

# Wisconsin Retirement System

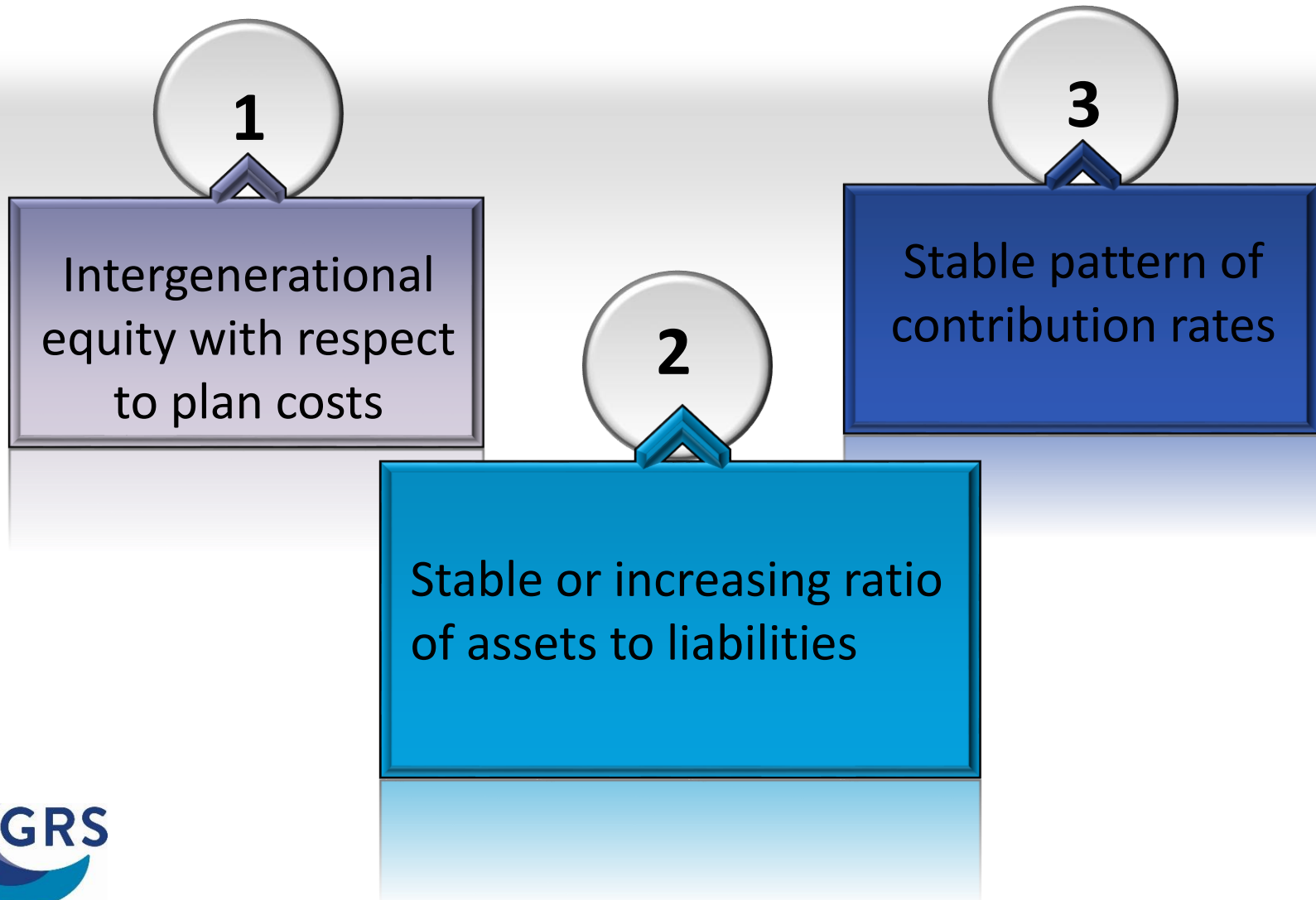
42nd Annual Actuarial Valuation as of  
December 31, 2022 and Gain/Loss Analysis

June 2023



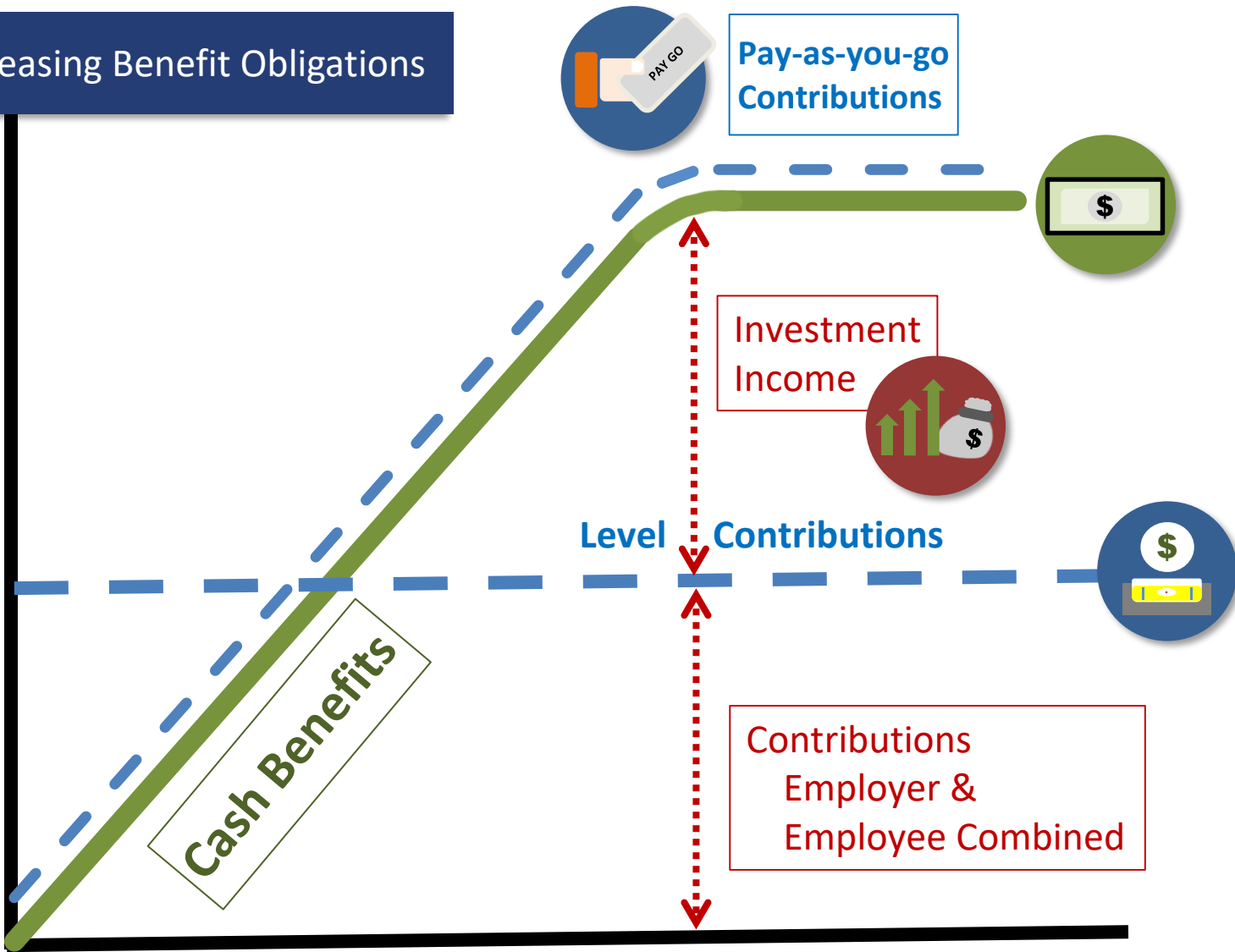
# Funding Objectives

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# Financing Increasing Benefit Obligations

