accounting Standards Board (GASB) Statement No. 68 establishes standards for pension accounting and financial reporting. Under GASB Statement No. 68, the employer must account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information is not included in this report if it is not actuarial in nature, such as the notes to the financial statements regarding accounting policies and investments. As a result, the retirement system and/or plan sponsor is responsible for preparing and disclosing the non-actuarial information needed to comply with these accounting standards.

### Financial Statements

GASB Statement No. 68 requires state and local government employers that contribute to DB pension plans to recognize the net pension liability and the pension expense on their financial statements, along with the related deferred outflows of resources and deferred inflows of resources. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to 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).

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the certain changes in the liability and investment experience.

It is our understanding that the WRS is a cost sharing multiple employer plan. The purpose of this report is to develop the required information in aggregate. Reporting for individual employers will be developed by DETF staff in accordance with each employer's proportionate share and reported to each employer by the DETF.

## Notes to Financial Statements

GASB Statement No. 68 requires the notes of the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows of resources and inflows of resources related to pensions.

In addition, GASB Statement No. 68 requires the notes of the financial statements for the employers to include certain additional information, including:

- 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;
- for the current year, sources of changes in the net pension liability;
- significant assumptions and methods used to calculate the total pension liability;
- inputs to the Single Discount Rate;
- certain information about mortality assumptions and the dates of experience studies;
- the date of the valuation used to determine the total pension liability;
- information about changes of assumptions or other inputs and benefit terms;
- the basis for determining contributions to the plan, including a description of the plan's funding policy, as well as member and employer contribution requirements;
- the total pension liability, fiduciary net position, net pension liability, and the pension plan's fiduciary net position as a percentage of the total pension liability;
- the net pension liability using a discount rate that is 1% higher and 1% lower than used to calculate the total pension liability and net pension liability for financial reporting purposes; and
- a description of the system that administers the pension plan.



## Required Supplementary Information

The financial statements of employers also include required supplementary information showing the 10-year fiscal history of:

- sources of changes in the net pension liability;
- information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- comparison of actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

While the first two tables may be built prospectively as the information becomes available, sufficient information is currently available for the third table.

## Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. For the employer's financial reporting purposes, the net pension liability and pension expense should be measured as of the employer's "measurement date" which may not be earlier than the employer's prior fiscal year-end date. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of December 31, 2014 with roll forward to December 31, 2015 and a measurement date of December 31, 2015. The roll forward included adjustments in the liability due to changes in dividend adjustments for current and future retired members.

## 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 plan's projected fiduciary net position is not sufficient to pay benefits).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.20%; the municipal bond rate is 3.57% (based on the weekly rate closest to but not later than the measurement date of the "20-Bond GO Index" rate from Bond Buyer Index); and the resulting Single Discount Rate is 7.20%.

## Effective Date and Transition

GASB Statement No. 68 is effective for an employer's fiscal years beginning after June 15, 2014; however, earlier application is encouraged by the GASB.

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## **SECTION B**

### FINANCIAL STATEMENTS

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Auditor's Note – This information is presented in draft form for review by the Plan's auditor. Please let us know if there are any items that the auditor changes so that we may maintain consistency with the Plan's financial statements.

**PENSION EXPENSE UNDER GASB STATEMENT NO. 68**  
**FISCAL YEAR ENDED DECEMBER 31, 2015**

**A. Expense**

1. Service Cost	\$ 1,787,870,316
2. Interest on the Total Pension Liability	6,347,123,575
3. Current-Period Benefit Changes	0
4. Employee Contributions (made negative for addition here)	(937,225,184)
5. Projected Earnings on Plan Investments (made negative for addition here)	(6,527,684,328)
6. Pension Plan Administrative Expense	22,708,614
7. Other Changes in Plan Fiduciary Net Position	0
8. Recognition of Outflow (Inflow) of Resources due to Liabilities	(471,268,075)
9. Recognition of Outflow (Inflow) of Resources due to Assets	1,737,658,087
<b>10. Total Pension Expense</b>	<b>\$ 1,959,183,005</b>

**STATEMENT OF OUTFLOWS AND INFLOWS ARISING FROM CURRENT  
REPORTING PERIOD  
FISCAL YEAR ENDED DECEMBER 31, 2015**

**A. Outflows (Inflows) of Resources due to Liabilities**

1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses *	\$ (4,247,328,263)
2. Assumption Changes (gains) or losses	\$ 1,412,040,786
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years }	5.1322
4. Outflow (Inflow) of Resources to be recognized in the current pension expense for the difference between expected and actual experience of the Total Pension Liability	\$ (827,584,323)
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	\$ 275,133,624
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	<u>\$ (552,450,699)</u>
7. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for the difference between expected and actual experience of the Total Pension Liability	\$ (3,419,743,940)
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	\$ 1,136,907,162
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	<u>\$ (2,282,836,778)</u>

**B. Outflows (Inflows) of Resources due to Assets**

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	\$ 7,200,807,140
2. Recognition period for Assets {in years }	5.0000
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets	\$ 1,440,161,428
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	\$ 5,760,645,712

\* Starting with 2015, this item includes the impact of known Market Recognition Account deferred gains/losses on the liability for dividend payments. This was a change in method from the prior valuation. See page 24 for a full description.

**STATEMENT OF OUTFLOWS AND INFLOWS ARISING FROM CURRENT AND PRIOR  
REPORTING PERIODS  
FISCAL YEAR ENDED DECEMBER 31, 2015**

**A. Outflows and Inflows of Resources due to Liabilities and Assets to be Recognized in Current Pension Expense**

	<u>Outflows of Resources</u>	<u>Inflows of Resources</u>	<u>Net Outflows of Resources</u>
1. Due to Liabilities	\$ 356,316,248	\$ 827,584,323	\$ (471,268,075)
2. Due to Assets	1,737,658,087	-	1,737,658,087
<b>3. Total</b>	<b>\$ 2,093,974,335</b>	<b>\$ 827,584,323</b>	<b>\$ 1,266,390,012</b>

**B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense**

	<u>Outflows of Resources</u>	<u>Inflows of Resources</u>	<u>Net Outflows of Resources</u>
1. Differences between expected and actual experience	\$ 81,182,624	\$ 827,584,323	\$ (746,401,699)
2. Assumption Changes	275,133,624	-	275,133,624
3. Net Difference between projected and actual earnings on pension plan investments	1,737,658,087	-	1,737,658,087
<b>4. Total</b>	<b>\$ 2,093,974,335</b>	<b>\$ 827,584,323</b>	<b>\$ 1,266,390,012</b>

**C. Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses**

	<u>Deferred Outflows of Resources</u>	<u>Deferred Inflows of Resources</u>	<u>Net Deferred Outflows of Resources</u>
1. Differences between expected and actual experience	\$ 274,900,604	\$ 3,419,743,940	\$ (3,144,843,336)
2. Assumption Changes	1,136,907,162	-	1,136,907,162
3. Net Difference between projected and actual earnings on pension plan investments	6,653,135,688	-	6,653,135,688
<b>4. Total</b>	<b>\$ 8,064,943,454</b>	<b>\$ 3,419,743,940</b>	<b>\$ 4,645,199,514</b>

**D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future Pension Expenses**

<u>Year Ending December 31</u>	<u>Net Deferred Outflows of Resources</u>
2016	\$ 1,266,390,012
2017	1,266,390,012
2018	1,266,390,011
2019	919,063,461
2020	(73,033,982)
Thereafter	-
<b>Total</b>	<b>\$ 4,645,199,514</b>

**SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS**  
**CURRENT PERIOD**  
**FISCAL YEAR ENDED DECEMBER 31, 2015**

