Welcome to the Employee Trust Funds Board

December 10, 2020

etf

Announcements

Item 1 – No Memo

Consideration of Open and Closed Minutes of September 17, 2020 October 7, 2020

Item 2 - Memo Only

Committee Reports

Item 3 - Employee Trust Funds Board

Executive Committee – Wayne Koessl

Secretary Search and Screen Committee – Wayne Koessl

Audit Committee – Bill Ford

Budget and Operations Committee – Roberta Rasmus

Review of Committee Charters

Item 4A - Employee Trust Funds Board

Matt Stohr, Administrator

Division of Retirement Services

Wisconsin Retirement System Stress Testing

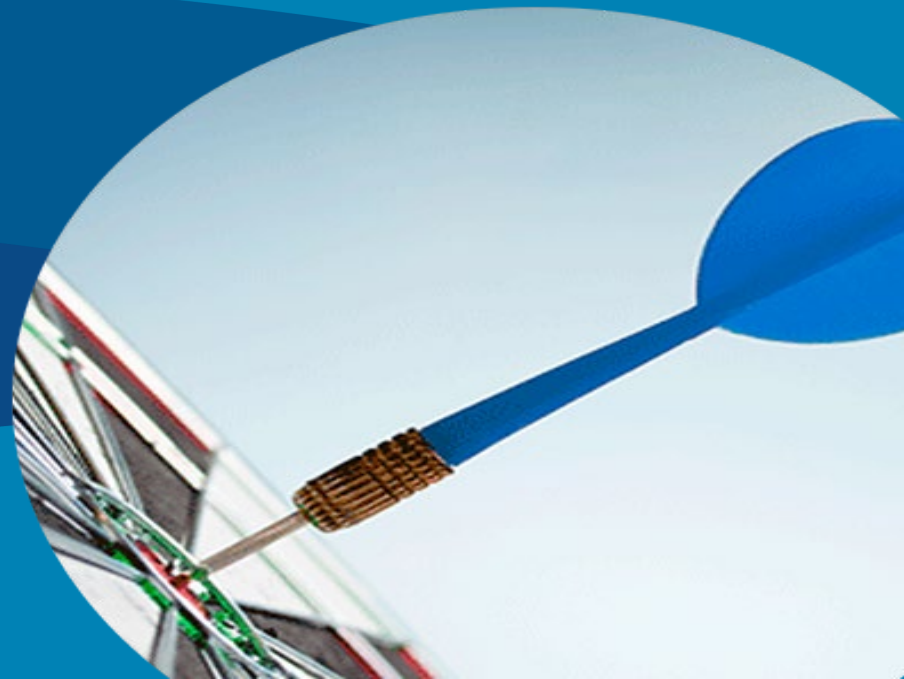
Item 4B- Employee Trust Funds Board

Gabriel Roeder Smith & Company
Brian Murphy, Senior Consultant
Jim Anderson, Senior Consultant
Mark Buis, Senior Consultant

Wisconsin Retirement System

Wisconsin Retirement System Stress Testing

December 10, 2020



Today's Discussion

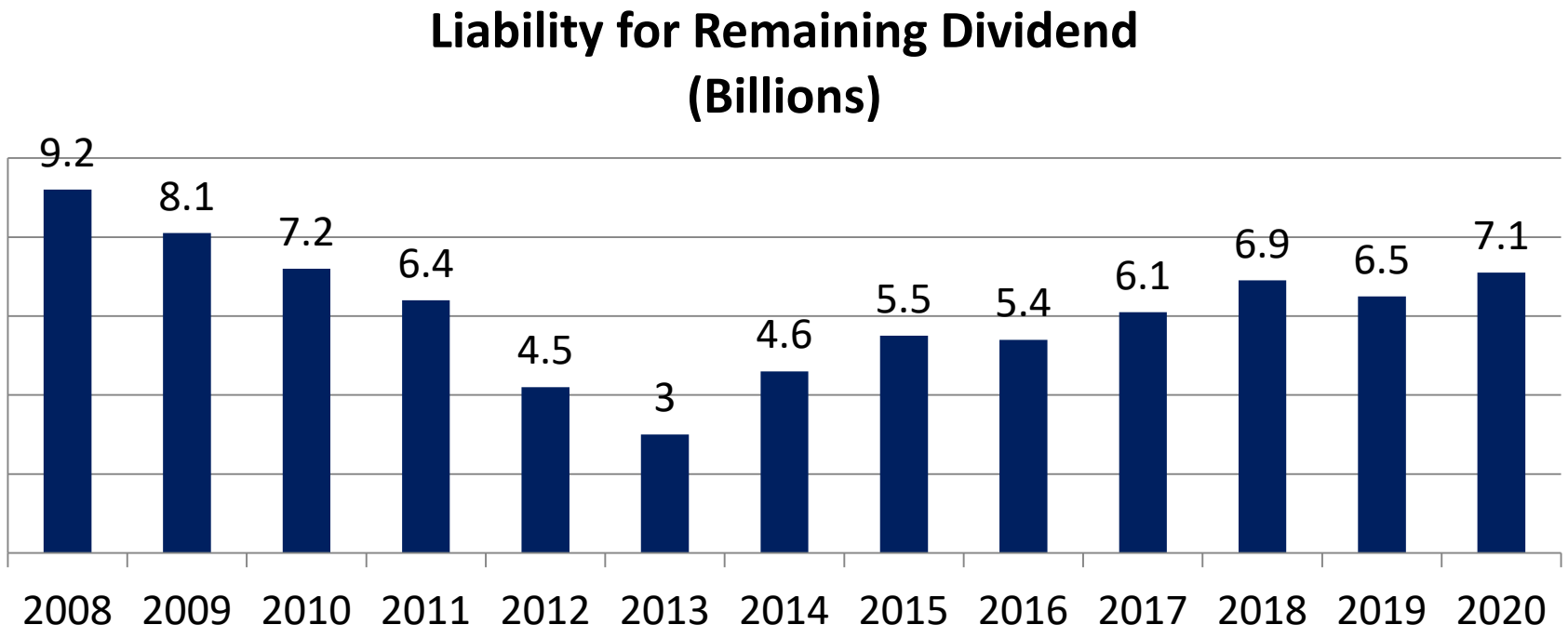
- WRS Deterministic Stress Testing
- WRS Stochastic Stress Testing

WRS DETERMINISTIC STRESS TESTING

Nature of Deterministic Stress Testing

- Investigation of dire scenarios
  - What *could* happen in the realm of possibility, a black swan event that is unexpected
  - In a highly diversified portfolio like WRS', actual large one year asset losses (-20%, -30%) would reflect asset market meltdown in total
- Note that deterministic stress testing herein does not reflect the usual asset market bounceback in following years

Historic Dividend Liability ("Past Dividend Liability")



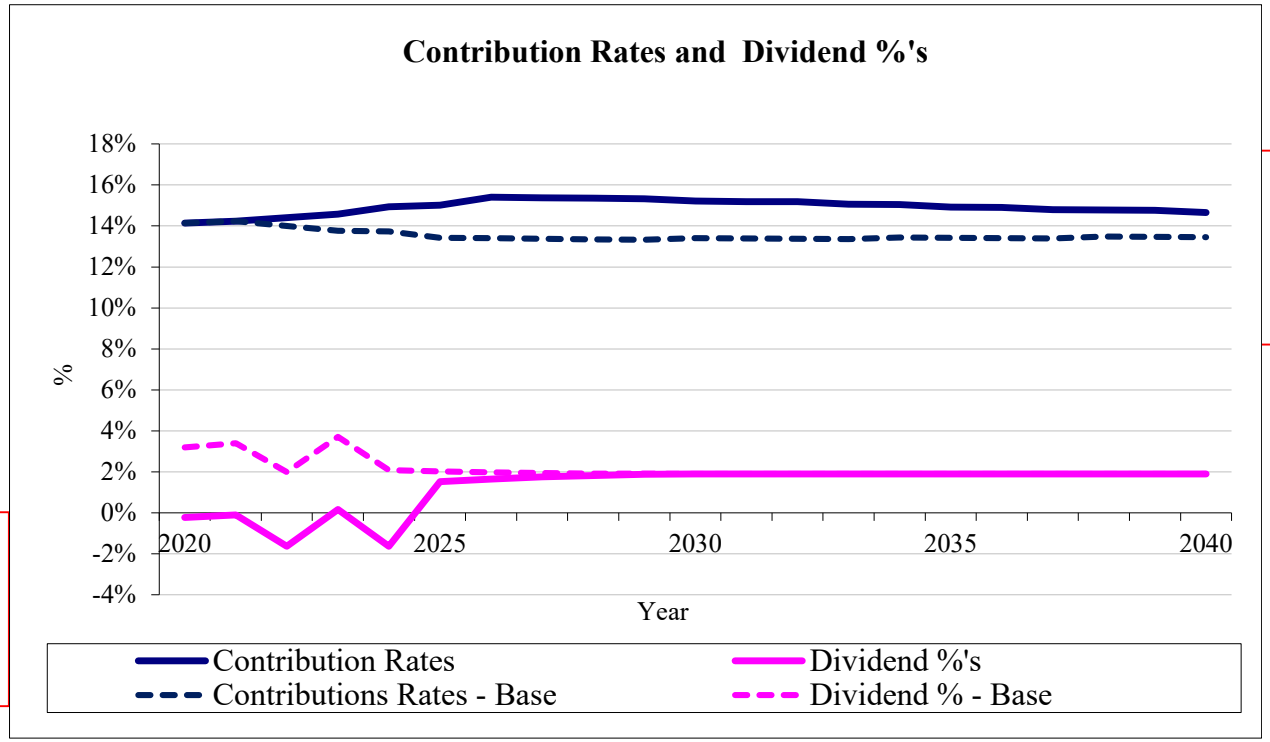
Notes: 1) drawdown of the reserve via dividend reductions in 2008- 2013 followed by the dividend buildup affects different cohorts of retirees differently.
2) Mortality impacts the past dividend liability in 2015-2016, 2018-2019.