% of Active Employee Pays

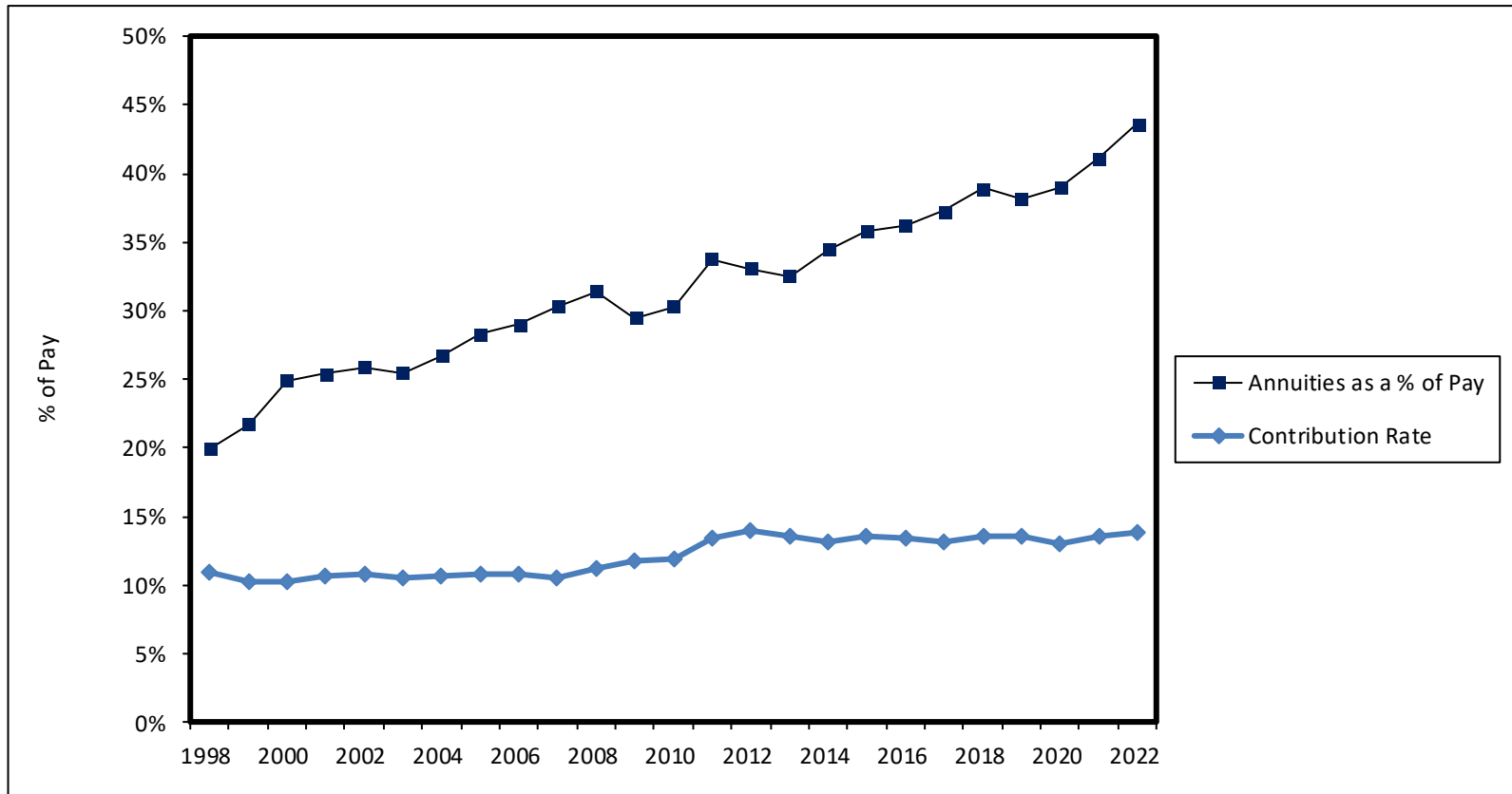


Start

Years of Time



# Annuities as a % of Payroll and WRS Average Total Contribution Rate\*

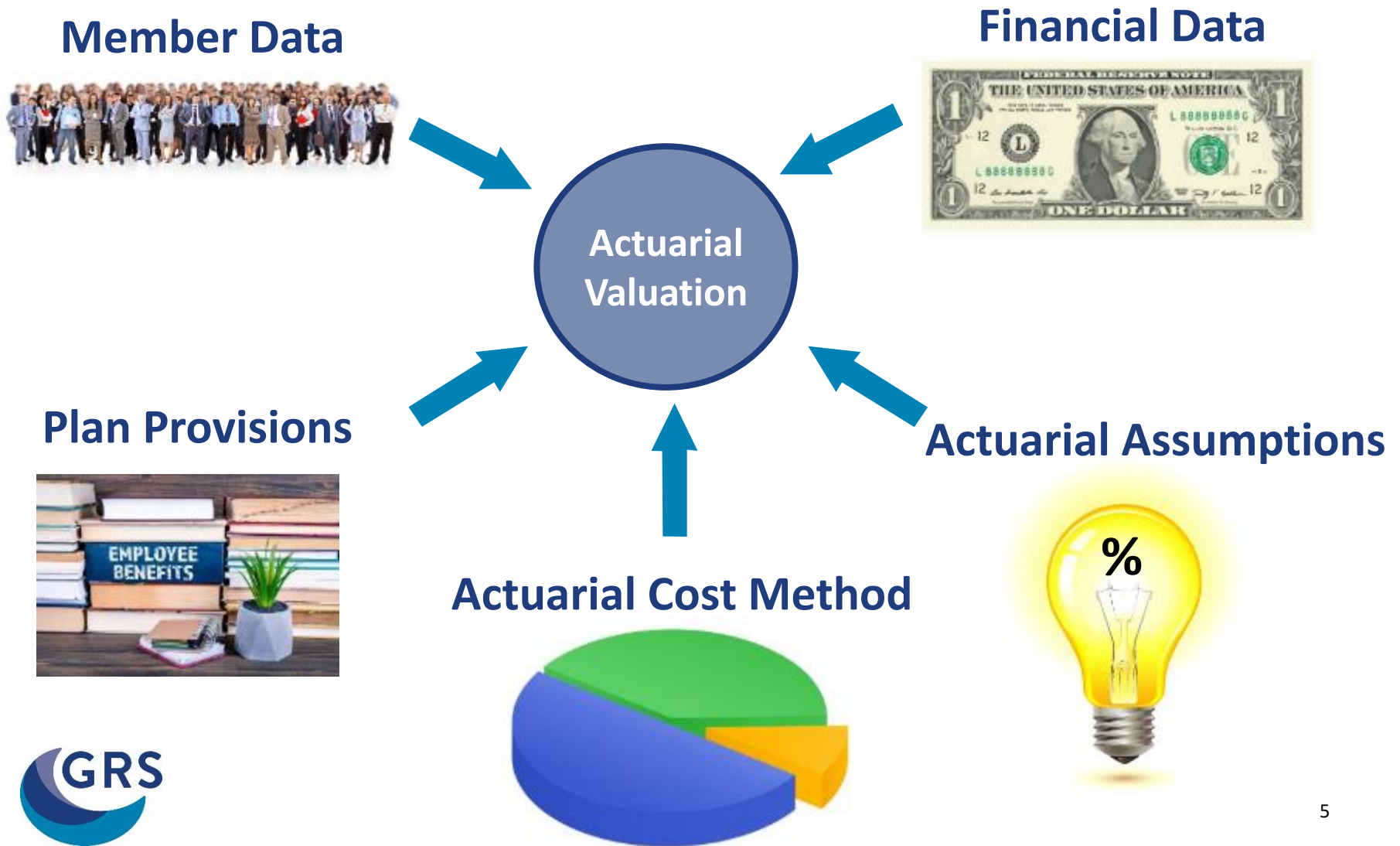


Annuities are expected to continue to increase as a percent of payroll for several more decades.

*\*Average total rate shown is for General Participants.*



# Actuarial Valuation Process



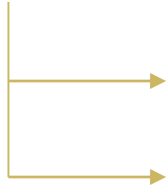
# Active Participants at December 31, 2022

Valuation Group	Number	Annual Earnings (\$ Millions)	Group Averages			
			Earnings	Age	Years of Service	Contribs.
General	236,592	\$14,148.7	\$59,802	44.8	10.8	\$68,070
Executive Group & Elected Officials	1,234	120.0	97,250	55.0	14.5	135,438