<b>A. Total pension liability</b>	
1. Service Cost	\$ 1,787,870,316
2. Interest on the total pension liability	6,347,123,575
3. Changes of benefit terms	-
4. Difference between expected and actual experience of the total pension liability	(4,247,328,263)
5. Changes of assumptions	1,412,040,786
6. Benefit payments, including refunds of employee contributions	(4,861,228,917)
7. Net change in total pension liability	\$ 438,477,497
8. Total pension liability – beginning	89,691,173,404
9. Total pension liability – ending	<u><u>\$ 90,129,650,901</u></u>
<b>B. Plan fiduciary net position</b>	
1. Contributions – employer	\$ 977,733,921
2. Contributions – employee	937,225,184
3. Net investment income	(673,122,812)
4. Benefit payments, including refunds of employee contributions	(4,861,228,917)
5. Pension plan administrative expense	(22,708,614)
6. Other	-
7. Net change in plan fiduciary net position	\$ (3,642,101,238)
8. Plan fiduciary net position – beginning	92,146,771,547
9. Plan fiduciary net position – ending	<u><u>\$ 88,504,670,309</u></u>
<b>C. Net pension liability</b>	<u><u>\$ 1,624,980,592</u></u>
<b>D. Plan fiduciary net position as a percentage of the total pension liability</b>	<b>98.20%</b>
<b>E. Covered-employee payroll<sup>^</sup></b>	<b>\$ 13,530,500,000</b>
<b>F. Net pension liability as a percentage of covered-employee payroll</b>	<b>12.01%</b>

<sup>^</sup>Covered payroll provided by DETF.

**SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS MULTIYEAR**  
**Last 10 Fiscal Years (which may be built prospectively)**

Fiscal year ending December 31,	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
<b>Total Pension Liability</b>										
Service Cost	\$ 1,787,870,316	\$ 1,757,020,910								
Interest on the Total Pension Liability	6,347,123,575	6,089,287,273								
Benefit Changes	-	-								
Difference between Expected and Actual Experience*	(4,247,328,263)	437,265,852								
Assumption Changes	1,412,040,786	-								
Benefit Payments	(4,823,586,513)	(4,540,247,874)								
Refunds	(37,642,404)	(34,401,181)								
<b>Net Change in Total Pension Liability</b>	438,477,497	3,708,924,980								
<b>Total Pension Liability - Beginning</b>	89,691,173,404	85,982,248,424								
<b>Total Pension Liability - Ending (a)</b>	\$ 90,129,650,901	\$ 89,691,173,404								
<b>Plan Fiduciary Net Position</b>										
Employer Contributions	\$ 977,733,921	\$ 987,792,834								
Employee Contributions	937,225,184	941,903,267								
Pension Plan Net Investment Income	(673,122,812)	4,891,014,826								
Benefit Payments	(4,823,586,513)	(4,540,247,874)								
Refunds	(37,642,404)	(34,401,181)								
Pension Plan Administrative Expense	(22,708,614)	(24,036,951)								
Other	-	-								
<b>Net Change in Plan Fiduciary Net Position</b>	(3,642,101,238)	2,222,024,921								
<b>Plan Fiduciary Net Position - Beginning</b>	92,146,771,547	89,924,746,626								
<b>Plan Fiduciary Net Position - Ending (b)</b>	\$ 88,504,670,309	\$ 92,146,771,547								
<b>Net Pension Liability - Ending (a) - (b)</b>	1,624,980,592	(2,455,598,143)								
<b>Plan Fiduciary Net Position as a Percentage of Total Pension Liability</b>	98.20 %	102.74 %								
<b>Covered-Employee Payroll<sup>^</sup></b>	\$ 13,530,500,000	\$ 13,219,500,000								
<b>Net Pension Liability as a Percentage of Covered-Employee Payroll</b>	12.01 %	(18.58)%								

## Notes to Schedule:

N/A

<sup>^</sup> Covered payroll provided by DETF.

\* Starting with 2015, this item includes the impact of known Market Recognition Account deferred gains/losses on the liability for dividend payments. See page 24 for a full description.

**SCHEDULE OF CONTRIBUTIONS MULTIYEAR**  
**Last 10 Fiscal Years**

<b>FY Ending December 31,</b>	<b>Actuarially Determined Contribution*</b>	<b>Actual Contribution</b>	<b>Contribution Deficiency (Excess)</b>	<b>Covered Payroll^</b>	<b>Actual Contribution as a % of Covered Payroll</b>
2006			\$ -		0.00%
2007			-		0.00%
2008			-		0.00%
2009			-		0.00%
2010			-		0.00%
2011			-		0.00%
2012			-		0.00%
2013			-		0.00%
2014	\$ 987,792,834	\$ 987,792,834	-	\$ 13,219,500,000	7.47%
2015	977,733,921	977,733,921	-	13,530,500,000	7.23%

*\*Since it is the actuary's understanding that the System's practice is 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 System in the fiscal year.*

*^Covered payroll provided by DETF.*



## NOTES TO SCHEDULE OF CONTRIBUTIONS

### SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS USED IN THE CALCULATION OF THE 2015 CONTRIBUTION RATE

**Valuation Date:** December 31, 2013

**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	30-Year closed from date of participation in WRS
Asset Valuation Method	5-Year smoothed value
Inflation	2.0% to 2.7% -- approximate; No explicit price inflation assumption is used in this valuation.
Salary Increases	3.2% to 8.8% including inflation
Net Investment Rate of Return	5.50%
Weighted based on assumed rate for:	
Retired participants	5.00%
Active participants	
Post-retirement participants	5.00%
Pre-retirement participants	7.20%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2012 valuation pursuant to an experience study of the period 2009 - 2011
Mortality	WRS experience projected to 2017 with scale BB

**Other Information:**

Notes The actuarially determined contribution for calendar year 2015 was determined from the December 31, 2013 actuarial valuation.

## Single Discount Rate

A single discount rate of 7.20% 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 7.20% and a long term bond rate of 3.57%. Because of the unique structure of WRS, the 7.20% expected rate of return implies that a dividend of approximately 2.1% will always be paid after reflecting known changes in the Market Recognition Account. 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 to changes in the single discount rate, the following presents the plan's net pension liability, calculated using a single discount rate of 7.20%, as well as what the plan's net pension liability 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 to the Single Discount Rate Assumption

	Current Single Discount			
	1% Decrease	Rate Assumption	1% Increase	
Discount Rate	6.20%	7.20%	8.20%	
Ultimate Dividend Rate	2.10%	2.10%	2.10%	
Total Pension Liability	\$ 99,902,315,243	\$ 90,129,650,901	\$ 82,497,025,797	
Plan Fiduciary Net Position	88,504,670,309	88,504,670,309	88,504,670,309	
Net Pension Liability/(Asset)	\$ 11,397,644,934	\$ 1,624,980,592	\$ (6,007,644,512)	

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 1.1% for the 6.2% discount rate, 2.1% for the 7.2% discount rate, and 3.0% for the 8.2% discount rate.

### Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

	Current Single Discount			
	1% Decrease	Rate Assumption	1% Increase	
Discount Rate	6.20%	7.20%	8.20%	
Ultimate Dividend Rate	1.10%	2.10%	3.00%	
Total Pension Liability	\$ 93,535,449,557	\$ 90,129,650,901	\$ 86,506,131,589	
Plan Fiduciary Net Position	88,504,670,309	88,504,670,309	88,504,670,309	
Net Pension Liability/(Asset)	\$ 5,030,779,248	\$ 1,624,980,592	\$ (1,998,538,720)	

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## **SECTION C**

### **CALCULATION OF THE SINGLE DISCOUNT RATE**

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Auditor's Note – This information is presented in draft form for review by the Plan's auditor. Please let us know if there are any items that the auditor changes so that we may maintain consistency with the Plan's financial statements.