Deterministic Scenario Description

Scenario 1	a. Negative 10% Return in 2020, 7% thereafter b. Negative 20% Return in 2020, 7% thereafter c. Negative 30% Return in 2020, 7% thereafter
Scenario 2	Receiving lower contributions than expected for 2 years: a. 25% b. 50% c. 75% (Negative 20% Scenario)

Scenario 1a – Negative 10% Return in 2020, 7% Thereafter

($6.5 Billion) Dividend Adjustment



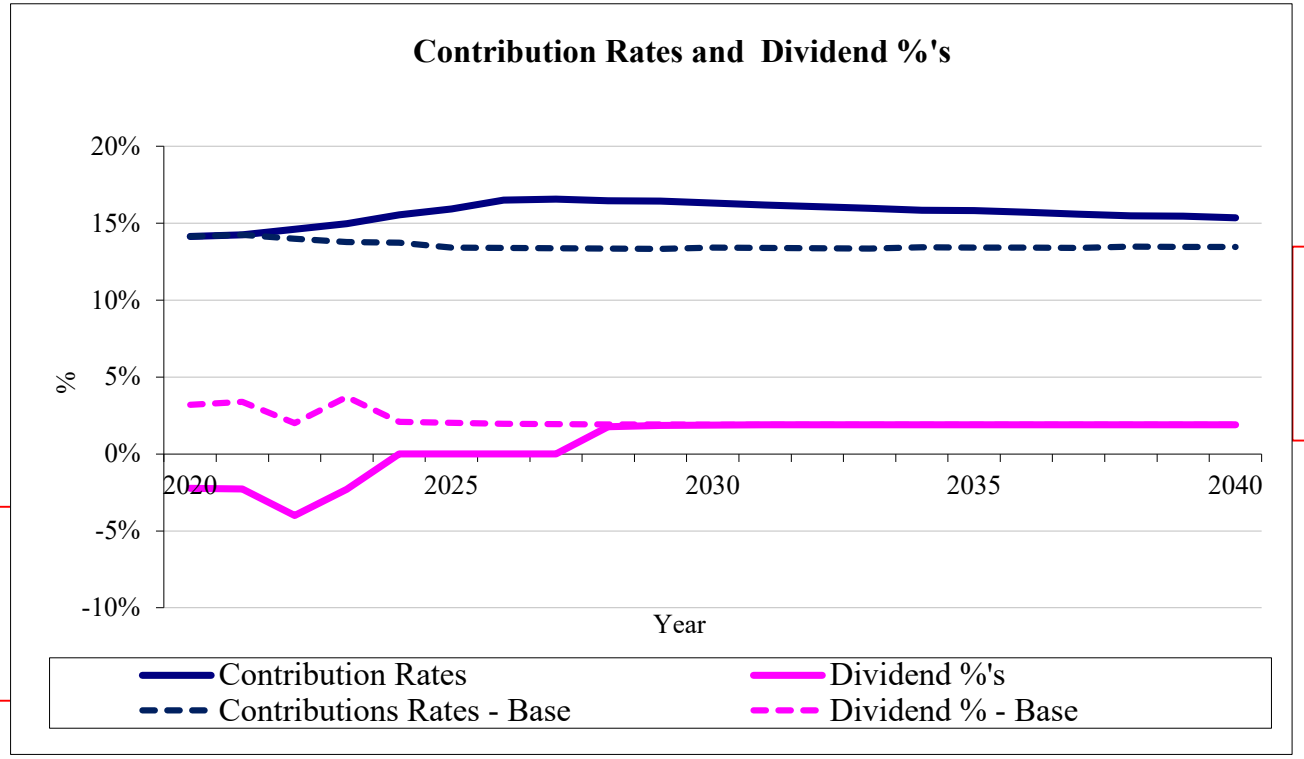
$6.5 Billion Contrib. Increase

Scenario 1a – Negative 10% Return in 2020, 7% Thereafter

- Past Dividend Liability is not depleted
- Dividends will be 0% or negative through 2024
- Contribution Rate gradually increases by about 2.0% of payroll in year 5 and beyond

Scenario 1b – Negative 20% Return in 2020 , 7% Thereafter

($11.5 Billion) Dividend Adjustment



$10 Billion Contrib. Increase

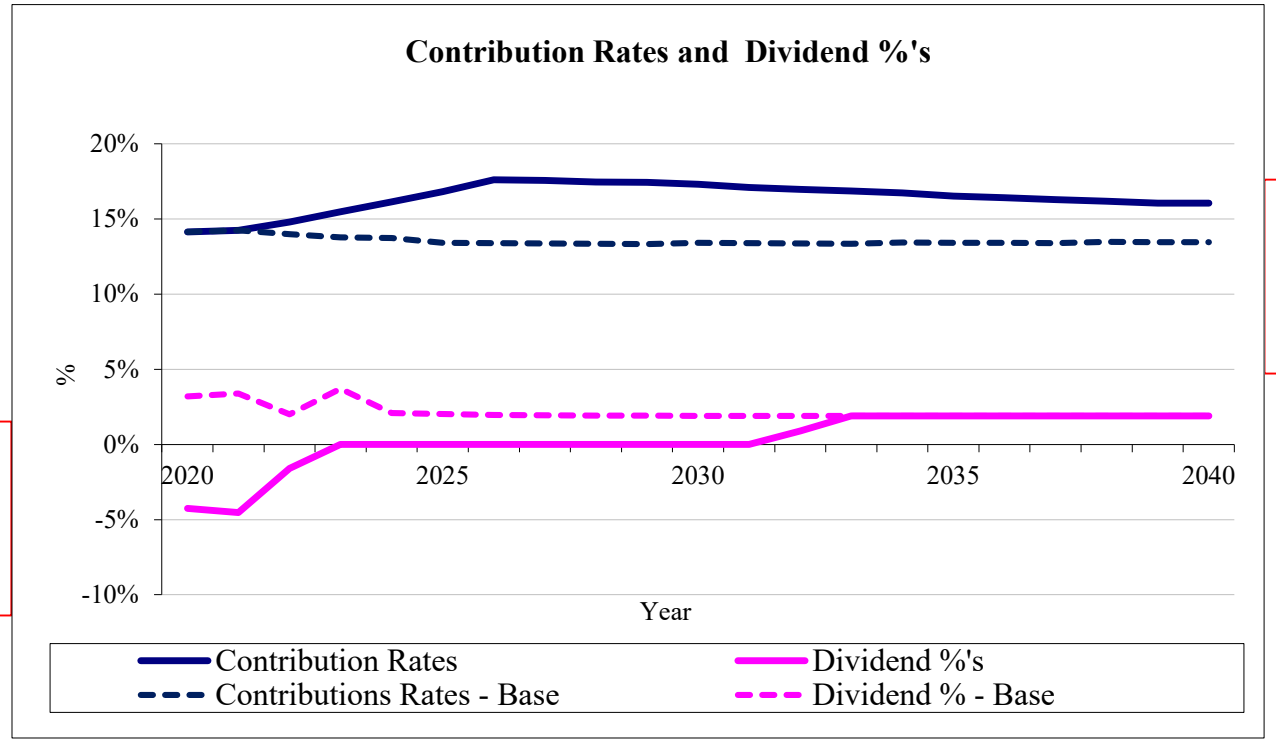
"Past Dividend Liability" depleted by 2023, restored by 2028 when member dividends might be payable again

Scenario 1b – Negative 20% Return in 2020, 7% Thereafter

- Past Dividend Liability is depleted in 2023
- Retiree Liability becomes underfunded
- There will be a series of negative dividends, until most people are at the floor, followed by an extended period of no dividends
- Dividends could resume in 2028
- Between 2024 and 2028, returns are used to fully fund the retiree liability
- Contribution Rate gradually increases by about 3% of payroll in year 5 and beyond

Scenario 1c – Negative 30% Return in 2020 , 7% Thereafter

($15.5 Billion) Dividend Adjustment



$13 Billion Contrib. Increase

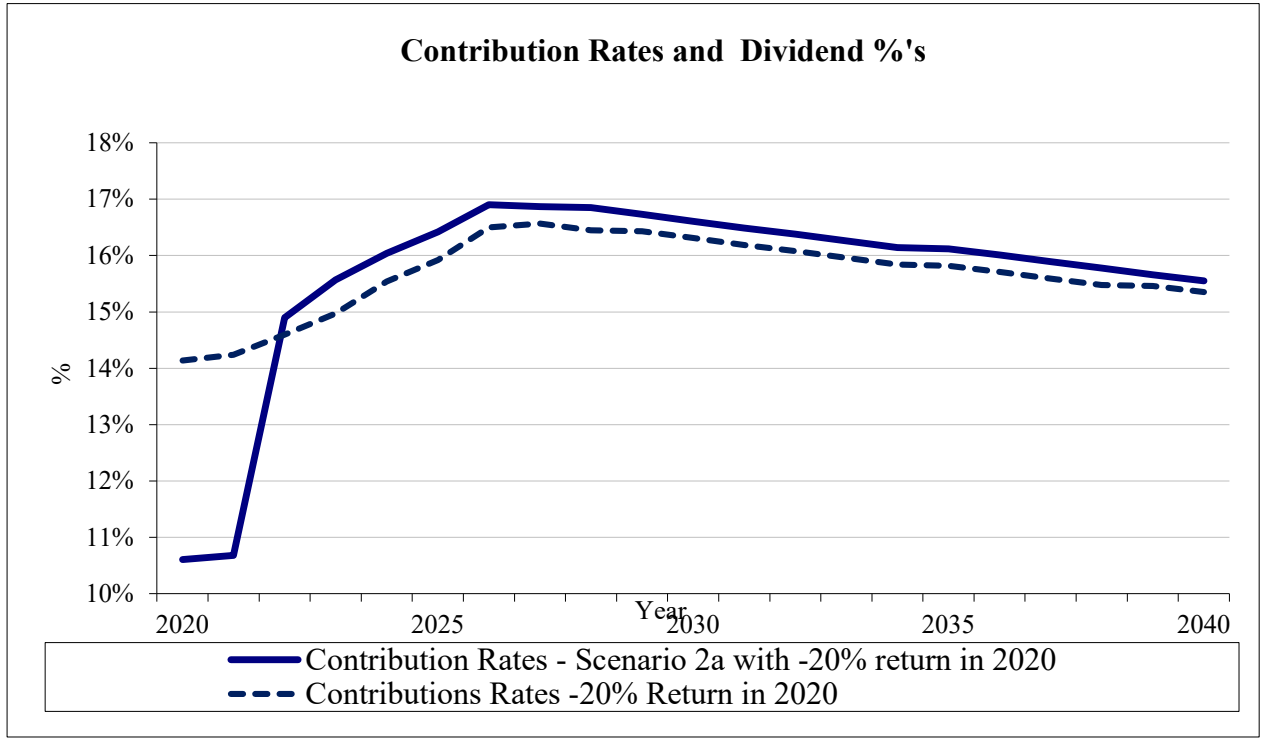
"Past Dividend Liability " depleted by 2022, restored by 2032 when member dividends begin again

Scenario 1c – Negative 30% Return in 2020, 7% Thereafter

- Past Dividend Liability is depleted in 2022
- Retiree Liability becomes underfunded
- There will be a series of negative dividends, until most people are at the floor, followed by an extended period of no dividends
- Dividends could resume in 2032
- Between 2022 and 2032, returns are used to fully fund the retiree liability
- Contribution Rate gradually increases by about 4% of payroll in year 5 and beyond