Protective Occupation with Social Security	18,961	1,501.5	79,189	39.5	11.9	81,660
Protective Occupation without Social Security	2,805	255.7	91,155	39.9	13.1	98,476
<b>Total Active Participants</b>	<b>259,592</b>	<b>\$16,025.9</b>	<b>\$61,735</b>	<b>44.4</b>	<b>10.9</b>	<b>\$69,712</b>
Prior Year	257,683	\$15,410.0	\$59,802	44.6	11.1	\$69,680



# All Participants at December 31, 2022

Active Lives  
Valuation



Valuation Group	Number	Average Annual Earnings/Benefits <sup>1</sup>
Actives	259,592	\$61,735
Inactives	181,758	\$20,892
Retirees & Beneficiaries	233,804	\$29,889
<b>Total Participants</b>	<b>675,154</b>	

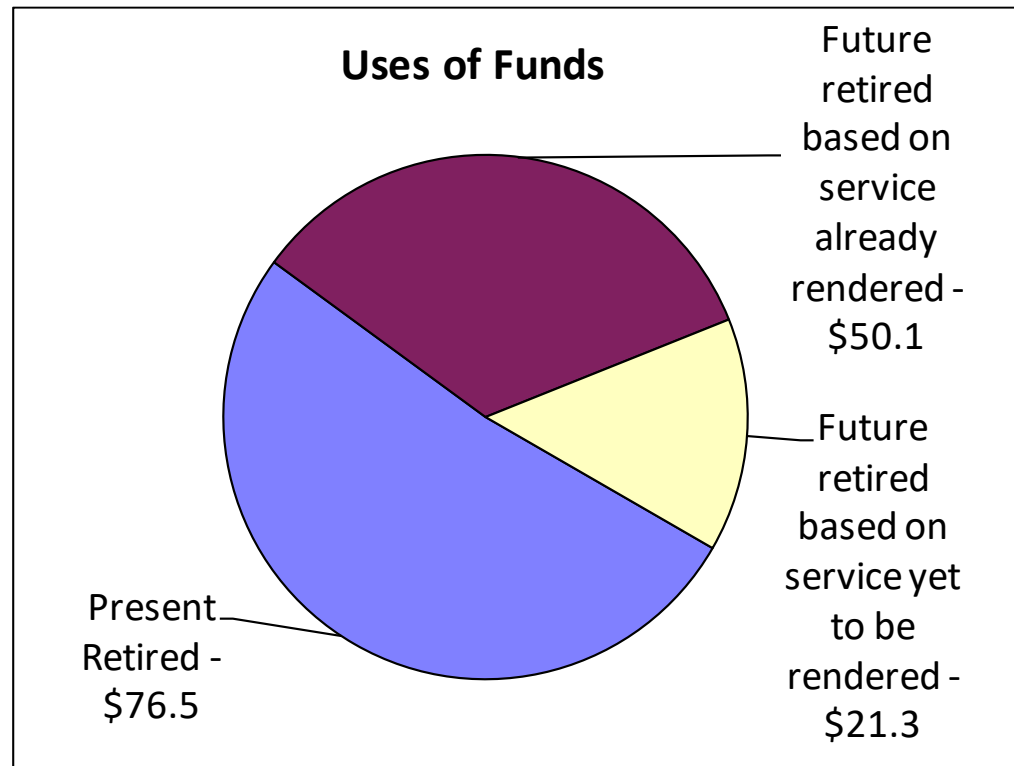
Retired Lives  
Valuation



<sup>1</sup> For inactives, average money purchase balance.