## 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 7.20%; the municipal bond rate is 3.57%; and the resulting Single Discount Rate is 7.20%.

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 2014 actuarial valuation (13.60%). 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 remains level for 20 years and is assumed to migrate to the ultimate contribution rate of 13.4% 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 modelled 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, 2115**

Year	Payroll for Current Employees	Contributions from Current Employees	Normal Cost Contributions	UAL Contributions	Total Contributions
0	\$ 13,040,397,667				
1	12,706,632,456	\$ 864,051,007	\$ 864,051,007	\$ -	\$ 1,728,102,014
2	12,409,894,178	868,692,593	868,692,593	-	1,737,385,185
3	12,120,638,918	848,444,725	848,444,725	-	1,696,889,449
4	11,829,519,660	836,938,516	836,938,516	-	1,673,877,032
5	11,530,659,051	838,855,446	838,855,446	-	1,677,710,892
6	11,222,221,617	836,055,511	836,055,511	-	1,672,111,021
7	10,903,819,239	812,334,534	812,334,534	-	1,624,669,067
8	10,576,703,205	787,964,389	787,964,389	-	1,575,928,778
9	10,241,956,732	763,025,777	763,025,777	-	1,526,051,553
10	9,896,249,906	737,270,618	737,270,618	-	1,474,541,236
11	9,538,148,788	710,592,085	710,592,085	-	1,421,184,169
12	9,169,664,193	683,139,983	683,139,983	-	1,366,279,965
13	8,792,450,897	655,037,592	655,037,592	-	1,310,075,184
14	8,406,360,360	626,273,847	626,273,847	-	1,252,547,694
15	8,013,539,606	597,008,701	597,008,701	-	1,194,017,401
16	7,615,566,817	567,359,728	567,359,728	-	1,134,719,456
17	7,210,473,644	537,180,287	537,180,287	-	1,074,360,573
18	6,800,066,882	506,604,983	506,604,983	-	1,013,209,965
19	6,386,269,908	475,777,108	475,777,108	-	951,554,216
20	5,967,566,158	444,583,679	444,583,679	-	889,167,357
21	5,545,076,656	413,108,211	413,108,211	-	826,216,422
22	5,121,196,734	381,529,157	381,529,157	-	763,058,313
23	4,696,913,925	349,920,088	349,920,088	-	699,840,175
24	4,274,072,806	318,418,424	318,418,424	-	636,836,848
25	3,856,361,776	287,298,953	287,298,953	-	574,597,905
26	3,445,206,788	256,667,906	256,667,906	-	513,335,811
27	3,039,553,800	226,446,758	226,446,758	-	452,893,516
28	2,639,314,618	176,834,080	176,834,080	-	353,668,159
29	2,248,400,965	150,642,865	150,642,865	-	301,285,729
30	1,879,977,813	125,958,514	125,958,514	-	251,917,027
31	1,546,101,129	103,588,776	103,588,776	-	207,177,551
32	1,251,802,811	83,870,789	83,870,789	-	167,741,577
33	1,000,493,529	67,033,067	67,033,067	-	134,066,133
34	791,404,924	53,024,130	53,024,130	-	106,048,260
35	621,013,716	41,607,919	41,607,919	-	83,215,838
36	483,168,338	32,372,279	32,372,279	-	64,744,557
37	371,867,675	24,915,134	24,915,134	-	49,830,268
38	283,249,458	18,977,714	18,977,714	-	37,955,427
39	213,694,808	14,317,552	14,317,552	-	28,635,104
40	159,581,655	10,691,971	10,691,971	-	21,383,942
41	117,984,097	7,904,935	7,904,935	-	15,809,869
42	86,590,626	5,801,572	5,801,572	-	11,603,144
43	63,156,779	4,231,504	4,231,504	-	8,463,008
44	45,622,571	3,056,713	3,056,713	-	6,113,425
45	32,374,267	2,169,076	2,169,076	-	4,338,152
46	22,478,727	1,506,075	1,506,075	-	3,012,149
47	15,275,173	1,023,437	1,023,437	-	2,046,873
48	10,016,844	671,129	671,129	-	1,342,257
49	6,201,323	415,489	415,489	-	830,977
50	3,455,098	231,492	231,492	-	462,983

**SINGLE DISCOUNT RATE DEVELOPMENT**  
**PROJECTION OF CONTRIBUTIONS ENDING DECEMBER 31, 2115 (CONCLUDED)**

Year	Payroll for Current Employees	Contributions from Current Employees	Normal Cost Contributions	UAL Contributions	Total Contributions
51	\$ 1,676,135	\$ 112,301	\$ 112,301	\$ -	\$ 224,602
52	729,065	48,848	48,848	-	97,695
53	317,694	21,286	21,286	-	42,571
54	131,398	8,804	8,804	-	17,607
55	38,604	2,587	2,587	-	5,173
56	6,971	467	467	-	934
57	495	33	33	-	66
58	106	7	7	-	14
59	-	-	-	-	-
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, 2115**

Year	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Investment Earnings at 7.20%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)=(a)+(b)-(c)+(d)
1	\$ 88,504,670,309	\$ 1,728,102,014	\$ 4,878,811,322	\$ 6,260,882,036	\$ 91,614,843,038
2	91,614,843,038	1,737,385,185	5,058,335,183	6,478,792,323	94,772,685,363
3	94,772,685,363	1,696,889,449	5,207,119,766	6,699,461,306	97,961,916,352
4	97,961,916,352	1,673,877,032	5,345,983,287	6,923,359,685	101,213,169,781
5	101,213,169,781	1,677,710,892	5,501,079,768	7,152,099,118	104,541,900,024
6	104,541,900,024	1,672,111,021	5,760,848,166	7,382,380,471	107,835,543,350
7	107,835,543,350	1,624,669,067	6,045,539,193	7,607,773,809	111,022,447,033
8	111,022,447,033	1,575,928,778	6,339,745,340	7,825,099,375	114,083,729,845
9	114,083,729,845	1,526,051,553	6,638,811,487	8,033,168,100	117,004,138,011
10	117,004,138,011	1,474,541,236	6,950,871,356	8,230,576,436	119,758,384,327
11	119,758,384,327	1,421,184,169	7,261,977,203	8,415,989,540	122,333,580,834
12	122,333,580,834	1,366,279,965	7,571,395,551	8,588,516,023	124,716,981,271
13	124,716,981,271	1,310,075,184	7,878,170,222	8,747,280,700	126,896,166,933
14	126,896,166,933	1,252,547,694	8,178,793,314	8,891,512,732	128,861,434,045
15	128,861,434,045	1,194,017,401	8,477,187,866	9,020,385,987	130,598,649,568
16	130,598,649,568	1,134,719,456	8,771,932,619	9,132,941,482	132,094,377,887
17	132,094,377,887	1,074,360,573	9,058,046,011	9,228,377,697	133,339,070,145
18	133,339,070,145	1,013,209,965	9,334,321,988	9,306,059,301	134,324,017,423
19	134,324,017,423	951,554,216	9,600,167,237	9,365,390,377	135,040,794,779
20	135,040,794,779	889,167,357	9,855,958,201	9,405,743,020	135,479,746,954
21	135,479,746,954	826,216,422	10,099,122,327	9,426,518,962	135,633,360,011
22	135,633,360,011	763,058,313	10,322,960,540	9,427,426,799	135,500,884,583
23	135,500,884,583	699,840,175	10,527,838,465	9,408,404,851	135,081,291,143
24	135,081,291,143	636,836,848	10,717,919,530	9,369,241,432	134,369,449,894
25	134,369,449,894	574,597,905	10,891,294,503	9,309,654,178	133,362,407,474
26	133,362,407,474	513,335,811	11,044,461,045	9,229,561,855	132,060,844,095
27	132,060,844,095	452,893,516	11,181,028,735	9,128,880,196	130,461,589,072
28	130,461,589,072	353,668,159	11,301,430,065	9,005,964,688	128,519,791,854
29	128,519,791,854	301,285,729	11,403,128,412	8,860,704,784	126,278,653,955
30	126,278,653,955	251,917,027	11,481,379,849	8,694,828,379	123,744,019,512
31	123,744,019,512	207,177,551	11,528,278,375	8,509,093,066	120,932,011,754
32	120,932,011,754	167,741,577	11,539,917,997	8,304,821,743	117,864,657,077
33	117,864,657,077	134,066,133	11,513,548,148	8,083,713,775	114,568,888,837
34	114,568,888,837	106,048,260	11,451,942,011	7,847,606,624	111,070,601,709
35	111,070,601,709	83,215,838	11,358,799,144	7,598,217,136	107,393,235,539
36	107,393,235,539	64,744,557	11,234,565,211	7,337,188,054	103,560,602,940
37	103,560,602,940	49,830,268	11,082,051,027	7,066,106,011	99,594,488,192
38	99,594,488,192	37,955,427	10,904,142,309	6,786,419,086	95,514,720,396
39	95,514,720,396	28,635,104	10,701,314,698	6,499,520,995	91,341,561,797
40	91,341,561,797	21,383,942	10,472,946,022	6,206,875,460	87,096,875,176
41	87,096,875,176	15,809,869	10,216,724,090	5,910,124,523	82,806,085,478
42	82,806,085,478	11,603,144	9,932,798,789	5,611,082,521	78,495,972,354
43	78,495,972,354	8,463,008	9,626,199,419	5,311,489,043	74,189,724,986
44	74,189,724,986	6,113,425	9,303,759,500	5,012,762,213	69,904,841,124
45	69,904,841,124	4,338,152	8,968,936,072	4,716,031,930	65,656,275,133
46	65,656,275,133	3,012,149	8,622,888,243	4,422,329,481	61,458,728,520
47	61,458,728,520	2,046,873	8,267,024,240	4,132,660,429	57,326,411,582
48	57,326,411,582	1,342,257	7,902,885,268	3,847,989,856	53,272,858,427
49	53,272,858,427	830,977	7,531,642,145	3,569,248,419	49,311,295,678
50	49,311,295,678	462,983	7,154,441,024	3,297,346,120	45,454,663,757