Scenario 2a – Receive contribution = 25% lower than expected for 2 years (Negative 20% Scenario in Base Scenario)

$1.1 Billion Savings over 2 years



$1.3 Billion Cost over 18 years

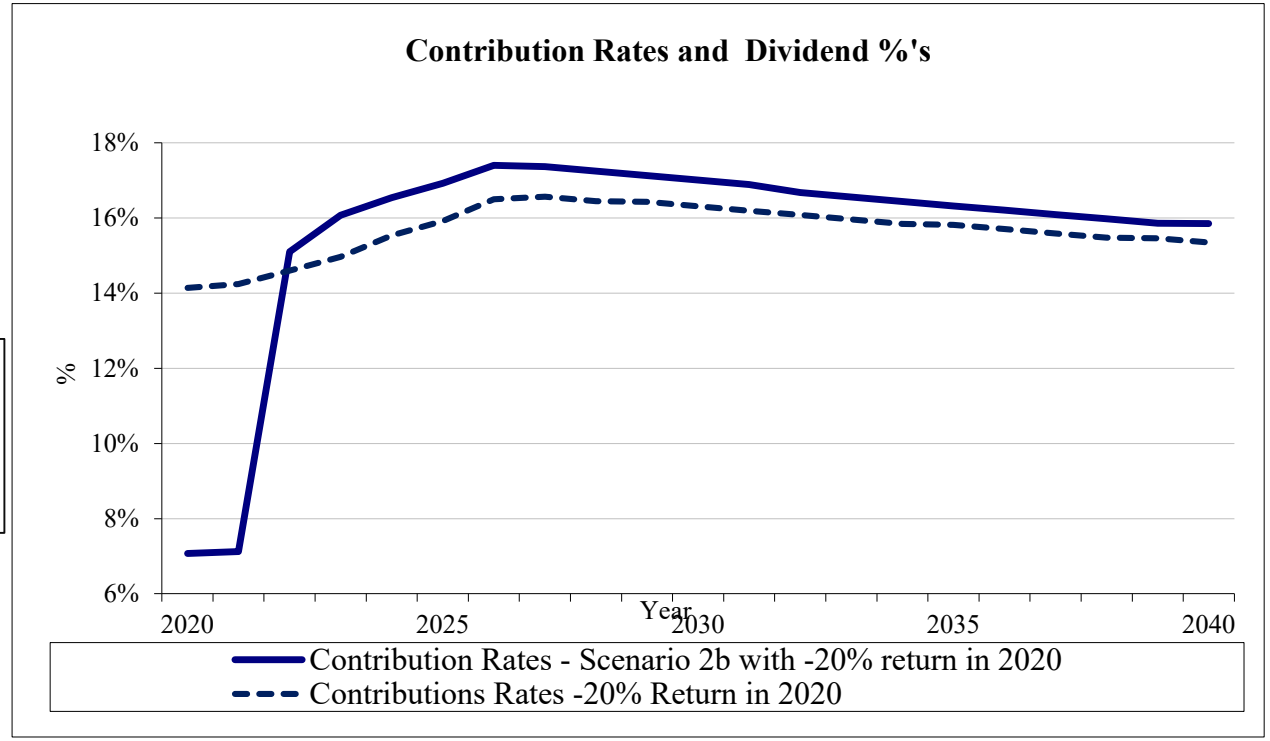
No dividend shown because no impact

Scenario 2a – Receive contribution = 25% lower than expected for 2 years (Negative 20% Scenario in Base Scenario)

- Contribution deferral only impacts contribution stream
  - Dividend process set via Retired Lives valuation
- Early 2 year “savings” must be paid back plus interest in future
- Resulting in higher overall contributions
- On following two slides, the impact is magnified

Scenario 2b – Receive contribution = 50% lower than expected for 2 years (Negative 20% Scenario in Base Scenario)

$2.2 Billion Savings over 2 years

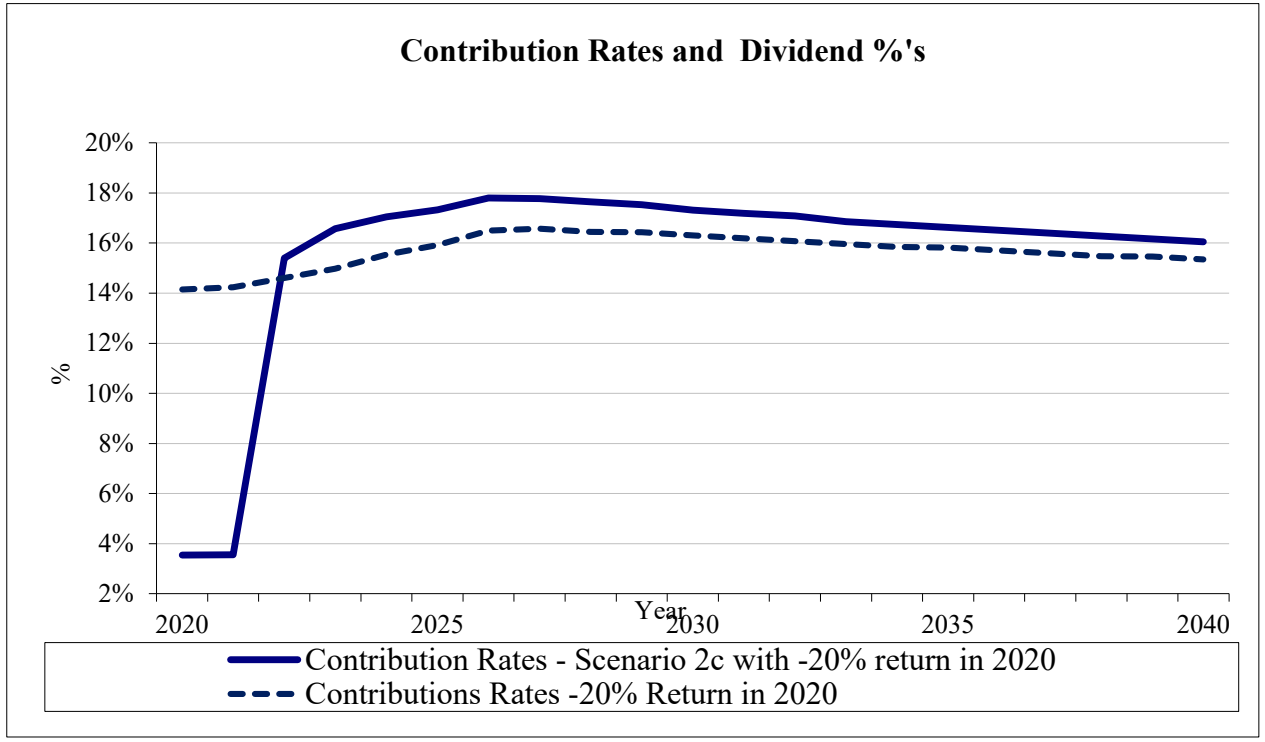


$2.7 Billion Cost over 18 years

No dividend shown because no impact

Scenario 2c – Receive contribution = 75% lower than expected for 2 years (Negative 20% Scenario in Base Scenario)

$3.3 Billion Savings over 2 years



$4.1 Billion Cost over 18 years

No dividend shown because no impact

STOCHASTIC STRESS TESTING

Stochastic Stress Testing

- Stress test provides insight into how the System would respond to severely unfavorable markets
- For the WRS, can answer questions like:
  - What would it take to deplete the Past Dividend Liability ?
  - How would contribution rates be impacted?
- Stochastic stress tests studied:
  - Probable range of contribution rates & funded status
  - Probability of depleting the Past Dividend Liability
  - Probability of a negative dividend in any given year

Stochastic (Monte Carlo) Simulations

- Based on 1000 random trials
- Valuation Assumptions held constant
- Expected return is 7.0% for all future years
  - Also modeled -10.0%, -20.0% and -30.0% for 2020
- Standard Deviation (measure of volatility) is 14.7%
- Stochastic simulations will not predict the future
  - Results can vary significantly with very minor changes to parameters
  - They are useful for comparing relative likelihood of different scenarios

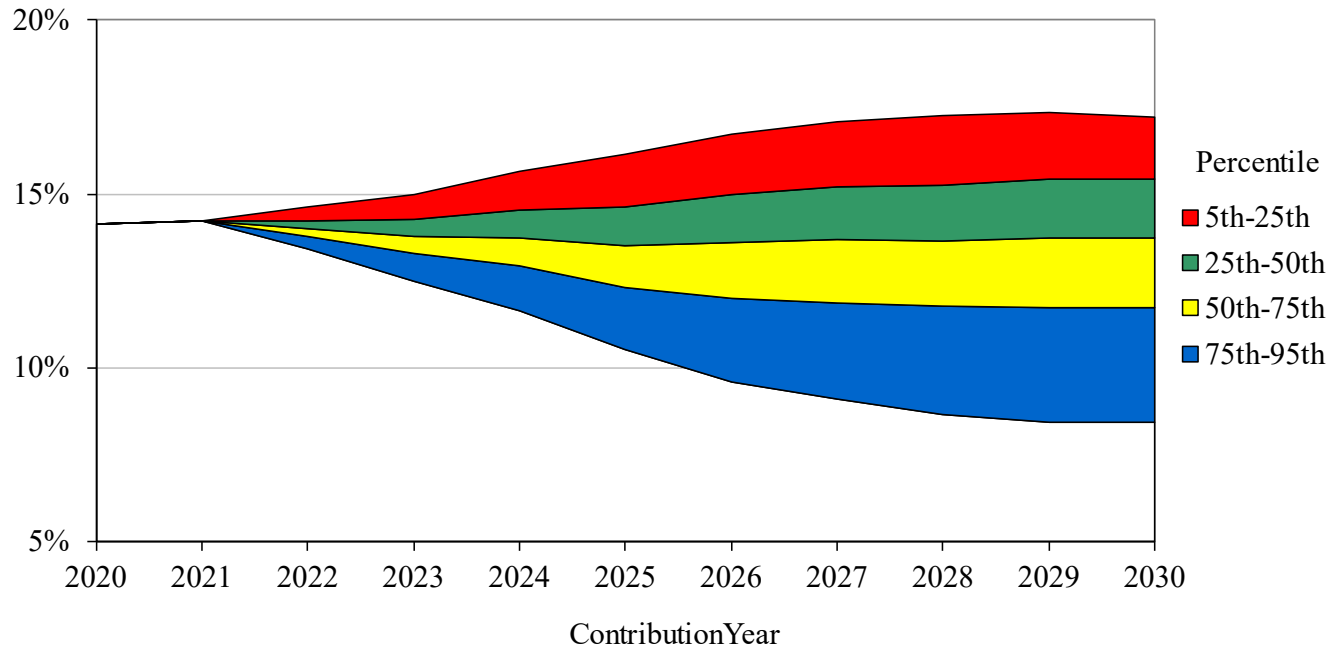
Dividend Process

- 5% Benchmark
- 7% Return assumption
- Implies 1.9% Expected dividends
- Actual past dividends have varied greatly over time
- Inflation has also varied greatly over time