# \$147.9 Billion\* of Benefit Promises to Present Active and Retired Members

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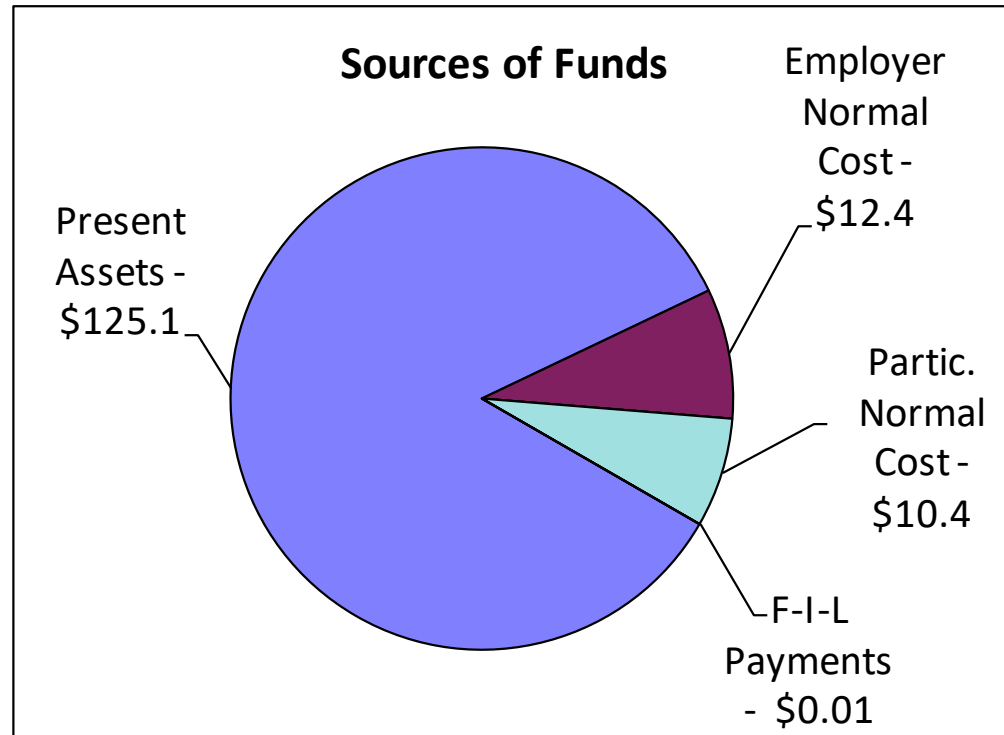


\* Present value of future benefits; all divisions combined.

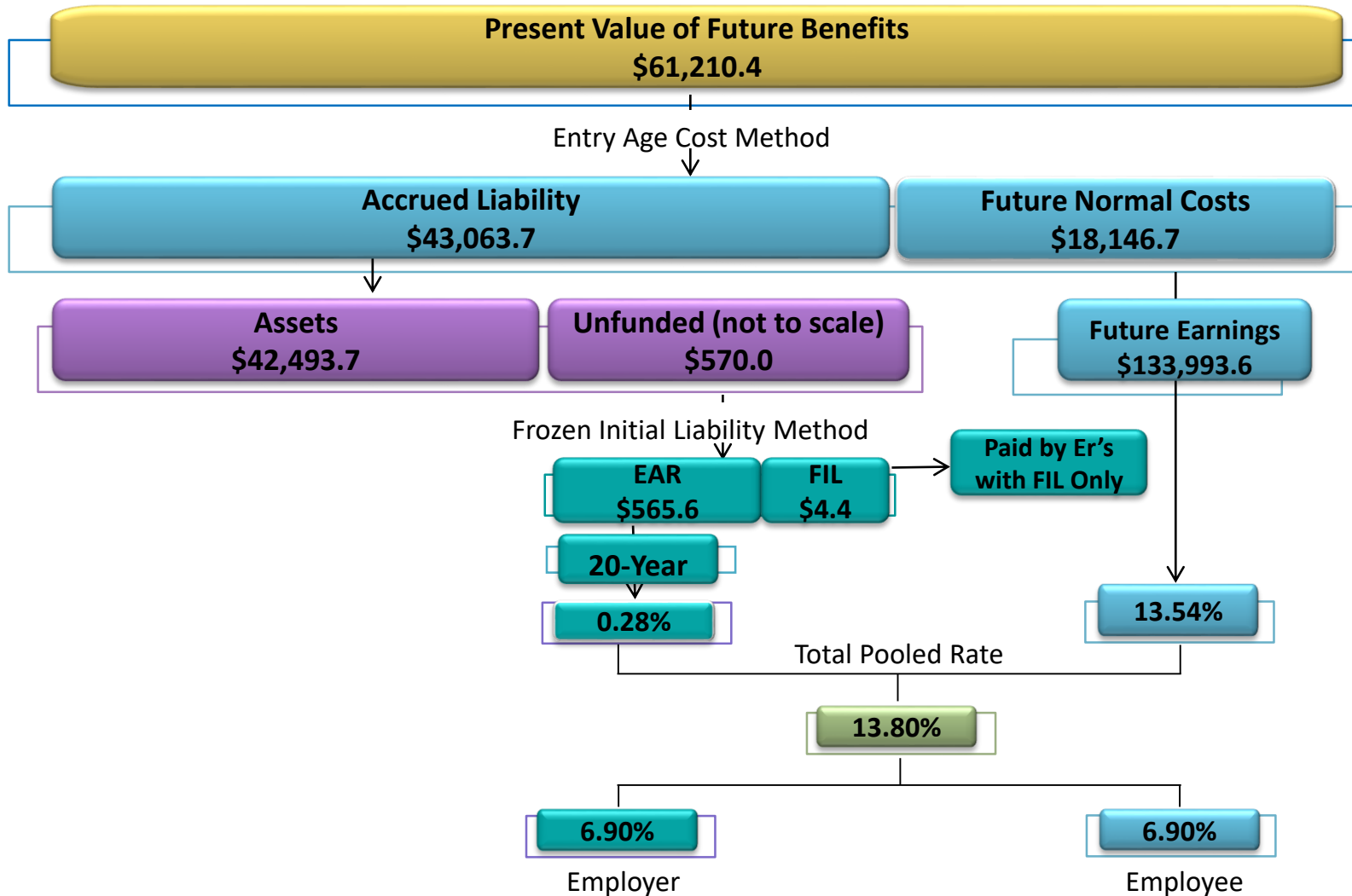


# Sources of Funds for Financing \$147.9 Billion of Benefit Promises

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## Actuarial Valuation Process Illustration for General/Elected Group (\$ Millions)



# Summary of December 31, 2022 Valuation Results

	General, Executive & Elected Officials		Protective Occupation				Average
			With Soc. Sec.		Without Soc. Sec.		
	2024	2023	2024	2023	2024	2023	2024
Employer Normal Cost	6.90%	6.80%	14.30%	13.20%	19.10%	18.10%	7.80%
Participant Normal Cost	6.90%	6.80%	6.90%	6.80%	6.90%	6.80%	6.90%
<b>Total Normal Cost</b>	<b>13.8%</b>	<b>13.6%</b>	<b>21.2%</b>	<b>20.0%</b>	<b>26.0%</b>	<b>24.9%</b>	<b>14.7%</b>
<b>Estimated Total NC (\$ millions)*</b>	<b>\$2,089.0</b>	<b>\$2,058.7</b>	<b>\$337.7</b>	<b>\$318.6</b>	<b>\$70.5</b>	<b>\$67.5</b>	

\* Based on payroll projected from valuation date to fiscal year using the payroll growth assumption.