**SINGLE DISCOUNT RATE DEVELOPMENT**  
**PROJECTION OF PLAN FIDUCIARY NET POSITION ENDING DECEMBER 31, 2115**  
**(CONCLUDED)**

Year	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Investment Earnings at 7.20%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)=(a)+(b)-(c)+(d)
51	\$ 45,454,663,757	\$ 224,602	\$ 6,772,275,460	\$ 3,033,179,039	\$ 41,715,791,938
52	41,715,791,938	97,695	6,386,428,337	2,777,624,862	38,107,086,158
53	38,107,086,158	42,571	5,998,679,400	2,531,512,454	34,639,961,783
54	34,639,961,783	17,607	5,610,959,308	2,295,593,954	31,324,614,036
55	31,324,614,036	5,173	5,224,911,433	2,070,544,660	28,170,252,436
56	28,170,252,436	934	4,842,017,346	1,856,975,097	25,185,211,121
57	25,185,211,121	66	4,463,842,623	1,655,429,768	22,376,798,332
58	22,376,798,332	14	4,092,044,736	1,466,376,146	19,751,129,756
59	19,751,129,756	-	3,728,394,503	1,290,191,891	17,312,927,143
60	17,312,927,143	-	3,374,786,946	1,127,149,932	15,065,290,130
61	15,065,290,130	-	3,033,219,026	977,402,803	13,009,473,907
62	13,009,473,907	-	2,705,718,796	840,969,136	11,144,724,247
63	11,144,724,247	-	2,394,237,498	717,725,602	9,468,212,351
64	9,468,212,351	-	2,100,537,604	607,406,182	7,975,080,930
65	7,975,080,930	-	1,826,080,565	509,609,453	6,658,609,818
66	6,658,609,818	-	1,571,957,451	423,812,968	5,510,465,335
67	5,510,465,335	-	1,338,934,359	349,389,600	4,520,920,577
68	4,520,920,577	-	1,127,514,623	285,621,209	3,679,027,163
69	3,679,027,163	-	937,941,503	231,710,905	2,972,796,565
70	2,972,796,565	-	770,191,220	186,796,355	2,389,401,700
71	2,389,401,700	-	623,962,074	149,964,683	1,915,404,309
72	1,915,404,309	-	498,621,895	120,270,696	1,537,053,109
73	1,537,053,109	-	393,132,132	96,761,039	1,240,682,016
74	1,240,682,016	-	306,004,940	78,504,386	1,013,181,461
75	1,013,181,461	-	235,332,916	64,624,321	842,472,867
76	842,472,867	-	178,940,208	54,328,157	717,860,815
77	717,860,815	-	134,593,940	46,924,808	630,191,684
78	630,191,684	-	100,171,778	41,830,292	571,850,197
79	571,850,197	-	73,766,697	38,563,767	536,647,267
80	536,647,267	-	53,737,612	36,737,671	519,647,327
81	519,647,327	-	38,712,420	36,045,182	516,980,088
82	516,980,088	-	27,564,155	36,247,503	525,663,436
83	525,663,436	-	19,383,657	37,162,084	543,441,863
84	543,441,863	-	13,448,977	38,652,066	568,644,951
85	568,644,951	-	9,194,752	40,617,178	600,067,378
86	600,067,378	-	6,185,866	42,986,030	636,867,542
87	636,867,542	-	4,090,357	45,709,769	678,486,955
88	678,486,955	-	2,656,736	48,757,081	724,587,300
89	724,587,300	-	1,693,931	52,110,364	775,003,733
90	775,003,733	-	1,058,424	55,762,828	829,708,137
91	829,708,137	-	647,070	59,716,096	888,777,162
92	888,777,162	-	385,600	63,978,315	952,369,877
93	952,369,877	-	221,813	68,562,785	1,020,710,850
94	1,020,710,850	-	120,811	73,486,908	1,094,076,946
95	1,094,076,946	-	60,438	78,771,402	1,172,787,910
96	1,172,787,910	-	27,007	84,439,774	1,257,200,677
97	1,257,200,677	-	11,004	90,518,060	1,347,707,733
98	1,347,707,733	-	4,509	97,034,797	1,444,738,022
99	1,444,738,022	-	2,401	104,021,053	1,548,756,673
100	1,548,756,673	-	-	111,510,480	1,660,267,153