Updated Stochastic Stress Testing

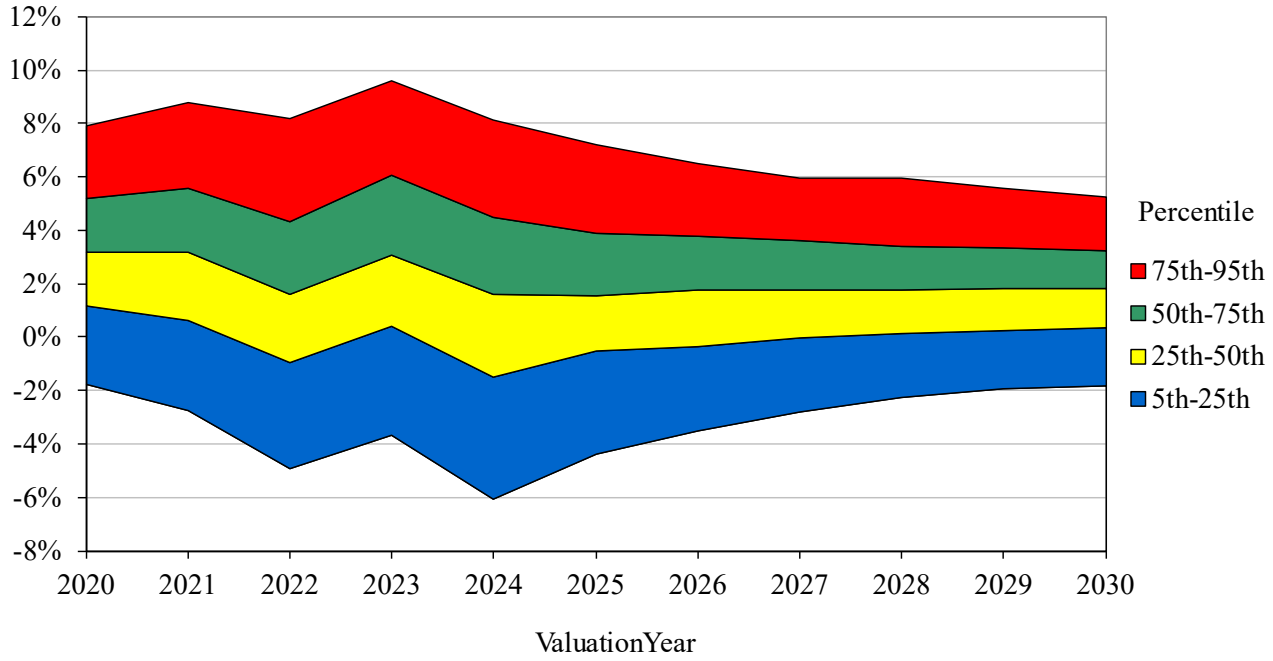
- The following slides show results of updated Stochastic projections, based on December 31, 2019 data
- Items of interest displayed:
  - Contribution rates
  - Dividend rates
  - Funded status
  - Past Dividend Liability

Contribution as a % of Payroll



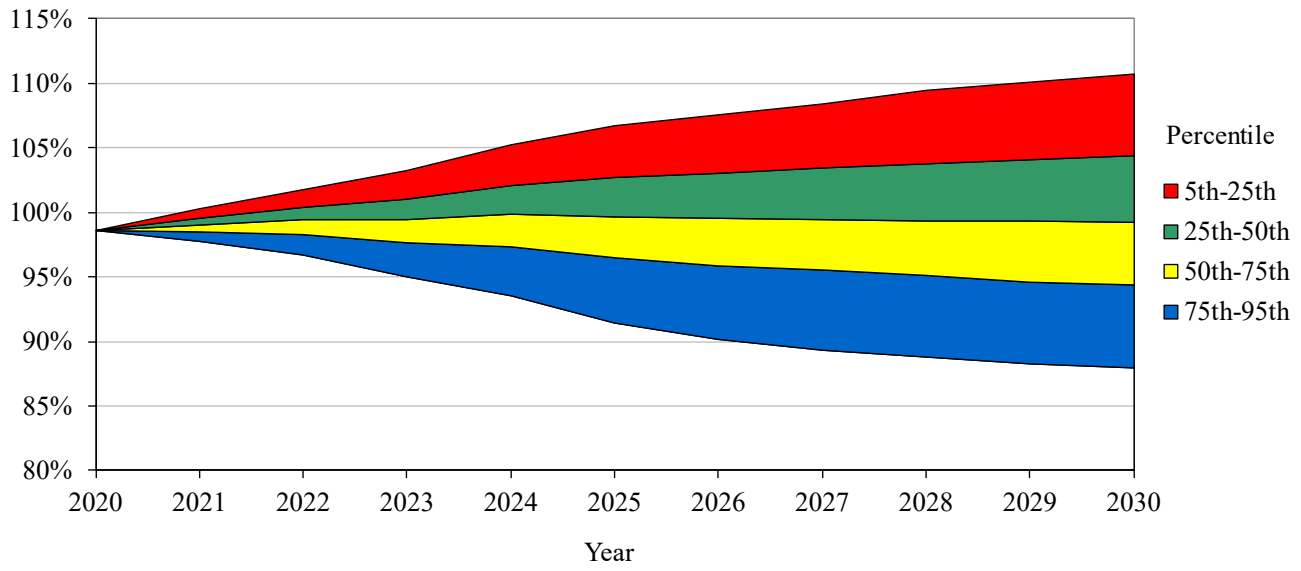
5th Percentile	14.1%	14.2%	14.6%	15.0%	15.6%	16.1%	16.7%	17.1%	17.3%	17.3%	17.2%
25th Percentile	14.1%	14.2%	14.2%	14.3%	14.5%	14.6%	15.0%	15.2%	15.3%	15.4%	15.4%
Median	14.1%	14.2%	14.0%	13.8%	13.7%	13.5%	13.6%	13.7%	13.7%	13.7%	13.7%
75th Percentile	14.1%	14.2%	13.8%	13.3%	12.9%	12.3%	12.0%	11.9%	11.8%	11.7%	11.7%
95th Percentile	14.1%	14.2%	13.4%	12.5%	11.6%	10.5%	9.6%	9.1%	8.7%	8.4%	8.4%

Dividend Rates



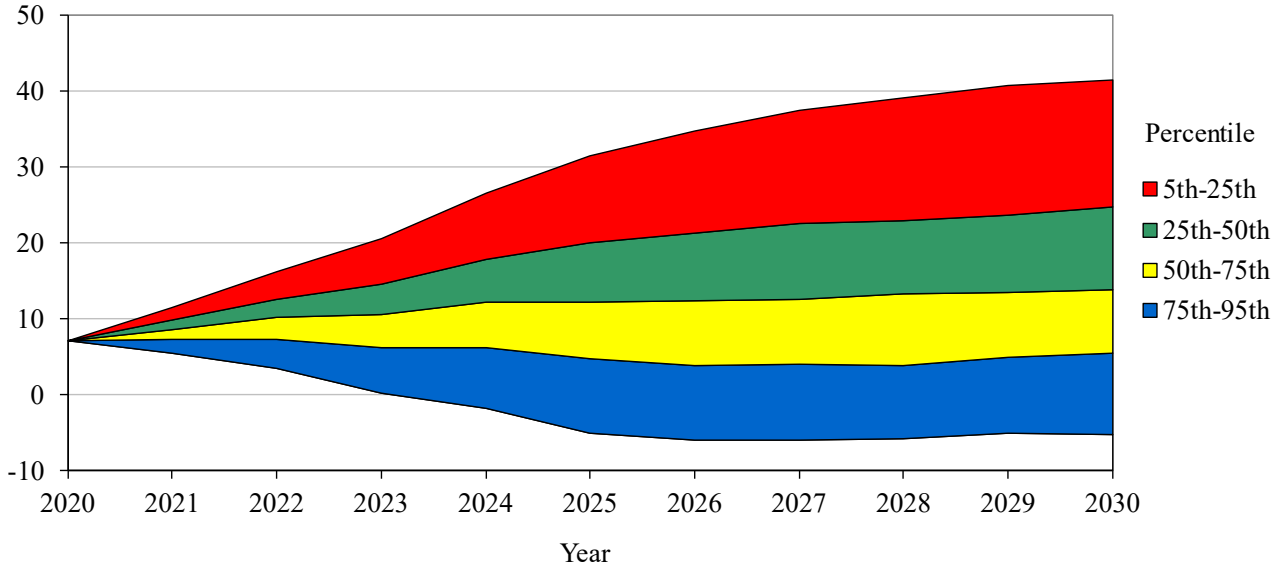
5th Percentile	-1.8%	-2.8%	-4.9%	-3.7%	-6.1%	-4.4%	-3.5%	-2.8%	-2.3%	-2.0%	-1.8%
25th Percentile	1.2%	0.6%	-1.0%	0.4%	-1.5%	-0.5%	-0.3%	0.0%	0.1%	0.3%	0.4%
Median	3.2%	3.2%	1.6%	3.0%	1.6%	1.5%	1.7%	1.8%	1.8%	1.8%	1.8%
75th Percentile	5.2%	5.5%	4.3%	6.0%	4.5%	3.9%	3.8%	3.6%	3.4%	3.3%	3.2%
95th Percentile	7.9%	8.8%	8.2%	9.6%	8.1%	7.2%	6.5%	6.0%	6.0%	5.6%	5.2%

Funded Status



5th Percentile	98.6%	100.2%	101.8%	103.2%	105.2%	106.7%	107.5%	108.5%	109.4%	110.1%	110.7%
25th Percentile	98.6%	99.5%	100.4%	101.0%	102.1%	102.7%	103.1%	103.4%	103.8%	104.1%	104.4%
Median	98.6%	99.0%	99.4%	99.4%	99.9%	99.7%	99.6%	99.4%	99.3%	99.3%	99.2%
75th Percentile	98.6%	98.5%	98.3%	97.6%	97.4%	96.5%	95.8%	95.5%	95.1%	94.6%	94.3%
95th Percentile	98.6%	97.8%	96.7%	95.0%	93.5%	91.4%	90.1%	89.3%	88.8%	88.3%	87.9%

Past Dividend Liability (billions)