# Comparative Statement of Total Average Contribution Rates

<b>Valuation 12/31</b>	<b>General</b>	<b>Executive &amp; Elected</b>	<b>Protective with Soc. Sec.</b>	<b>Protective without Soc. Sec.</b>
2002	10.82%	11.51%	12.52%	15.01%
2007	10.58%	11.55%	13.15%	14.09%
2012	14.00%	15.50%	17.10%	21.00%
2017	13.12%	13.12%	17.10%	21.59%
2018	13.54%	13.54%	18.41%	23.02%
2019	13.53%	13.53%	18.51%	23.11%
2020	13.00%	13.00%	18.52%	23.86%
2021	13.60%	13.60%	20.03%	24.90%
2022	13.81%	13.81%	21.20%	26.00%

Executive and Elected employee and employer rates for CY 2016 and beyond are made in accordance with the combined General/Exec & Elected results.

# Protective Contribution Rate Levels

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- Higher contribution rates compared to General Employees
  - Higher Benefit Multipliers
    - Protective = 2% or 2.5% (with or without Soc. Security)
    - General & Executive/Elected = 1.6%
  - Earlier Normal Retirement Eligibility
    - Protective at Age 54 or Age 53 with 25 years of service
    - General & Executive/Elected at Age 65/62 or Age 57 with 30 years of service



# Protective Contribution Rate Levels

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- More volatile contribution rates compared to General Employees
  - Asset/Payroll ratios<sup>1</sup>
    - Protective = 317% - 420% (with or without Soc. Security)
    - General & Executive/Elected = 298%
  - Liability/Payroll ratios<sup>2</sup>
    - Protective = 369% - 467% (with or without Soc. Security)
    - General & Executive/Elected = 302%



<sup>1</sup> Line 8 divided by line 2 from page B-2 in the active lives valuation

<sup>2</sup> Line 7 divided by line 2 from page B-2 in the active lives valuation

# Reasons for Contribution Changes

	General, Executive & Elected	Protective with Soc. Sec.	Protective without Soc. Sec.
2023 Normal Cost Rate	13.60%	20.00%	24.90%
Effect of Benefit Change	0.00%	0.00%	0.00%
Effect of Assumption Change	0.00%	0.00%	0.00%
Effect of Asset Performance	0.03%	0.21%	0.31%
Effect of Salary Experience	0.05%	0.89%	0.49%
Effect of Money Purchase Benefit	0.07%	0.03%	0.01%
Demographic and Other Experience	0.05%	0.07%	0.29%
2024 Normal Cost Rate	13.80%	21.20%	26.00%

Generally  
zero when  
not an  
experience  
study year

The effect of Asset Performance is different for each group because the ratio of assets to payroll is different for each group.

# Impact of Asset Gains/Losses

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- Asset gains and losses above or below the assumed rate of return are smoothed in over the current year and four future years
- Four years after a valuation date, all asset gains or losses known at valuation date are fully recognized
- Statutory smoothing method in WRS is referred to as the Market Recognition Account (MRA)



# Operation of Market Recognition Account (MRA)

## - \$ Millions

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	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>
Actual Investment Return	\$ (17,445)				
Assumed Investment Return	7,894				
Gain/(Loss) to be phased-in	(25,339)				
Phased-in recognition					
• Current year	\$ (5,068)	?	?	?	?
• First prior year	2,495	\$(5,068)	?	?	?
• Second prior year	1,774	2,495	\$(5,068)	?	?
• Third prior year	2,204	1,774	2,495	\$(5,068)	?
• Fourth prior year	<u>(2,049)</u>	<u>2,204</u>	<u>1,774</u>	<u>2,495</u>	<u>\$ (5,068)</u>
Total recognized gain (loss)	\$ (644)	\$ 1,405	\$ (799)	\$(2,573)	\$ (5,068)

# Reconciliation of Market Recognition Account (MRA)

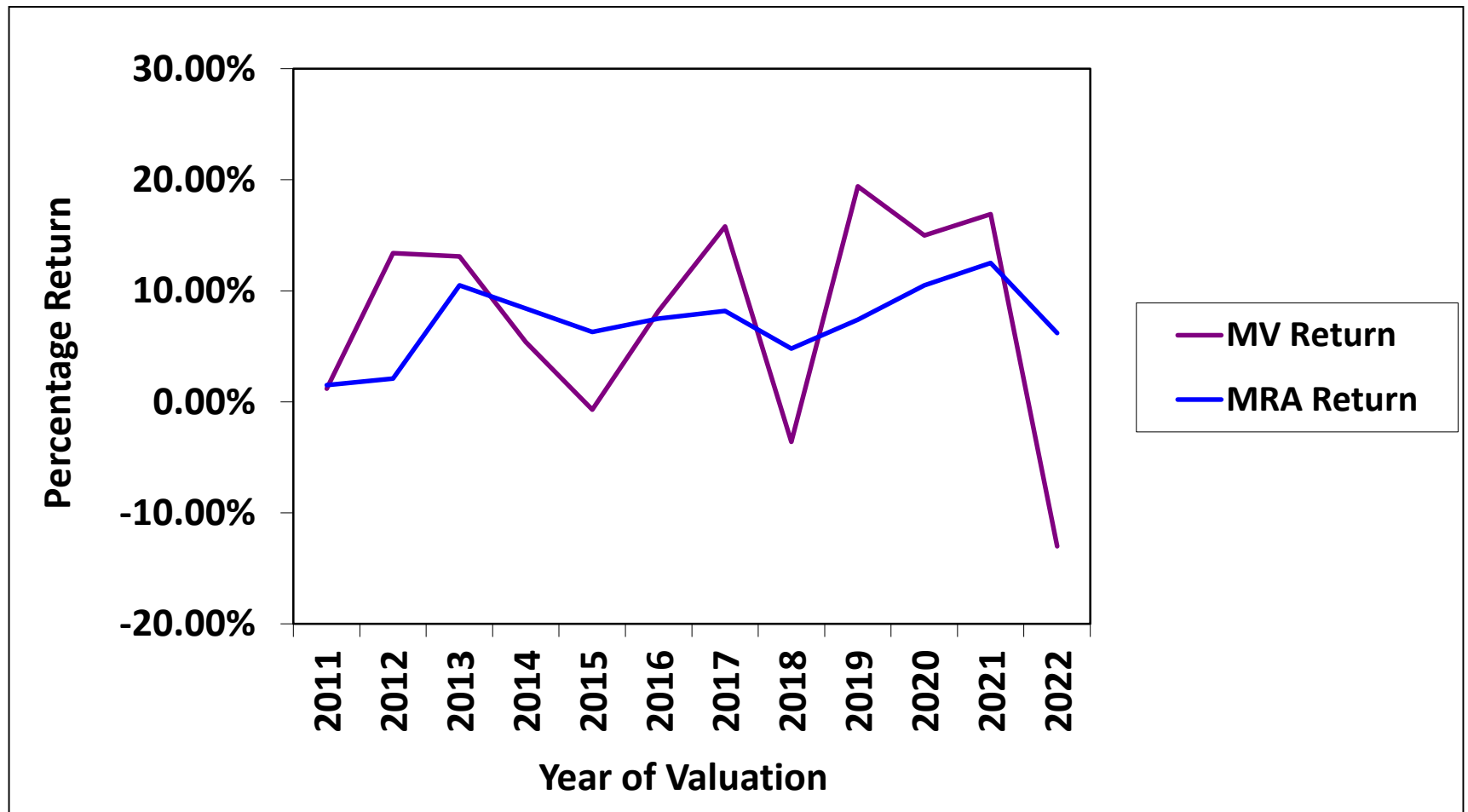
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	<u>\$ Millions</u>
MRA at Beginning of Year	\$118,333.8
Non-Investment Cash Flow	(4,483.2)
Assumed Return (at 6.8%)	7,894.3
Phase-in of Gains/(Losses)	(644.3)
MRA at End of Year	\$121,100.6
MRA Rate of Return	6.20%
Market Value Rate of Return	-13.00%