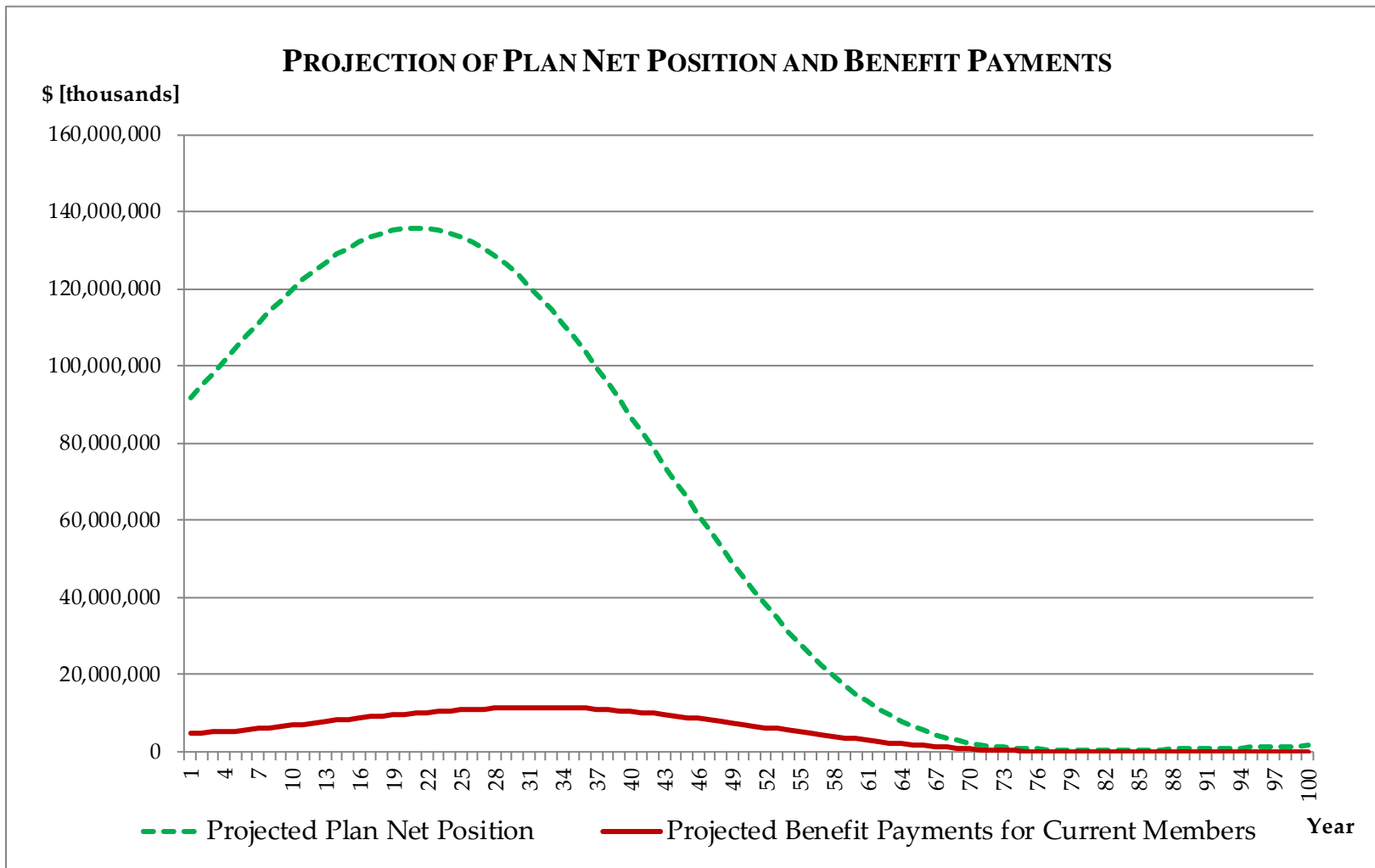
## SINGLE DISCOUNT RATE DEVELOPMENT

### PRESENT VALUES OF PROJECTED BENEFITS ENDING DECEMBER 31, 2115

Year	Projected Beginning Plan Net Position*	Projected Benefit Payments	Funded Portion of Benefit Payments	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)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v <sup>((a)-.5)</sup>	(g)=(e)*vf <sup>((a)-.5)</sup>	(h)=((c)/(1+sdr) <sup>(a-.5)</sup>
1	\$ 88,504,670,309	\$ 4,878,811,322	\$ 4,878,811,322	\$ -	\$ 4,712,123,130	\$ -	\$ 4,712,123,130
2	91,614,843,038	5,058,335,183	5,058,335,183	-	4,557,381,927	-	4,557,381,927
3	94,772,685,363	5,207,119,766	5,207,119,766	-	4,376,335,447	-	4,376,335,447
4	97,961,916,352	5,345,983,287	5,345,983,287	-	4,191,272,018	-	4,191,272,018
5	101,213,169,781	5,501,079,768	5,501,079,768	-	4,023,198,015	-	4,023,198,015
6	104,541,900,024	5,760,848,166	5,760,848,166	-	3,930,204,147	-	3,930,204,147
7	107,835,543,350	6,045,539,193	6,045,539,193	-	3,847,414,135	-	3,847,414,135
8	111,022,447,033	6,339,745,340	6,339,745,340	-	3,763,664,676	-	3,763,664,676
9	114,083,729,845	6,638,811,487	6,638,811,487	-	3,676,500,770	-	3,676,500,770
10	117,004,138,011	6,950,871,356	6,950,871,356	-	3,590,779,937	-	3,590,779,937
11	119,758,384,327	7,261,977,203	7,261,977,203	-	3,499,529,308	-	3,499,529,308
12	122,333,580,834	7,571,395,551	7,571,395,551	-	3,403,579,537	-	3,403,579,537
13	124,716,981,271	7,878,170,222	7,878,170,222	-	3,303,623,474	-	3,303,623,474
14	126,896,166,933	8,178,793,314	8,178,793,314	-	3,199,334,365	-	3,199,334,365
15	128,861,434,045	8,477,187,866	8,477,187,866	-	3,093,338,310	-	3,093,338,310
16	130,598,649,568	8,771,932,619	8,771,932,619	-	2,985,905,880	-	2,985,905,880
17	132,094,377,887	9,058,046,011	9,058,046,011	-	2,876,209,815	-	2,876,209,815
18	133,339,070,145	9,334,321,988	9,334,321,988	-	2,764,865,657	-	2,764,865,657
19	134,324,017,423	9,600,167,237	9,600,167,237	-	2,652,621,403	-	2,652,621,403
20	135,040,794,779	9,855,958,201	9,855,958,201	-	2,540,390,842	-	2,540,390,842
21	135,479,746,954	10,099,122,327	10,099,122,327	-	2,428,233,984	-	2,428,233,984
22	135,633,360,011	10,322,960,540	10,322,960,540	-	2,315,348,569	-	2,315,348,569
23	135,500,884,583	10,527,838,465	10,527,838,465	-	2,202,706,037	-	2,202,706,037
24	135,081,291,143	10,717,919,530	10,717,919,530	-	2,091,862,026	-	2,091,862,026
25	134,369,449,894	10,891,294,503	10,891,294,503	-	1,982,929,439	-	1,982,929,439
26	133,362,407,474	11,044,461,045	11,044,461,045	-	1,875,760,996	-	1,875,760,996
27	132,060,844,095	11,181,028,735	11,181,028,735	-	1,771,413,506	-	1,771,413,506
28	130,461,589,072	11,301,430,065	11,301,430,065	-	1,670,232,017	-	1,670,232,017
29	128,519,791,854	11,403,128,412	11,403,128,412	-	1,572,072,723	-	1,572,072,723
30	126,278,653,955	11,481,379,849	11,481,379,849	-	1,476,549,182	-	1,476,549,182
31	123,744,019,512	11,528,278,375	11,528,278,375	-	1,383,004,208	-	1,383,004,208
32	120,932,011,754	11,539,917,997	11,539,917,997	-	1,291,418,442	-	1,291,418,442
33	117,864,657,077	11,513,548,148	11,513,548,148	-	1,201,928,567	-	1,201,928,567
34	114,568,888,837	11,451,942,011	11,451,942,011	-	1,115,202,748	-	1,115,202,748
35	111,070,601,709	11,358,799,144	11,358,799,144	-	1,031,839,918	-	1,031,839,918
36	107,393,235,539	11,234,565,211	11,234,565,211	-	952,009,735	-	952,009,735
37	103,560,602,940	11,082,051,027	11,082,051,027	-	876,012,856	-	876,012,856
38	99,594,488,192	10,904,142,309	10,904,142,309	-	804,057,412	-	804,057,412
39	95,514,720,396	10,701,314,698	10,701,314,698	-	736,101,834	-	736,101,834
40	91,341,561,797	10,472,946,022	10,472,946,022	-	672,008,620	-	672,008,620
41	87,096,875,176	10,216,724,090	10,216,724,090	-	611,537,169	-	611,537,169
42	82,806,085,478	9,932,798,789	9,932,798,789	-	554,610,447	-	554,610,447
43	78,495,972,354	9,626,199,419	9,626,199,419	-	501,390,934	-	501,390,934
44	74,189,724,986	9,303,759,500	9,303,759,500	-	452,048,791	-	452,048,791
45	69,904,841,124	8,968,936,072	8,968,936,072	-	406,511,635	-	406,511,635
46	65,656,275,133	8,622,888,243	8,622,888,243	-	364,577,635	-	364,577,635
47	61,458,728,520	8,267,024,240	8,267,024,240	-	326,055,621	-	326,055,621
48	57,326,411,582	7,902,885,268	7,902,885,268	-	290,759,138	-	290,759,138
49	53,272,858,427	7,531,642,145	7,531,642,145	-	258,489,310	-	258,489,310
50	49,311,295,678	7,154,441,024	7,154,441,024	-	229,051,865	-	229,051,865