5th Percentile	7.1	11.5	16.1	20.5	26.5	31.5	34.7	37.4	39.0	40.8	41.4
25th Percentile	7.1	9.8	12.5	14.5	17.8	20.1	21.3	22.6	22.9	23.7	24.7
Median	7.1	8.5	10.2	10.6	12.2	12.2	12.3	12.5	13.2	13.6	13.9
75th Percentile	7.1	7.3	7.3	6.3	6.3	4.7	3.9	4.0	3.9	4.9	5.4
95th Percentile	7.1	5.4	3.5	0.2	(1.9)	(5.1)	(6.0)	(5.9)	(5.8)	(5.0)	(5.3)

Stochastic Projection Observations

- The projections incorporate 2019 data
  - Including very favorable market rates of asset return during 2019
- WRS Cost sharing mechanisms result in much more narrow contribution and funded status impacts at the tails (5th and 95th%-tiles)
- The following pages provide probabilities related to future dividends based on single year asset return shocks of -10%, -20%, -30%

Dividend Discussion

Probability that Past Dividend Liability will be Depleted by Year

Val Date	Assuming 2020 Return of			
	7.0%	-10.0%	-20.0%	-30.0%
2020	0.0%	0.0%	0.0%	0.0%
2021	0.0%	0.0%	0.0%	0.0%
2022	0.3%	0.0%	0.2%	18.9%
2023	4.6%	3.9%	43.9%	95.5%
2024	8.5%	17.3%	63.2%	97.0%
2025	13.9%	35.1%	79.7%	98.6%

Dividend Discussion

Probability of a Negative Dividend by Year

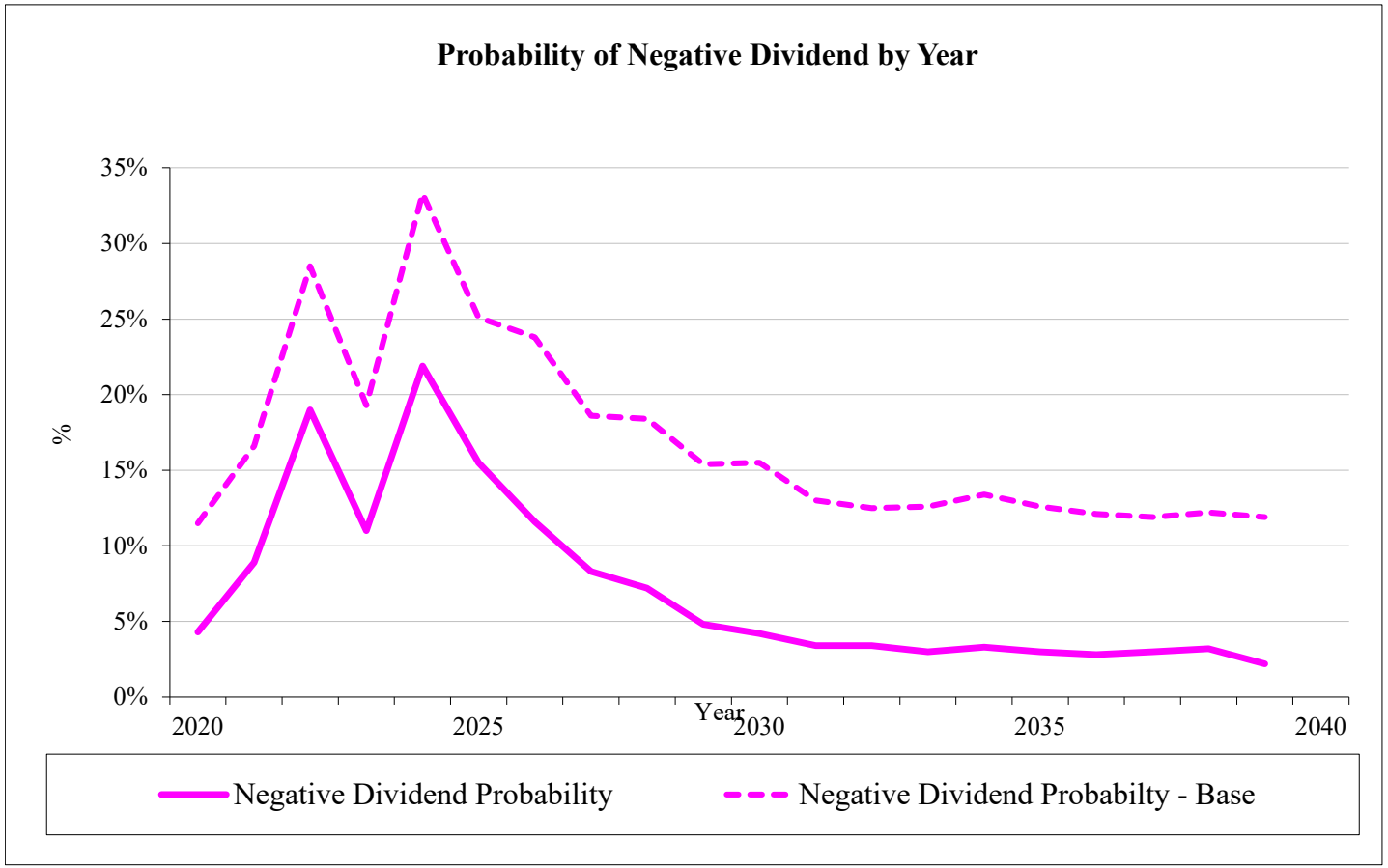
Val Date	Assuming 2020 Return of			
	7.0%	-10.0%	-20.0%	-30.0%
2020	0.0%	0.0%*	100.0%	100.0%
2021	16.6%	44.5%	88.6%	99.7%
2022	28.5%	72.6%	94.6%	99.8%
2023	19.3%	45.4%	78.2%	95.5%
2024	33.3%	68.3%	90.1%	98.5%
2025	25.1%	29.5%	34.4%	39.6%

* Probability in 2020 is either 0% or 100%. The true rate in this scenario is negative, but rounded to zero since less than -.05%.

Stochastic Dividend Scenarios

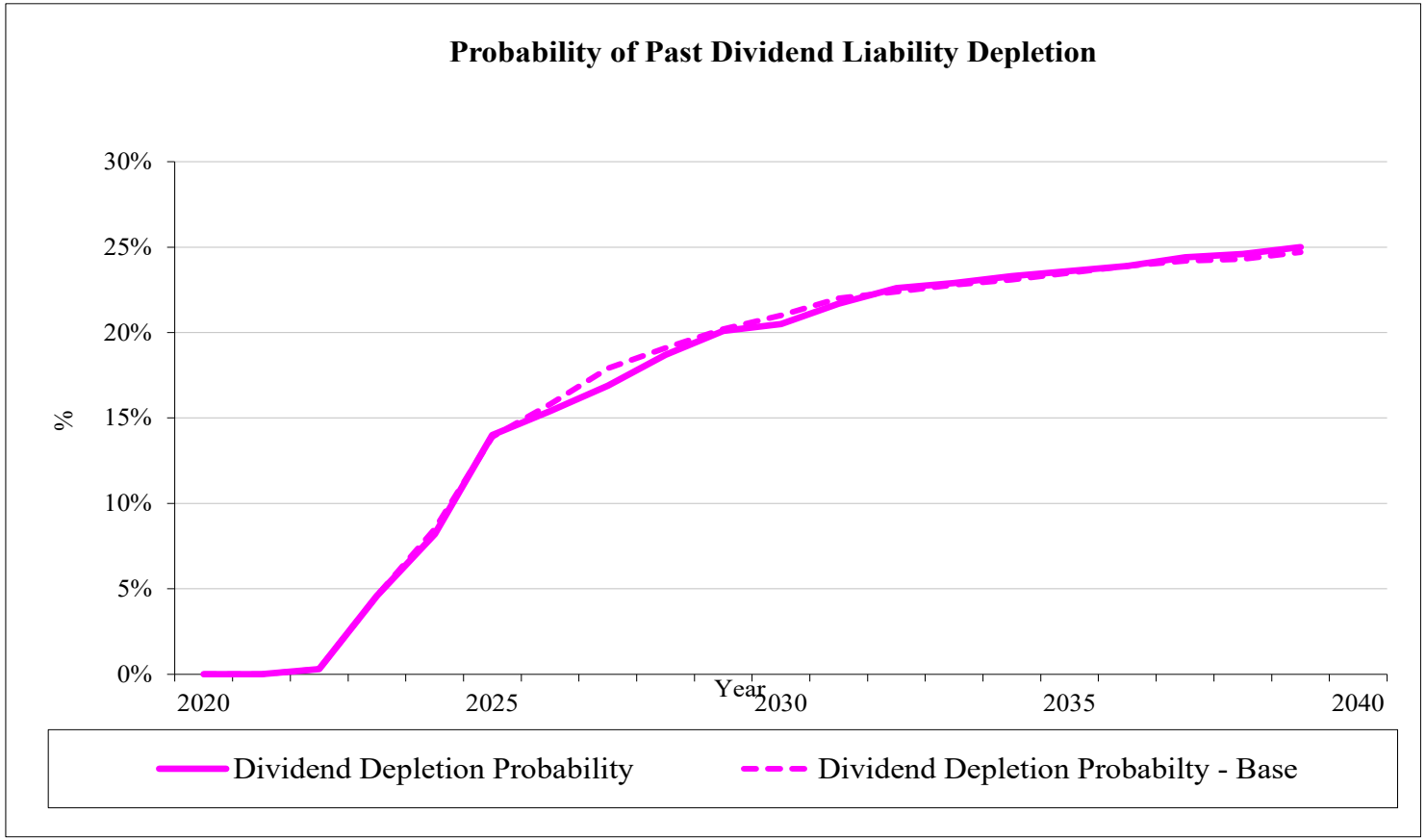
Scenario 1	Increase the Core dividend threshold to 2%
Scenario 2	Cap positive dividends at 3% and create reserve
Scenario 3	Limit dividend reductions to -2%