Assets in MRA include non WRS programs such as Sick Leave, Duty Disability, etc.

Market value rate of return shown as calculated by GRS and may differ from returns calculated by SWIB and/or ETF.

# Market Value Return vs. Market Recognition (Actuarial) Return



# WRS Funded Status



	<b>Frozen Initial</b>	<b>Entry Age</b>
2018	100.0%	98.6%
2019	100.0%	98.6%
2020	100.0%	99.1%
2021	100.0%	99.3%
2022	100.0%	98.8%

# Concluding Remarks

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- There are \$7.0 billion of unrecognized losses in the MRA
- Due to the cost sharing nature of WRS, asset gains/losses have been traditionally shared by:

Employees	Employers	Retirees
↑↓ Money Purchase Benefits	↓↑ Contributions	↑↓ Dividends
↓↑ Contributions		



# Gain/Loss Analysis

# 2022 Gain/Loss Analysis

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A Gain/Loss Analysis measures differences between actual and assumed experience in each Risk Area.

# WRS Assumption Risk Areas

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Primary Risks	
Demographic	Economic
Normal retirement	Salary increases
Early retirement	Investment return
Death-in-service	
Disability	
Other separations	



**RISKS**



# Why Have a Gain/Loss Analysis?

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**1**

To gain an understanding of reasons for contribution rate changes



**2**

It is a year-by-year measure of the operation of assumptions



**3**

To determine when assumption changes are needed



**4**

To understand the nature of risk

# The Nature of Defined Benefit Plan Risk

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## Investment Risk

- The risk that actual returns will differ from assumed returns.

## Asset/Liability Mismatch

- The potential that changes in assets are not offset by changes in liabilities. Because of the way assets are invested in most public plans, this is almost synonymous with investment risk.

## Contribution Risk

- The risk that actual contributions will differ from expected contributions. This could occur, for example, if the plan's funding policy is not followed, or if there are changes in the covered population.



# Retirement Sustainability Equation

## - Asset/Liability Mismatch

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$$C + I = B + E$$

**B** depends on

- ▶ Plan Provisions – at retirement, member receives x% of Final Average Pay times years of service
- ▶ Participant Experience – tenure, pay increases, etc.

**Most Systems do not have asset changes offset by liability changes**

# Retirement Sustainability Equation

- Smaller Asset/Liability Mismatch in WRS

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$$C + I = B + E$$

**B** depends on plan provisions, which incorporates **I** Experience

- ▶ Money Purchase DC benefit (changes with I results)
- ▶ Annual post-retirement adjustments to the monthly annuity benefit are based solely on investment returns
  - ▶ Dividends can increase or decrease

# The Nature of Defined Benefit Plan Risk

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## Salary and Payroll Risk

- Individual pays and/or total covered payroll may not grow at the assumed rate. If covered payroll grows more slowly than assumed, or shrinks, actual contributions may fall short of expected contributions.

## Longevity Risk

- Members may live for more or fewer years than expected, affecting the amount of pension income they will receive from the plan.

## Other Demographic Risks

- Members may terminate, retire, or become disabled at rates other than expected, affecting both contribution rates and funded status.

# Population Development During 2022

	<u>Actual</u>	<u>Expected</u>
<b>Beginning Census</b>	257,683	
(-) Normal Retirement	4,444	4,812
(-) Early Retirement	3,998	4,061
(-) Death	108	275
(-) Disability Retirement		
- Total Approved	254	155
- Less Pending	86	
- Net New	168	
(-) Other Separations	18,628	13,857
(-) Transfers Out	3,179	
(+) Transfers In	3,179	
(+) New Entrants	29,255	
<b>Ending Census</b>	259,592	

# Population Development During 2022

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Normal Retirements	Varied by group and gender. Overall, lower than expected, but net result on liabilities is a small loss
Early Retirements	Lower than expected, overall producing a small loss
Deaths	Among active participants were lower than expected. The net result for the past year was a small loss
Disabilities	Slightly higher than expected, producing a small gain
Other Separations	Varied by group, gender and service. Overall, higher than expected. The net result was a small gain

# Comparative Schedule of Experience Gains/Losses by Decrement

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## Divisions Combined (Millions)

	<u>2021</u>	<u>2022</u>
Normal Retirement	\$ (27.4)	\$ (36.4)
Early Retirement	(20.9)	(24.2)
Disability Retirement	4.2	2.0
Death with Benefit	(3.0)	(2.0)
Other Separations	<u>20.1</u>	<u>37.5</u>
Total	\$ (27.0)	\$ (23.1)
As % of Liabilities	-0.06%	-0.05%



# Components of Total Gain/(Loss)

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	<u>Gain/(Loss) in Millions</u>	
	<u>2021</u>	<u>2022</u>
Economic Risk Areas	\$1,288	\$(489)
Decrement Risk Areas	(27)	(23)
Other Activity	<u>(90)</u>	<u>(76)</u>
Total Gain/(Loss)	\$1,171	\$(588)

# Investment Earnings in 2022 (Active Participants)

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	<u>\$ Millions</u>
A. Average balance on Participant and Employer Accumulation Reserves	\$47,663
B. Expected earnings: 6.8%	3,241
C. Earnings credited to Participant and Employer Accumulation Reserves	1,868
D. Gain (loss) from earnings: C - B	\$(1,373)

# Investment Earnings in 2022

## (Active Participants)

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- \$1,373 million is the total recognized asset loss for the year for active participants
- However, part of the total gain/loss is allocated to Variable Excess accounts
- Some of the gain/loss flows through to members via the operation of Money Purchase minimum benefits
- Must net these out to determine remaining core fund gain or loss
- Remaining portion affects contribution rates



# Investment Earnings in 2022 (Active Participants)

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	<u>\$ Millions</u>
Gross Gain/(Loss) for the Year (for Actives)	\$(1,373)
Less Estimated Gain/(Loss) due to Money Purchase	(45)
Less Estimated Gain/(Loss) due to Variable Excess	<u>(1,196)</u>
Net Core Fund Asset Gain/(Loss)	\$ (132)