**SINGLE DISCOUNT RATE DEVELOPMENT**  
**PRESENT VALUES OF PROJECTED BENEFITS ENDING DECEMBER 31, 2115**  
**(CONCLUDED)**

Year	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	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)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v <sup>a</sup> ((a)-5)	(g)=(e)*vf <sup>a</sup> ((a)-5)	(h)=(c)/(1+sdr) <sup>a</sup> ((a)-5)
51	\$ 45,454,663,757	\$ 6,772,275,460	\$ 6,772,275,460	\$ -	\$ 202,254,389	\$ -	\$ 202,254,389
52	41,715,791,938	6,386,428,337	6,386,428,337	-	177,920,749	-	177,920,749
53	38,107,086,158	5,998,679,400	5,998,679,400	-	155,894,007	-	155,894,007
54	34,639,961,783	5,610,959,308	5,610,959,308	-	136,024,176	-	136,024,176
55	31,324,614,036	5,224,911,433	5,224,911,433	-	118,158,000	-	118,158,000
56	28,170,252,436	4,842,017,346	4,842,017,346	-	102,144,680	-	102,144,680
57	25,185,211,121	4,463,842,623	4,463,842,623	-	87,842,260	-	87,842,260
58	22,376,798,332	4,092,044,736	4,092,044,736	-	75,117,342	-	75,117,342
59	19,751,129,756	3,728,394,503	3,728,394,503	-	63,845,004	-	63,845,004
60	17,312,927,143	3,374,786,946	3,374,786,946	-	53,908,424	-	53,908,424
61	15,065,290,130	3,033,219,026	3,033,219,026	-	45,198,004	-	45,198,004
62	13,009,473,907	2,705,718,796	2,705,718,796	-	37,610,002	-	37,610,002
63	11,144,724,247	2,394,237,498	2,394,237,498	-	31,045,106	-	31,045,106
64	9,468,212,351	2,100,537,604	2,100,537,604	-	25,407,480	-	25,407,480
65	7,975,080,930	1,826,080,565	1,826,080,565	-	20,604,225	-	20,604,225
66	6,658,609,818	1,571,957,451	1,571,957,451	-	16,545,593	-	16,545,593
67	5,510,465,335	1,338,934,359	1,338,934,359	-	13,146,376	-	13,146,376
68	4,520,920,577	1,127,514,623	1,127,514,623	-	10,327,000	-	10,327,000
69	3,679,027,163	937,941,503	937,941,503	-	8,013,698	-	8,013,698
70	2,972,796,565	770,191,220	770,191,220	-	6,138,482	-	6,138,482
71	2,389,401,700	623,962,074	623,962,074	-	4,639,016	-	4,639,016
72	1,915,404,309	498,621,895	498,621,895	-	3,458,153	-	3,458,153
73	1,537,053,109	393,132,132	393,132,132	-	2,543,411	-	2,543,411
74	1,240,682,016	306,004,940	306,004,940	-	1,846,765	-	1,846,765
75	1,013,181,461	235,332,916	235,332,916	-	1,324,864	-	1,324,864
76	842,472,867	178,940,208	178,940,208	-	939,727	-	939,727
77	717,860,815	134,593,940	134,593,940	-	659,363	-	659,363
78	630,191,684	100,171,778	100,171,778	-	457,772	-	457,772
79	571,850,197	73,766,697	73,766,697	-	314,463	-	314,463
80	536,647,267	53,737,612	53,737,612	-	213,694	-	213,694
81	519,647,327	38,712,420	38,712,420	-	143,605	-	143,605
82	516,980,088	27,564,155	27,564,155	-	95,383	-	95,383
83	525,663,436	19,383,657	19,383,657	-	62,570	-	62,570
84	543,441,863	13,448,977	13,448,977	-	40,497	-	40,497
85	568,644,951	9,194,752	9,194,752	-	25,827	-	25,827
86	600,067,378	6,185,866	6,185,866	-	16,209	-	16,209
87	636,867,542	4,090,357	4,090,357	-	9,998	-	9,998
88	678,486,955	2,656,736	2,656,736	-	6,058	-	6,058
89	724,587,300	1,693,931	1,693,931	-	3,603	-	3,603
90	775,003,733	1,058,424	1,058,424	-	2,100	-	2,100
91	829,708,137	647,070	647,070	-	1,198	-	1,198
92	888,777,162	385,600	385,600	-	666	-	666
93	952,369,877	221,813	221,813	-	357	-	357
94	1,020,710,850	120,811	120,811	-	182	-	182
95	1,094,076,946	60,438	60,438	-	85	-	85
96	1,172,787,910	27,007	27,007	-	35	-	35
97	1,257,200,677	11,004	11,004	-	13	-	13
98	1,347,707,733	4,509	4,509	-	5	-	5
99	1,548,759,074	2,401	2,401	-	3	-	3
100	1,548,756,673	-	-	-	-	-	-
<b>Totals</b>					<b>\$ 105,837,948,776</b>	<b>\$ -</b>	<b>\$ 105,837,948,776</b>



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## **SECTION D**

### **SUMMARY OF ASSUMPTIONS**

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**SUMMARY OF ASSUMPTIONS  
USED TO DEVELOP TOTAL PENSION LIABILITY  
ASSUMPTIONS ADOPTED BY ETF BOARD AFTER  
CONSULTING WITH ACTUARY**

**Economic Assumptions**

In determining plan liabilities for accounting purposes, a discount rate of 7.2% is used for both actives and retirees. However, a long term assumed dividend of 2.1% 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 7.2% return assumption. The dividend rates used in developing the Total Pension Liability for accounting purposes is as follows:

2015: 2.9% Core, 2.0% Variable  
2016: 0.5% Core, -5% Variable  
2017: 1.5% Core, 2.1% Variable  
2018: 0.5% Core, 2.1% Variable  
2019: 0.0% Core, 2.1% Variable  
2020: 0.0% Core, 2.1% Variable  
2021 and later: 2.1% Core, 2.1% Variable

The **Wage Inflation Rate** assumed in this valuation was 3.20% 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, since there are no benefits that are linked to price increases. However, a price inflation assumption on the order of 2.0% to 2.7% would be consistent with the other economic assumptions.

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 7.2% pre-retirement investment return rate translates to an assumed real rate of return over wage inflation of 4.0%. The assumed real rate of return over price inflation would be higher – on the order of 4.5% to 5.2%, considering both an inflation assumption and an average expense provision.