Scenario 1 – Increase Dividend Threshold to 2%



Funded status and Contribution not impacted

Scenario 1 – Increase Dividend Threshold to 2%

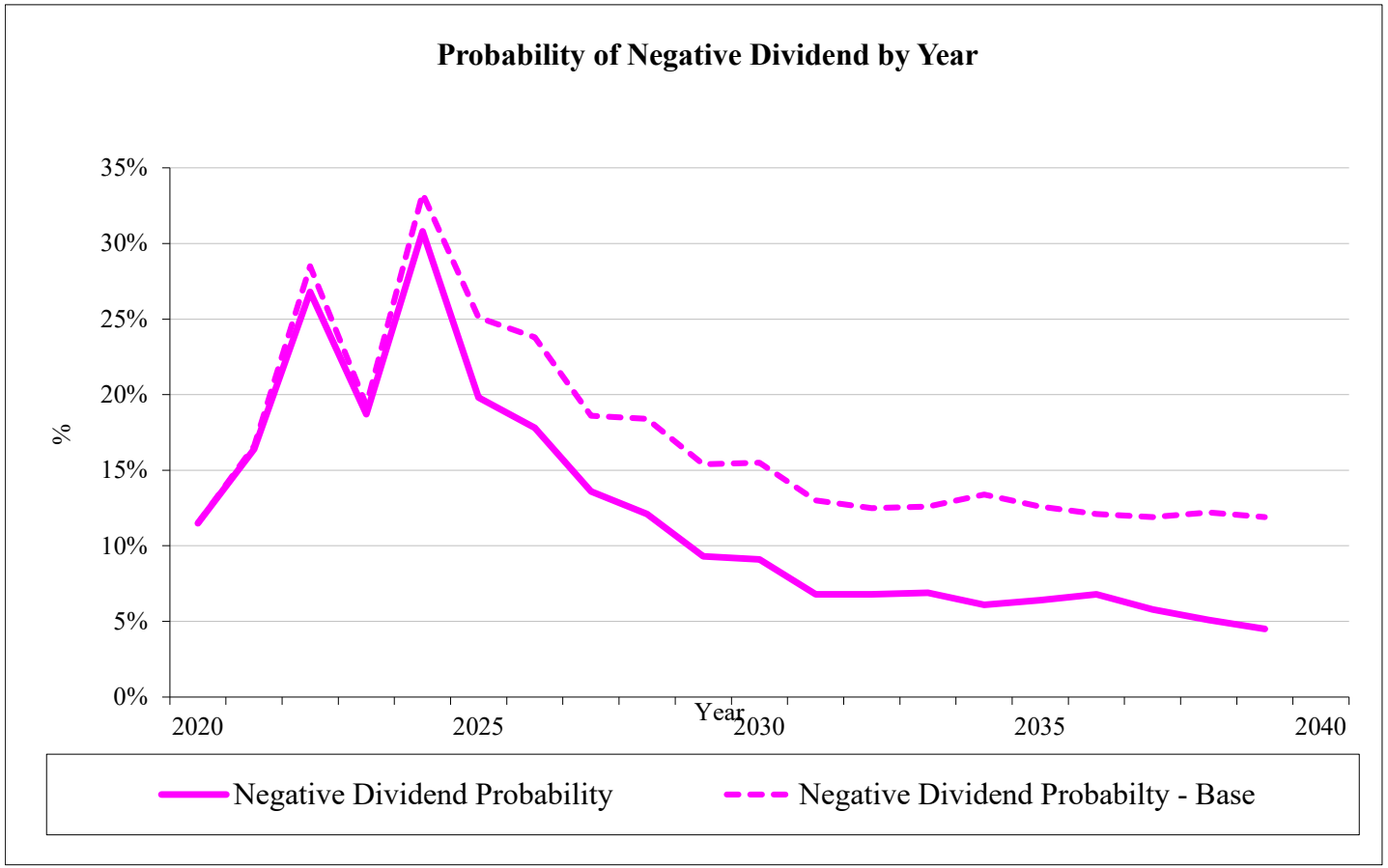


Funded status and Contribution not impacted

Scenario 1 – Increase Dividend Threshold to 2% Observations

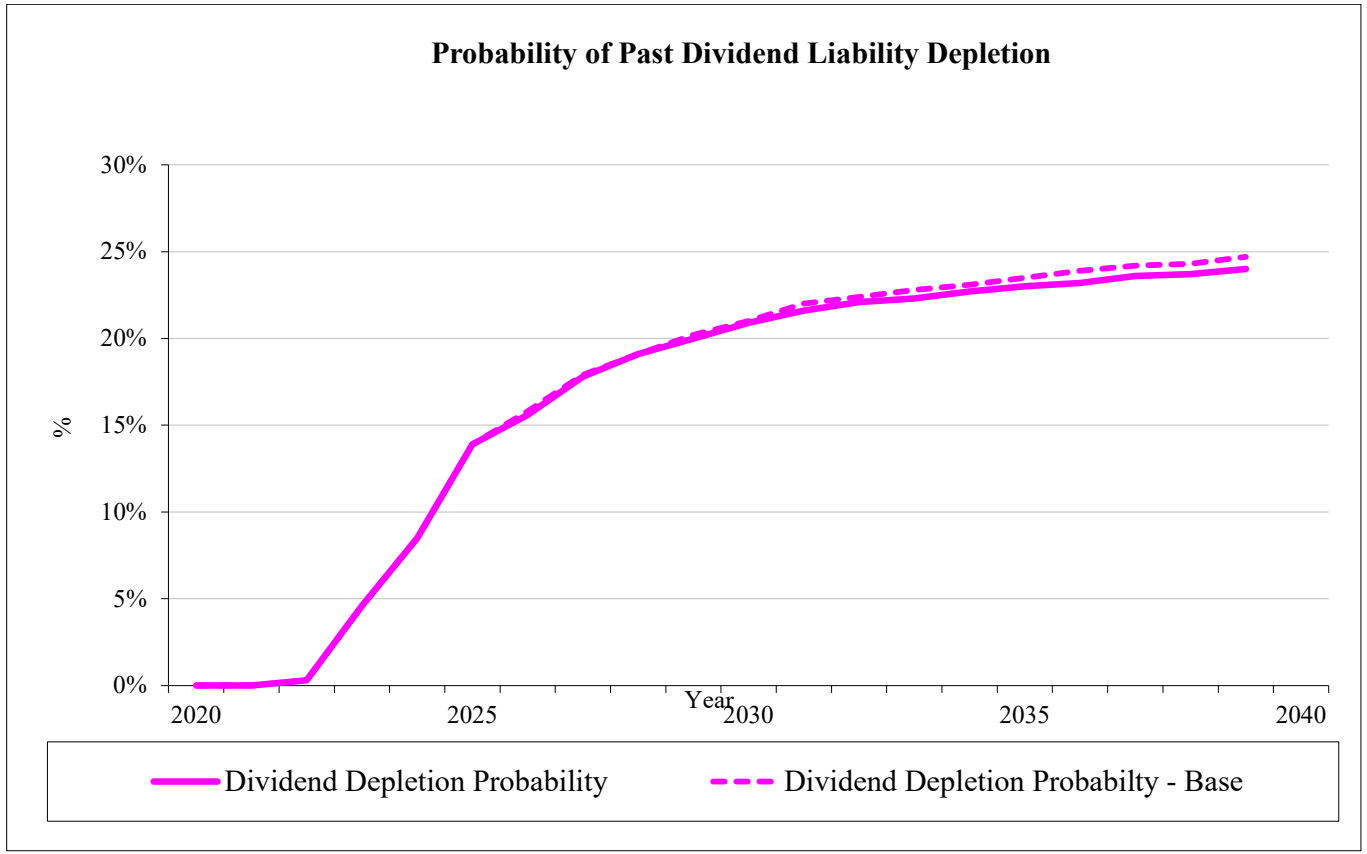
- Current Core dividend threshold: [-0.5%,0.5%]
- Increasing threshold to [-2%,2%]:
  - Probability of a negative dividend is reduced
  - Probability of the Past Dividend Liability being depleted is not significantly changed
  - There may be many years of no dividend adjustment

Scenario 2 – Cap Positive Dividends at 3% and Reserve



Funded status and Contribution not impacted

Scenario 2 – Cap Positive Dividends at 3% and Reserve

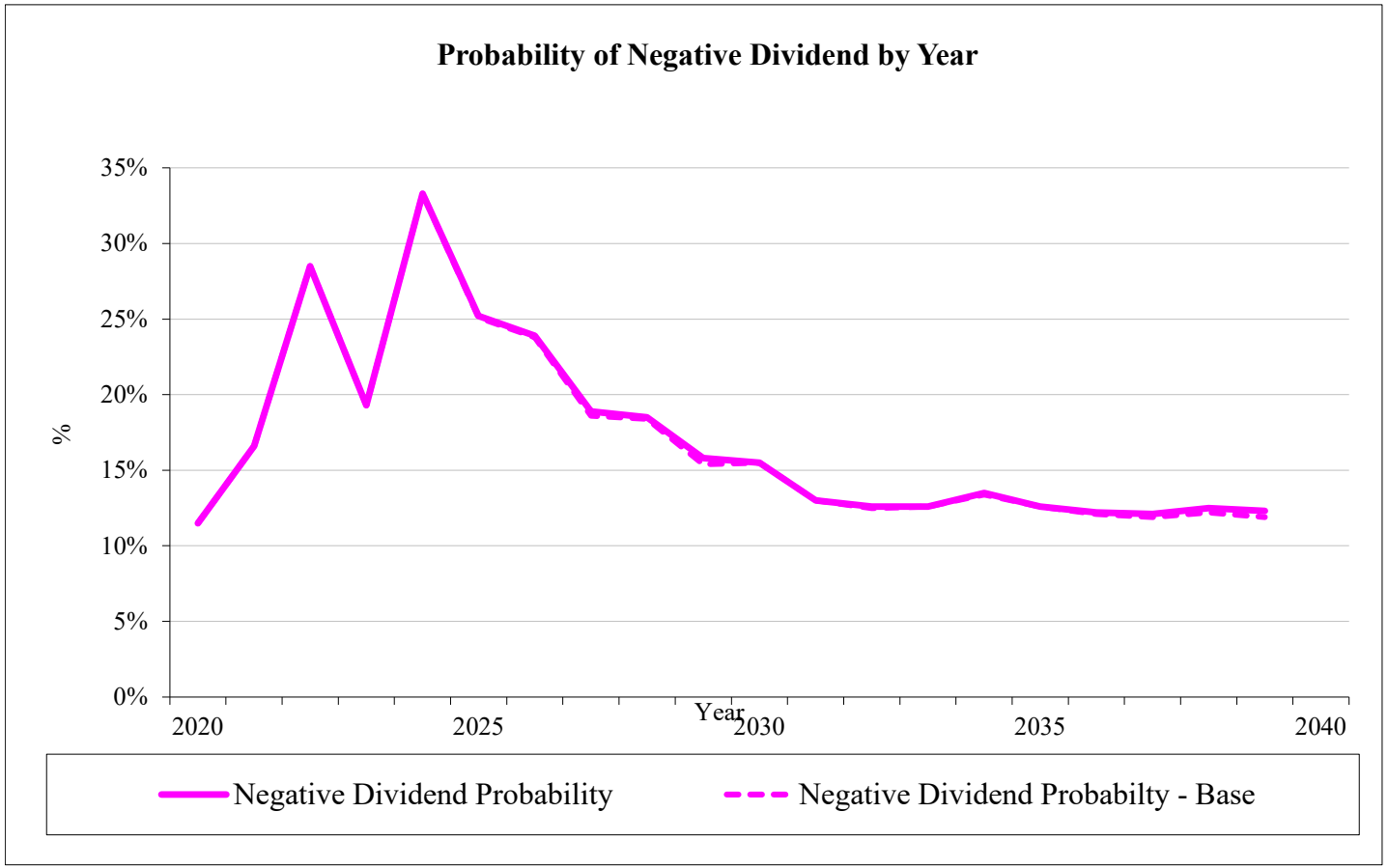


Funded status and Contribution not impacted

Scenario 2 – Cap Positive Div. at 3% and Reserve Observations

- Probability of a negative dividend is reduced over the long term
- Probability of the Past Dividend Liability being depleted is only slightly reduced
- Positive dividends are capped at 3%, reducing overall average dividend
- Can result in some transfer of dividends from cohort of retirees to another

Scenario 3 – Limit Negative Dividends to -2%



Funded status and Contribution not impacted

Scenario 3 Observations

- As expected, very little impact to probability of negative dividend
- May help retirees weather a significant downturn in the market, by not taking the hit all at once

Disclaimers

- This presentation shall not be construed to provide tax advice, legal advice or investment advice.
- Readers are cautioned to examine original source materials and to consult with subject matter experts before making decisions related to the subject matter of this presentation.
- This presentation expresses the views of the authors and does not necessarily express the views of Gabriel, Roeder, Smith & Company.