# Salary Related Gain/Loss

- Pay increases were overall higher than expected, resulting in a loss



	<b>Gain/Loss \$ Millions</b>	<b>% of Group Liabilities</b>
General, Executive & Elected	\$(117.1)	(0.3)%
Protective w/Soc. Sec.	(221.3)	(4.7)%
Protective w/o Soc. Sec.	(18.6)	(1.7)%
	\$(357.0)	(0.7)%

# Concluding Remarks

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1

Recognition of remaining prior asset gains and losses are expected over the next few years

2

This Gain/Loss Analysis is the second in a regular 3-year experience cycle

3

This study, together with the 2021 and 2023 results, will form the basis for the next experience study to be performed after the December 31, 2023 valuation cycle





# NEWS & EVENTS

## Current Events

# Current Events

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1

Highlights from Milwaukee Study, performed in first quarter of 2023

Actuarial Standard of Practice (ASOP) impacting 2023 WRS valuations

2





# Milwaukee Joining WRS?

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Legislature requested an evaluation of closure of Milwaukee City and County plans with new hires entering WRS prospectively

- City and County actuaries provided initial analyses
  - Based on assumptions specific to City and County
  - Unfunded liabilities, projections of plan closure
- Both actuaries assumed 7.5% investment return
- GRS reviewed the retained actuaries' work and provided additional requested information.



# Comparative Census Counts

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	<b>Milwaukee</b>		
	<b>City</b>	<b>County</b>	<b>WRS*</b>
General	7,768	3,060	234,494
Protective			
With Social Security	-	265	19,175
Without Social Security	2,326	-	2,762
<b>Total</b>	<b>10,094</b>	<b>3,325</b>	<b>256,431</b>

Since only new hires would go into the WRS, the WRS census would be projected to increase very gradually, reaching an ultimate count of approximately 270,000 in 30 to 50 years.

\*WRS figures from the 2021 valuation.



# Comparative Asset Amounts

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<b>\$ Millions at December 31, 2021</b>		
<b>Milwaukee</b>		
<b>City</b>	<b>County</b>	<b>WRS</b>
<b>\$6,367.9</b>	<b>\$1,970.4</b>	<b>\$141,847.8</b>

# Milwaukee Joining WRS?

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GRS delivered 70+ page report in March that:

- Confirmed Unfunded Actuarial Accrued Liability (UAAL) amounts for each of the Milwaukee City and County retirement systems
  - Provided recommendations on approaches to paying the unfunded liability
- Reviewed soft close projections
- Reviewed certain plan closure issues



# Milwaukee Joining WRS?

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GRS delivered 70+ page report in March that:

- Provided information requested by the Legislative Fiscal Bureau
  - For the Milwaukee plans:
    - Amortization schedule of UAAL payments
    - Projected annual normal cost payments
    - Projected annual employee contributions
  - Projected annual employer/employee Milwaukee WRS contributions before and after change



# Milwaukee Joining WRS?

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GRS delivered 70+ page report in March that:

- Compared status quo with bringing Milwaukee new hires into WRS, based on 7.0% and 6.8% assumed rates of return
- Investigated projected contribution rates, normal cost rates and UAAL rates

The result of all this analyses? ...



# How Does this Impact WRS?

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From WRS Perspective:

- For General and Protective w/Social Security groups, adding relatively very small Milwaukee groups unlikely to have any material impact on normal cost rates
- For Protective w/out Social Security group, Milwaukee of similar size to the WRS, but with similar entry age – unlikely to impact normal cost rates



# Milwaukee...More to Come!

We express our thanks to Matt Stohr

Matt was extremely responsive in gathering information and helping guide the project



*Thank You!*



# Actuarial Standards “ASOPs” Generally

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1

Actuarial Standards Board (ASB) develops standards for work in various actuarial practice areas (Life, Health, Pension, etc.)

Our work for the Wisconsin Retirement System (WRS) must follow actuarial standards

2



# Main Pension ASOPS

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- ASOP 4: Measuring Pension Obligations
- ASOP 27: Selection of Economic Assumptions
- ASOP 35: Selection of Demographic and other non-economic Assumptions
- ASOP 44: Selection and use of Asset Valuation Methods
- ASOP 51 Assessment and disclosure of Risk

➔ Today's discussion focuses on ASOP 4



# Summary of Notable Changes to ASOP 4

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## **Point 1**

Actuaries now must calculate and disclose a reasonable Actuarially Determined Contribution (ADC)

## **Point 2**

Actuaries must disclose a Low-Default-Risk Obligation Measure (LDRM) in funding valuations

**Revised standard effective for WRS' 12/31/2023 valuations**



# Summary of Notable Changes to ASOP 4

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## Reasonable ADC

- Generally, plans which already develop an ADC following prior ASOP guidance are expected to meet the new reasonable ADC standard
- Plans which do not currently develop an ADC (some fixed rate plans, and some plans using statutory assumptions or methods) will be required to calculate a reasonable ADC.



# Summary of Notable Recent Changes to ASOP 4

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## Reasonable ADC -- Amortization

- Must amortize the UAAL within a reasonable time or
- Must reduce the UAAL by a reasonable amount each year.
- Actuary must assess whether or not UAAL will be fully amortized if all assumptions are met.