**Pay increase assumptions** for individual active members are shown for sample services below. Part of the assumption for each age is for merit and/or seniority increase, and the other 3.2% recognizes wage inflation, including price inflation, productivity increases, and other macro economic forces.

Service	% Merit and Longevity Increase Next Year					
	Gen.	University Teachers	Public School Teachers	Protective		Exec. & Elec.
				With S.S.	W/O S.S.	
1	3.5 %	3.0 %	5.6 %	4.8 %	5.5 %	2.5 %
2	3.5 %	3.0 %	5.6 %	4.8 %	5.5 %	2.5 %
3	3.1 %	2.9 %	5.2 %	4.1 %	4.7 %	2.0 %
4	2.8 %	2.8 %	4.7 %	3.5 %	3.8 %	1.6 %
5	2.5 %	2.7 %	4.3 %	2.8 %	3.0 %	1.1 %
10	1.5 %	2.2 %	2.6 %	1.1 %	0.9 %	0.2 %
15	1.1 %	1.7 %	1.4 %	0.8 %	0.5 %	0.2 %
20	0.9 %	1.2 %	0.6 %	0.7 %	0.4 %	0.2 %
25	0.6 %	0.9 %	0.3 %	0.6 %	0.3 %	0.2 %
30	0.4 %	0.7 %	0.2 %	0.5 %	0.2 %	0.2 %

## DECREMENT PROBABILITIES

The **mortality table** used to measure mortality for retired participants was the Wisconsin 2012 Mortality Table. The rates in this table were based on actual WRS experience and adjusted for future mortality improvements using the MP-2015 fully generational improvement scale (multiplied by 50%). The mortality table was adopted by the Board in connection with the 2012-2014 Experience Study. 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 Wisconsin 2012 Mortality Table with 5% Interest (without projection)

Sample Attained Ages	Present Value of \$1 Monthly for Life		Future Life Expectancy (years)	
	Males	Females	Males	Females
40	\$212.10	\$217.24	44.6	47.8
45	203.48	209.77	39.6	42.8
50	192.71	200.54	34.6	37.8
55	179.86	189.35	29.8	32.9
60	165.48	176.01	25.2	28.1
65	148.22	159.83	20.8	23.5
70	128.60	140.64	16.6	19.0
75	106.86	118.97	12.7	14.8
80	84.12	95.73	9.3	11.0
85	62.91	72.64	6.5	7.8

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

Sample Attained Ages	Present Value of \$1 Monthly for Life		Future Life Expectancy (years)	
	Males	Females	Males	Females
40	\$198.57	\$207.38	37.1	41.4
45	186.57	197.56	32.2	36.4
50	172.73	185.67	27.4	31.5
55	156.72	171.51	22.9	26.8
60	138.06	154.59	18.6	22.2
65	117.55	134.77	14.6	17.8
70	95.28	112.57	10.9	13.7
75	72.99	89.09	7.8	10.0
80	53.57	66.61	5.4	7.0
85	37.90	48.58	3.6	4.8

**ACTIVE PARTICIPANT MORTALITY RATES**

<b>Sample Attained Ages</b>	<b>Mortality Rates</b>	
	<b>Males</b>	<b>Females</b>
20	0.000138	0.000079
25	0.000165	0.000088
30	0.000206	0.000118
35	0.000359	0.000210
40	0.000485	0.000298
45	0.000642	0.000466
50	0.000866	0.000690
55	0.002011	0.001221
60	0.002854	0.001755
65	0.004354	0.002683
70	0.007198	0.004555
75	0.012242	0.008257
80	0.022508	0.015445

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	General		Public School		University		Protective*		Exec. & Elected
	Male	Female	Male	Female	Male	Female	With S.S.	W/O S.S.	
50							6%	4%	
51							7%	4%	
52							9%	5%	
53							23%	17%	
54							19%	25%	
55							19%	21%	
56							19%	27%	
57	18%	15%	36%	28%	12%	14%	19%	30%	12%
58	18%	15%	31%	28%	12%	12%	18%	30%	12%
59	18%	15%	24%	28%	12%	10%	16%	30%	12%
60	18%	15%	30%	28%	12%	12%	20%	26%	12%
61	18%	15%	28%	28%	12%	16%	20%	15%	12%
62	25%	25%	37%	36%	12%	14%	22%	20%	12%
63	30%	25%	32%	30%	12%	19%	26%	40%	12%
64	25%	25%	27%	27%	12%	13%	17%	40%	12%
65	25%	28%	29%	35%	15%	18%	30%	40%	12%
66	32%	32%	33%	35%	17%	22%	25%	40%	20%
67	26%	26%	27%	30%	16%	17%	30%	40%	15%
68	19%	22%	24%	30%	16%	16%	30%	40%	15%
69	19%	20%	24%	30%	16%	14%	30%	40%	10%
70	19%	20%	20%	35%	16%	18%	100%	100%	10%
71	19%	20%	20%	30%	18%	18%	100%	100%	10%
72	19%	20%	20%	22%	14%	18%	100%	100%	15%
73	19%	20%	20%	22%	14%	18%	100%	100%	15%
74	19%	20%	20%	22%	10%	18%	100%	100%	15%
75	100%	100%	100%	100%	100%	100%	100%	100%	100%

\* Includes early retirements.

### Early Retirement

Age	% Retiring Next Year						
	General		Public School		University		Exec. & Elected
	Male	Female	Male	Female	Male	Female	
55	9.0%	7.0%	13.0%	12.0%	4.0%	5.5%	3.0%
56	9.0%	7.0%	13.0%	12.0%	3.0%	5.5%	3.0%
57	4.8%	5.0%	12.0%	12.0%	2.5%	4.0%	3.0%
58	5.8%	6.0%	13.0%	12.0%	2.5%	5.5%	3.0%
59	6.5%	6.0%	14.0%	13.0%	3.0%	6.5%	3.0%
60	8.5%	8.5%	14.0%	17.0%	4.3%	8.0%	5.0%
61	8.5%	8.5%	15.0%	17.0%	5.0%	6.0%	5.0%
62	16.0%	16.0%	21.0%	23.0%	6.0%	12.0%	
63	17.0%	16.0%	21.0%	23.0%	7.0%	12.0%	
64	17.0%	16.0%	21.0%	23.0%	7.0%	12.0%	



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 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 5 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 Terminating								
		Protective		Public Schools		University		Exec. & Elected	General	
		With Soc. Sec.	Without Soc. Sec.	Males	Females	Males	Females		Males	Females
	0	17.0%	4.0%	18.3%	16.0%	16.0%	16.0%	18.0%	16.8%	20.0%
	1	8.0%	3.5%	11.0%	10.8%	14.0%	15.0%	14.0%	12.7%	14.1%
	2	5.0%	1.5%	7.8%	7.7%	12.0%	13.0%	12.0%	9.0%	11.0%
	3	4.3%	1.3%	5.9%	5.8%	10.0%	10.0%	10.0%	7.3%	8.9%
	4	3.8%	1.2%	4.9%	5.0%	8.5%	9.9%	10.0%	7.0%	8.5%
	5	3.1%	1.1%	3.6%	4.3%	8.0%	8.4%	8.0%	4.8%	6.7%
	6	3.0%	1.0%	3.2%	3.8%	7.5%	6.4%	7.0%	4.3%	5.6%
	7	2.9%	0.9%	2.6%	3.4%	5.7%	5.7%	6.0%	4.2%	5.0%
	8	2.5%	0.8%	2.6%	2.8%	4.6%	4.7%	6.0%	3.4%	4.7%
	9	2.2%	0.7%	2.4%	2.5%	4.0%	4.2%	6.0%	3.1%	4.5%
25	10 & Over	2.0%	0.7%	1.3%	2.2%	4.0%	5.0%	6.0%	2.5%	4.5%
30		1.8%	0.7%	1.3%	1.9%	3.9%	4.6%	5.1%	2.5%	4.3%
35		1.6%	0.7%	1.3%	1.6%	3.6%	4.2%	4.3%	2.4%	3.5%
40		1.3%	0.6%	1.3%	1.3%	3.1%	3.4%	4.1%	2.1%	2.7%
45		1.1%	0.6%	1.3%	1.1%	2.3%	2.6%	3.2%	1.8%	2.2%
50		1.0%	0.5%	1.3%	1.0%	1.9%	2.1%	2.5%	1.5%	1.9%
55		1.0%	0.5%	1.3%	1.0%	1.8%	2.0%	2.4%	1.5%	1.8%
60		1.0%	0.5%	1.3%	1.0%	1.8%	2.0%	2.4%	1.5%	1.8%