10 Minute Break

Employee Trust Funds Board

WRS Stress Testing Policy Discussion

Item 4C- Employee Trust Funds Board

Steve Hurley, Director

Office of Policy, Privacy and Compliance

Summary

- Addressing Dividend Risk
  - Role of Dividends
  - Dividends v. Inflation
  - Dividend Thresholds & Caps
  - Reserving Positive Dividends
- WRS Funding Policy

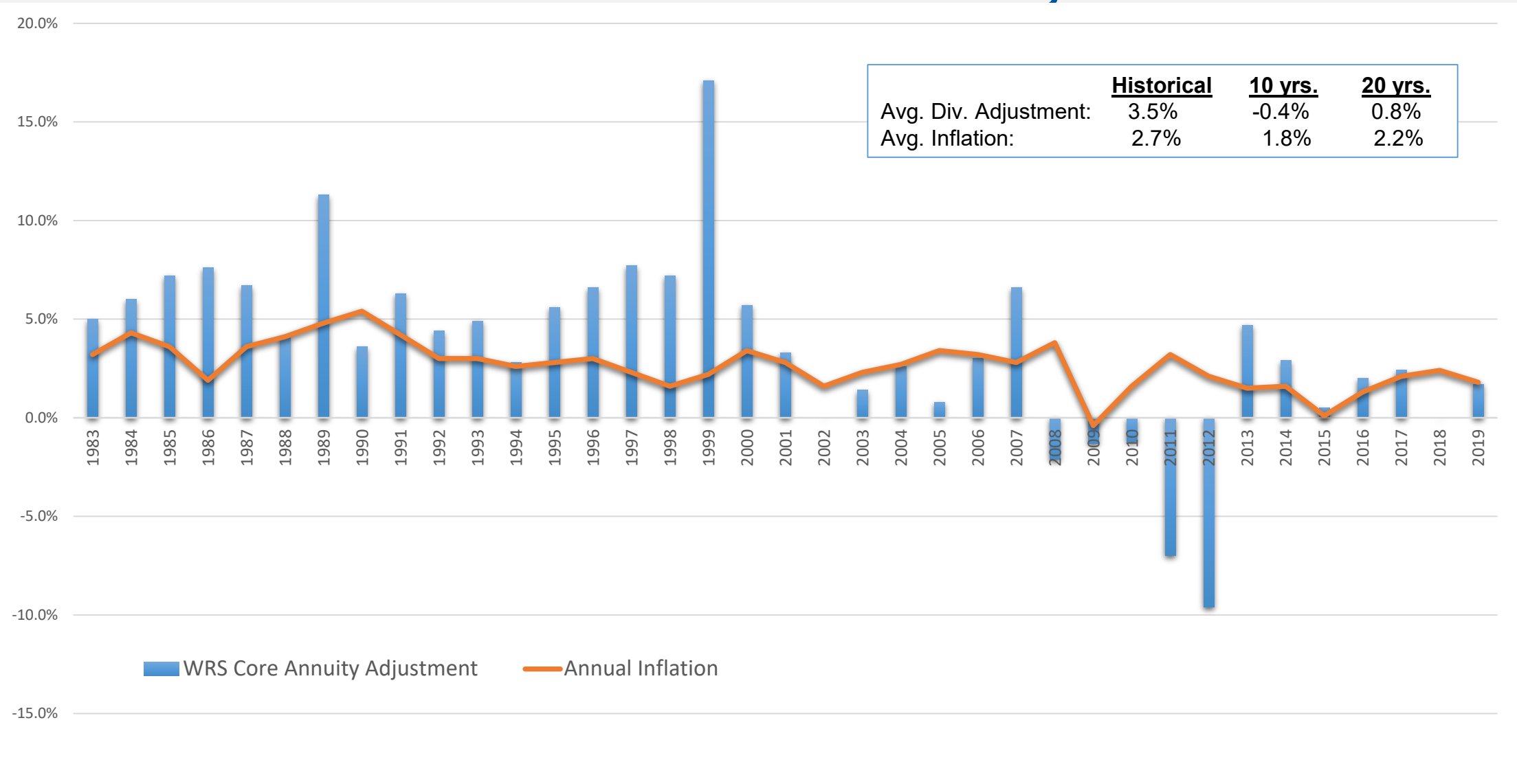
Addressing Dividend Risk

What Role do Dividends Play?

Clarity on intended functionality of dividends can inform Board decisions on dividend risk.

- Not a permanent Cost of Living Allowance.
- Anti-inflation function?
- Is volatility in dividends a risk to be managed, or a built-in part of a risk-sharing plan?

Core Dividends v. Inflation, 1983-2019



	Historical	10 yrs.	20 yrs.
Avg. Div. Adjustment:	3.5%	-0.4%	0.8%
Avg. Inflation:	2.7%	1.8%	2.2%

Dividend Thresholds & Caps

Address Negative Dividends or Dividend Depletion

- Limit negative dividends to a Board-approved amount on advice of actuary.
- Increase threshold at which negative dividends occur (currently 0.5%).
- Authority: Per statute, Board has some discretion.

Thresholds & Caps Pros/Cons

Increase Core Fund Dividend Threshold or Cap Negative Dividend

+ Temporarily blunts impact of market downturn for some annuitants.
+ Helps older retirees who have the most dividends remaining.
- Deficit in Annuity Reserve until eliminated by investment return.
- Afterward could be many years without dividends.
- Would not help those already at their annuity floor.
- Possible generational effects.

Reserving Positive Dividends

Address Dividend Volatility or Offset Negative Dividend

- Limit positive dividends to 3%.
- Surplus dividends above the “cap” are reserved.
- Offset a negative dividend back to zero, if possible.
- Authority: Requires administrative rule on advice of actuary. Additionally, requires use of ETF Secretary statutory authority to create reserves.

Reserving Pros/Cons

Limit Positive Dividends and Retain Surplus

+ Could reduce volatility in annual dividends.
+ Reduces probability of negative dividend over long term.
+ Slightly reduces risk of dividend liability depletion.
- Requires many years of substantially positive dividends.
- Can transfer dividends between cohorts of retirees.
- Potential for legal challenges over retaining surplus vs. distribution.

WRS Funding Policy

WRS Funding Policy

- Current Funding Policy addresses risk but does not specifically refer to the risks of negative dividends or dividend depletion.
- May be possible to develop “dividend liability health” measure.
- Possibly incorporate regular review of dividend risks.
- ETF could work with the actuary on ways to address dividend risk in the Risk Measures section of the Funding Policy.


Questions?

Thank you

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etf.wi.gov

ETF E-mail Updates

608-266-3285
1-877-533-5020

ETF Financial Reporting Update CY2019

Item 4D - Employee Trust Funds Board

Amelia Slaney, CPA
Director of the Financial Compliance Bureau

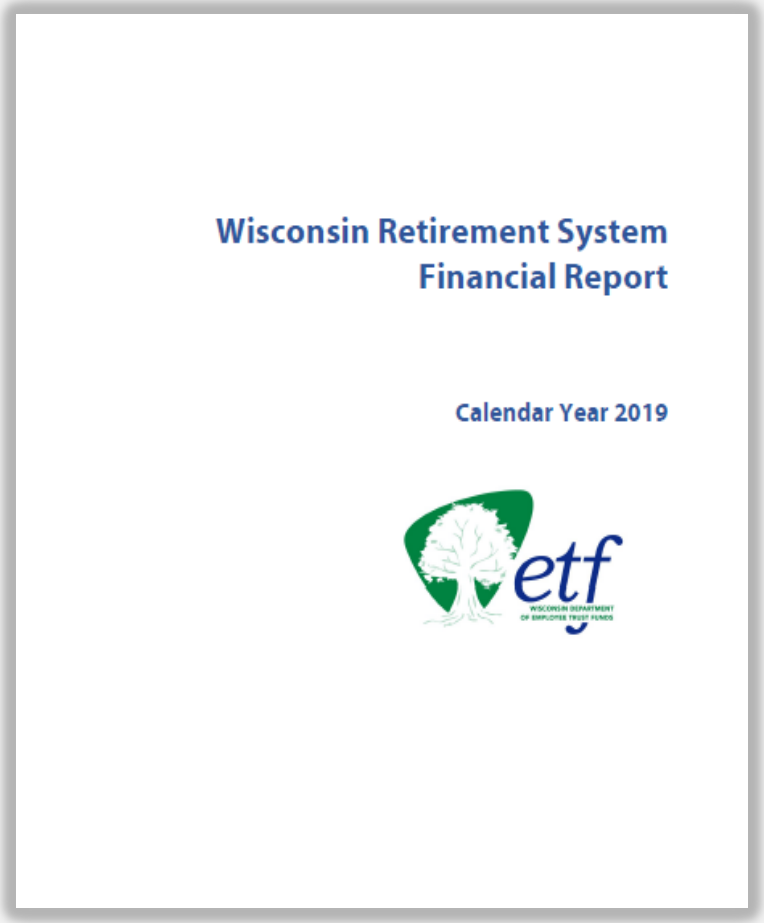
Division of Trust Finance

Agenda

- Wisconsin Retirement System (WRS)
  - Audit Results
  - Financial Statistics
- Comprehensive Annual Financial Report (CAFR) Update
  - Preview of Reporting Changes