# ASOP 4 – LDRROM

## Most Attention Getting Addition to ASOP 4

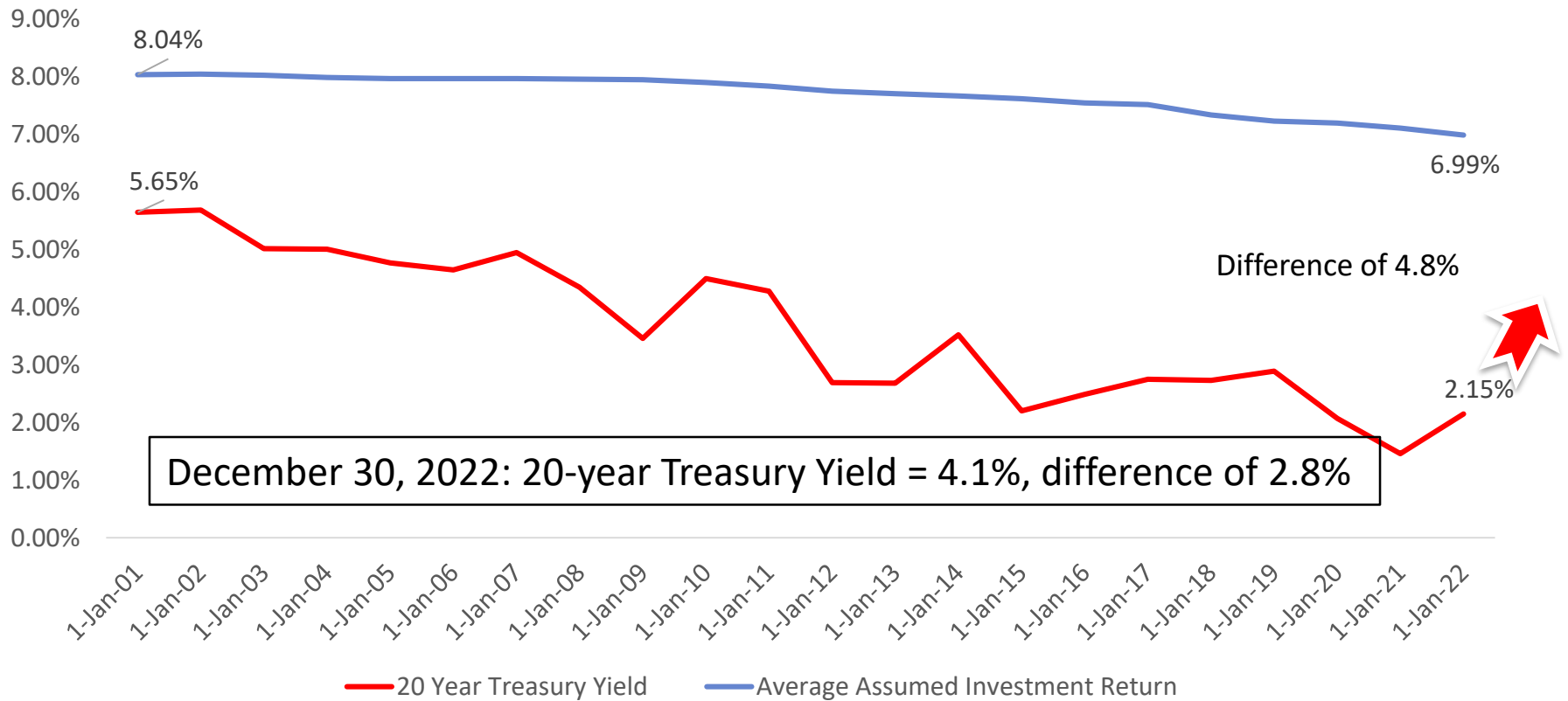


- Actuaries must calculate and disclose a liability using a discount rate or rates derived from
  - Low-default-risk fixed income securities
  - Whose cash flows are reasonably consistent with the pattern of benefits expected to be paid in the future

# Assumed Investment Returns vs. Risk-Free Yields

## NASRA Fund Survey

### Average Assumed Investment Return vs. Treasury Yields Over Time



# Understanding LDRM

Provides a more complete picture of the funded status and information regarding the security of benefits



- The LDRM itself can be viewed as the cost of significantly reducing risk.
  - In the late 1990's this cost might have looked quite affordable.
  - Maybe it will again someday
  - Reducing risk can enhance benefit security



# Understanding LDRROM

Provides a more complete picture of the funded status and information regarding the security of benefits



- Difference between LDRROM and the valuation AAL can be seen as a measure of the expected savings generated by taking investment risk.
  - Do the expected savings justify the risk?
  - If not consider what action should be taken

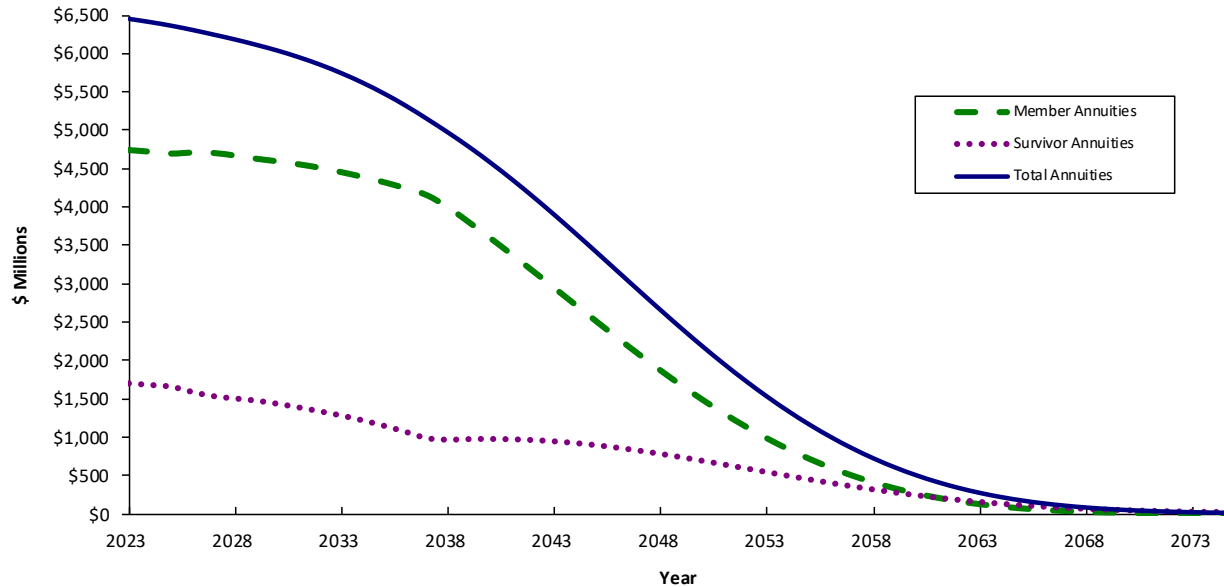
# LDROM Summary

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- Additional Liability measure based on a Low default risk investment program
- Will NOT impact contributions, UAAL, funded ratio, or funding period
- Intended to help stakeholders better understand the funded status of the plan and the risks involved.

# WRS has been disclosing similar risk measures for years (Total Future Benefits = PV @ 0%)



	\$ Billions	
	<u>With Expected Dividends</u>	<u>Without Expected Dividends</u>
Total Future Benefit Payments	\$149.6	\$118.8
Present Assets	72.1	72.1
Future Investment Return Needed	77.5	46.7

Based upon the assumptions used in the valuation, future dividends are expected to be approximately 1.7% per year. Of course actual dividends will be based upon actual future investment return and the operation of the Market Recognition Account.



A man in a dark blue suit, light blue shirt, and patterned tie is pointing his right index finger directly at the viewer. He is holding a dark folder or book under his left arm. The background is a blurred office setting.

**THANK YOU**

**QUESTIONS**

# Disclaimers

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- This presentation shall not be construed to provide tax advice, legal advice or investment advice.
- Brian Murphy, Mark Buis and Rich Koch are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.
- This is one of multiple documents comprising the actuarial report. Additional information regarding actuarial assumptions and methods, and important additional disclosures are provided in the full report entitled “Forty-Second Annual Actuarial Valuation and Gain/Loss Analysis.”
- If you need additional information to make an informed decision about the contents of this presentation or the contents of the full report, or if anything appears to be missing or incomplete, please contact us before making use of the information.