**Disability Rates**

Age	% of Active Participants Becoming Disabled									
	Protective		Public Schools		University		Exec. & Elected		General	
	With SS	W/O SS	Males	Females	Males	Females	Males	Females	Males	Females
20	0.01%	0.04%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%
25	0.01%	0.04%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%
30	0.01%	0.04%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.01%	0.02%
35	0.02%	0.04%	0.01%	0.01%	0.00%	0.02%	0.01%	0.01%	0.01%	0.03%
40	0.02%	0.06%	0.01%	0.02%	0.01%	0.03%	0.01%	0.01%	0.03%	0.04%
45	0.04%	0.11%	0.03%	0.05%	0.01%	0.03%	0.01%	0.01%	0.06%	0.06%
50	0.06%	0.64%	0.08%	0.10%	0.02%	0.06%	0.02%	0.02%	0.13%	0.09%
55	0.87%	0.48%	0.16%	0.14%	0.05%	0.09%	0.09%	0.09%	0.24%	0.16%
60	1.46%	0.14%	0.26%	0.21%	0.07%	0.13%	0.11%	0.11%	0.43%	0.23%

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## **SECTION E**

### **PLAN PROVISIONS**

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## SUMMARY OF BENEFIT PROVISIONS

### Normal Retirement Eligibility

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

General		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.

### 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.

**Early Retirement.** Any participant who has attained age 55 and any Protective occupation participant who has attained age 50 may apply for an early 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%.

**Disability Annuity.** Eligibility: generally total and permanent incapacity to engage in gainful employment. Participant must have completed at least 6 months of creditable service (in at least 5 out of the last 7 calendar years) preceding application for disability. Service requirement is waived if disability is from service-related causes.

For protective occupations, eligibility also can be met if a member has 15 years of service, is between the ages of 50 and 55 and unable to safely and efficiently perform one's duties.

**Disability Amounts.** Amounts payable in case of disability depend upon the plan from which payment is made and are described below.

	<b>Pre-10/16/92 WRS Plan</b>	<b>Post-10/15/92 LTDI Plan</b>
<b>Participants covered</b>	Participants hired before 10/16/92 who do not elect LTDI coverage.	Participants entering after 10/15/92 and participants on 10/15/92 who elect LTDI coverage.
<b>Benefit to age 65*</b>	WRS formula benefit based on service projected to normal retirement age.	40% of FAE for participants covered by Social Security; 50% of FAE for non-covered participants who cannot qualify for Social Security disability benefits.
<b>Benefit at age 65*</b>	Continuation of pre-65 amount.	WRS benefit accrued to date of disability plus 7% of FAE money purchase benefit during disability period, both of which are adjusted in accordance with dividend rate.

\* Conversion age is later for participants becoming disabled after age 61.

**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.

**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:

<b>Date of Participation</b>	<b>Rate Credited For Purpose of</b>	
	<b>Money Purchase</b>	<b>Refunds</b>
	<b>Minimum</b>	
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	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).

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

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## **SECTION F**

### **GLOSSARY OF TERMS**

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Auditor's Note – This information is presented in draft form for review by the Plan's auditor. Please let us know if there are any items that the auditor changes so that we may maintain consistency with the Plan's financial statements.

## GLOSSARY OF TERMS

<b><i>Actuarial Accrued Liability (AAL)</i></b>	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."
<b><i>Actuarial Assumptions</i></b>	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.
<b><i>Accrued Service</i></b>	Service credited under the system which was rendered before the date of the actuarial valuation.
<b><i>Actuarial Equivalent</i></b>	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.
<b><i>Actuarial Cost Method</i></b>	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.
<b><i>Actuarial Gain (Loss)</i></b>	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.
<b><i>Actuarial Present Value (APV)</i></b>	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.
<b><i>Actuarial Valuation</i></b>	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.
<b><i>Actuarial Valuation Date</i></b>	The date as of which an actuarial valuation is performed.
<b><i>Actuarially Determined Contribution (ADC) or Annual Required Contribution (ARC)</i></b>	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

<b><i>Amortization Payment</i></b>	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
<b><i>Amortization Method</i></b>	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).
<b><i>Cost-of-Living Adjustments</i></b>	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
<b><i>Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)</i></b>	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.
<b><i>Covered-Employee Payroll</i></b>	The payroll of covered employees, which is typically only the pensionable pay and does not include pay above any pay cap.
<b><i>Deferred Retirement Option Program (DROP)</i></b>	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.
<b><i>Deferred Inflows and Outflows</i></b>	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.
<b><i>Discount Rate</i></b>	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"> <li>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</li> <li>2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.</li> </ol>

## GLOSSARY OF TERMS

<b><i>Entry Age Actuarial Cost Method (EAN)</i></b>	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 ages(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.
<b><i>GASB</i></b>	The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.
<b><i>Fiduciary Net Position</i></b>	The fiduciary net position is the market value of the assets of the trust dedicated to the defined benefit provisions.
<b><i>Long-Term Expected Rate of Return</i></b>	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.
<b><i>Money-Weighted Rate of Return</i></b>	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.
<b><i>Multiple-Employer Defined Benefit Pension Plan</i></b>	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
<b><i>Municipal Bond Rate</i></b>	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.
<b><i>Net Pension Liability (NPL)</i></b>	The NPL is the liability of employers and non-employer contribution entities to plan members for benefits provided through a defined benefit pension plan.
<b><i>Non-Employer Contribution Entities</i></b>	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 statements, plan members are not considered non-employer contribution entities.
<b><i>Normal Cost</i></b>	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method.

## GLOSSARY OF TERMS

<b><i>Other Postemployment Benefits (OPEB)</i></b>	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 healthcare benefits regardless of the manner in which they are provided. Other post-employment benefits do not include termination benefits.
<b><i>Real Rate of Return</i></b>	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
<b><i>Service Cost</i></b>	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.
<b><i>Total Pension Expense</i></b>	<p>The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year:</p> <ol style="list-style-type: none"> <li>1. Service Cost</li> <li>2. Interest on the Total Pension Liability</li> <li>3. Current-Period Benefit Changes</li> <li>4. Employee Contributions (made negative for addition here)</li> <li>5. Projected Earnings on Plan Investments (made negative for addition here)</li> <li>6. Pension Plan Administrative Expense</li> <li>7. Other Changes in Plan Fiduciary Net Position</li> <li>8. Recognition of Outflow (Inflow) of Resources due to Liabilities</li> <li>9. Recognition of Outflow (Inflow) of Resources due to Assets</li> </ol>
<b><i>Total Pension Liability (TPL)</i></b>	The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.
<b><i>Unfunded Actuarial Accrued Liability (UAAL)</i></b>	The UAAL is the difference between actuarial accrued liability and valuation assets.
<b><i>Valuation Assets</i></b>	The valuation assets are the assets used in determining the unfunded liability of the plan. For purposes of GASB Statement Nos. 67 and 68, the valuation assets are equal to the market value of assets.