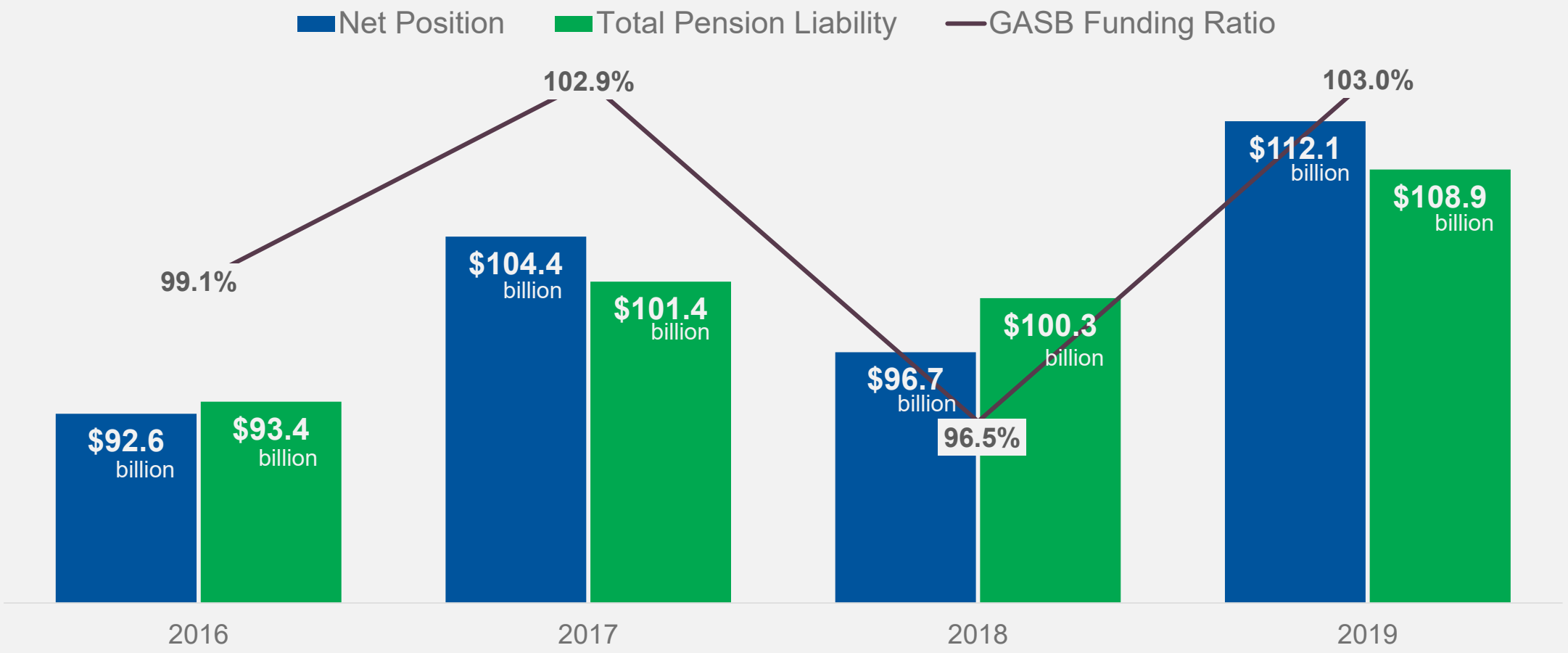
Positive WRS Audit Results

- WRS financial statements as of and for the year ending 12/31/2019
- Unmodified Opinion (clean)
- No audit findings/recommendations
- Timely reporting
    - Opinion date – 9/28/2020
    - Available to Employers on ETF website – 9/29/2020

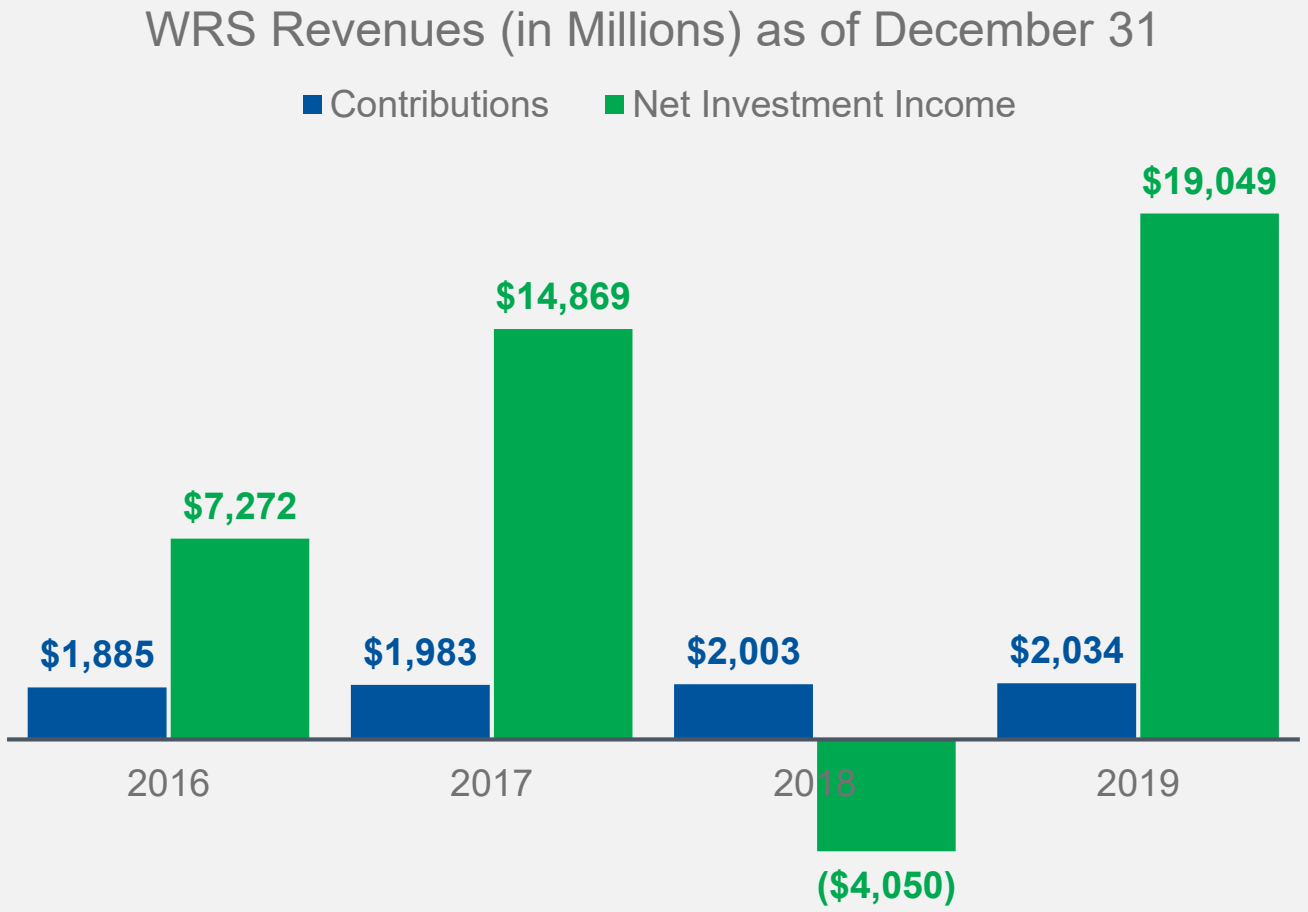


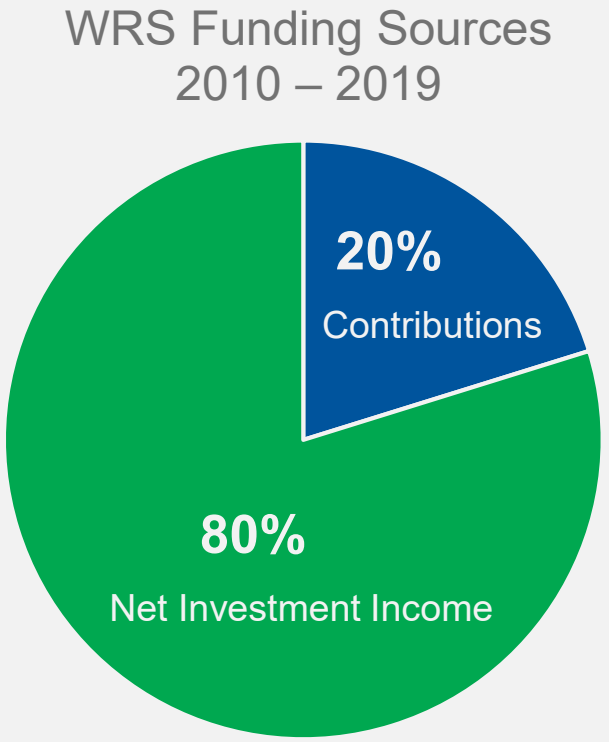
WRS Financially Strong

As of December 31



Investment Income 80% of WRS Revenue





CY2019 CAFR Update

- Audit of CAFR in progress
- Implemented Governmental Accounting Standards Board (GASB) Statement No. 84, "*Fiduciary Activities*" (guidance on identification of fiduciary activities and how those activities should be reported)
    - Evaluated reporting and presentation of benefit programs
        - State and Local Retiree Health Insurance plans
            - Slightly different reporting for State vs. Local plans
            - Will report a more traditional Statement of Changes
        - Significant changes in reporting for the sick leave programs

Sick Leave Program Changes

- Two sick leave programs, previously reported together as a fiduciary fund
  - Accumulated Sick Leave Conversion Credit (ASLCC)
    - Credits based on members unused sick leave and highest hourly rate of pay, can be used to pay for post-retirement health insurance premiums.
    - Will be reported as a proprietary fund. Meets definition of a compensated absence.
  - Supplemental Health Insurance Conversion Credit (SHICC)
    - An add-on or “match” of ASLCC credits
    - Will be reported as a fiduciary fund. Meets definition of an Other Post Employment Benefit (OPEB).
    - Requires actuarial calculation of net OPEB liability (or asset). Participating employers will report on their financial statement.
    - An additional report will be issued with employer schedules/data for participating employers


Questions?

Thank you

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ETF E-mail Updates

608-266-3285
1-877-533-5020

Appointment Scheduling Demonstration

Item 4E - Employee Trust Funds Board

Anne Boudreau, Deputy Administrator

Division of Retirement Services

Secretary's Report

Item 5A - Employee Trust Funds Board

Bob Conlin, Secretary

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ETF Organizational North Star Metrics

Item 5B - Employee Trust Funds Board

John Voelker, Deputy Secretary

Operational Updates

Items 5C – 5M - Memo Only

Future Items for Discussion

Item 6A – Employee Trust Funds Board

Closed Session

Item 7 – ETF Informational Technology and Security Management Program

Announcement of Action Taken on Business Deliberated During Closed Session

Item 8 – Employee Trust Funds Board

Adjournment

Item 9 – No Memo

Thank you

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