Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

Montana Public Employees' Retirement Board

Valuation Results
June 30, 2022

Presented October 6, 2022

Benefit Financing

- Basic Retirement Funding Equation

$$C + I = B + E$$

C = Contributions
I = Investment Income
B = Benefits Paid
E = Expenses (administration)

Benefit Financing

$$C + I = B + E$$

B depends on

- Plan Provisions
- Experience

C depends on

- Short Term: Actuarial Assumptions
  Actuarial Cost Method
- Long Term: I, B, E

Results

Changes Since Prior Valuation

- Updated assumptions and methods in accordance with the Experience Study for the Five-Year Period ended June 30, 2021
- Changes Included
  - Increased unfunded actuarial accrued liabilities by $501.7 million for all plans
  - Key assumption changes
    - Lowered the investment return assumption from 7.65% to 7.30%
    - Reduced payroll growth assumption from 3.50% to 3.25%
    - Updated mortality, retirement, disability, termination and salary merit scales to better reflect recent experience

Comments on Valuation

- Asset returns
  - Market asset returns averaged (4.21)% vs. 7.65% expected (11.86% less than expected)
  - Actuarial asset returns averaged 8.02% vs. 7.65% expected (0.37% more than expected)
    - Actuarial value of assets smooth investment gains and losses on a market value basis over a four-year period
    - The actuarial value of assets will recognize deferred investment gains/losses over the following three years

Comments on Valuation

- Funded Ratios
  - Funded ratios decreased for all plans
  - Mainly due to the adoption of new assumptions
- Amortization Periods for Unfunded Liability
  - Amortization periods increased for all systems
  - Mainly due to the adoption of new assumptions
  - The amortization period for PERS, HPORS, SRS, and GWPORS exceeds 30 years

Comments on Valuation

- Actuarial Experience Across All Plans
  - Overall experience gain of $79.1 million
  - Actuarial value of assets investment gain of $39.5 million due to unrecognized investment returns greater than the assumed rate of 7.65%
    - If all assumptions are met, will recognize gains for 2023 and 2024 followed by a significant loss in 2025
  - Demographic and mortality experience gain of $2.1 million
  - Experience gain of $37.4 million due to salary increases that were less than anticipated

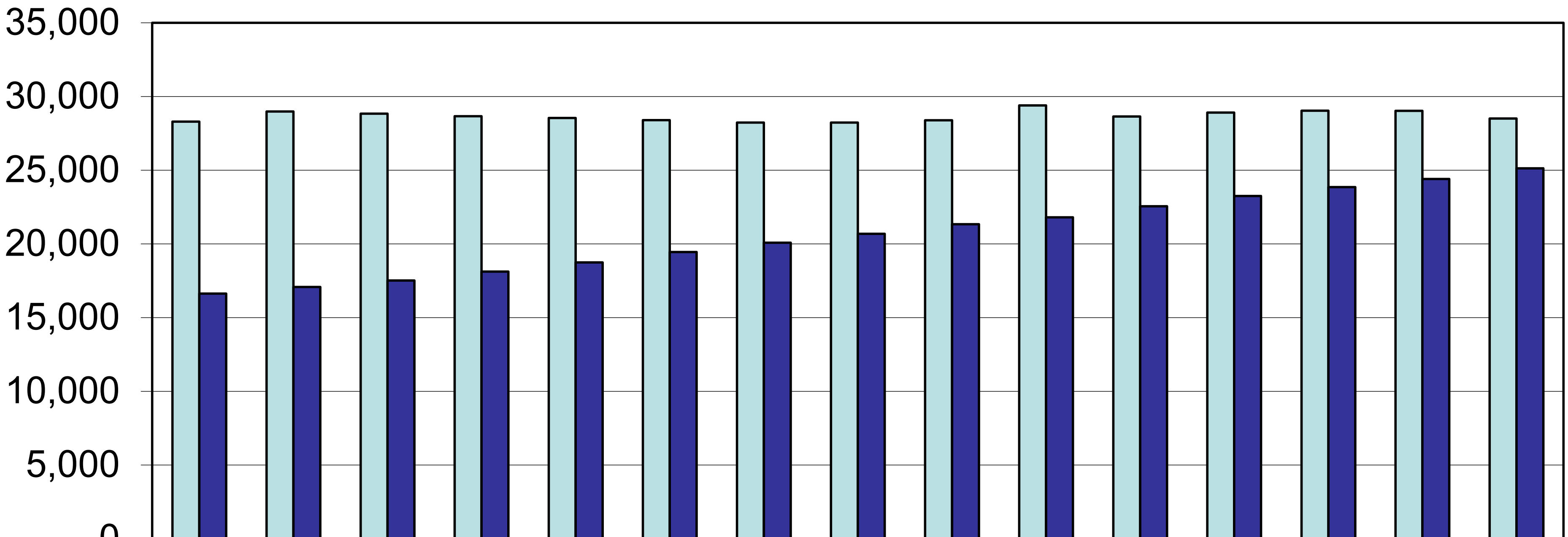
Comments on Valuation

- PERS
  - In accordance with statute, the employer contribution rate was increased by 0.1%.
- HPORS
  - State special revenue fund to transfer $4,000,000 by August 15, 2021, $2,000,000 by August 15, 2022, and $500,000 by August 15th for each fiscal year thereafter until the plan is 100% funded.
- JRS
  - Contribution holiday July 1, 2021 through June 30, 2023. Beginning July 1, 2023 employer contributions will resume at 14.00% until the funded ratio drops below 120%.

MONTANA PUBLIC EMPLOYEE RETIREMENT ADMINISTRATION

PERS Valuation Results

PERS Active and Retired Membership



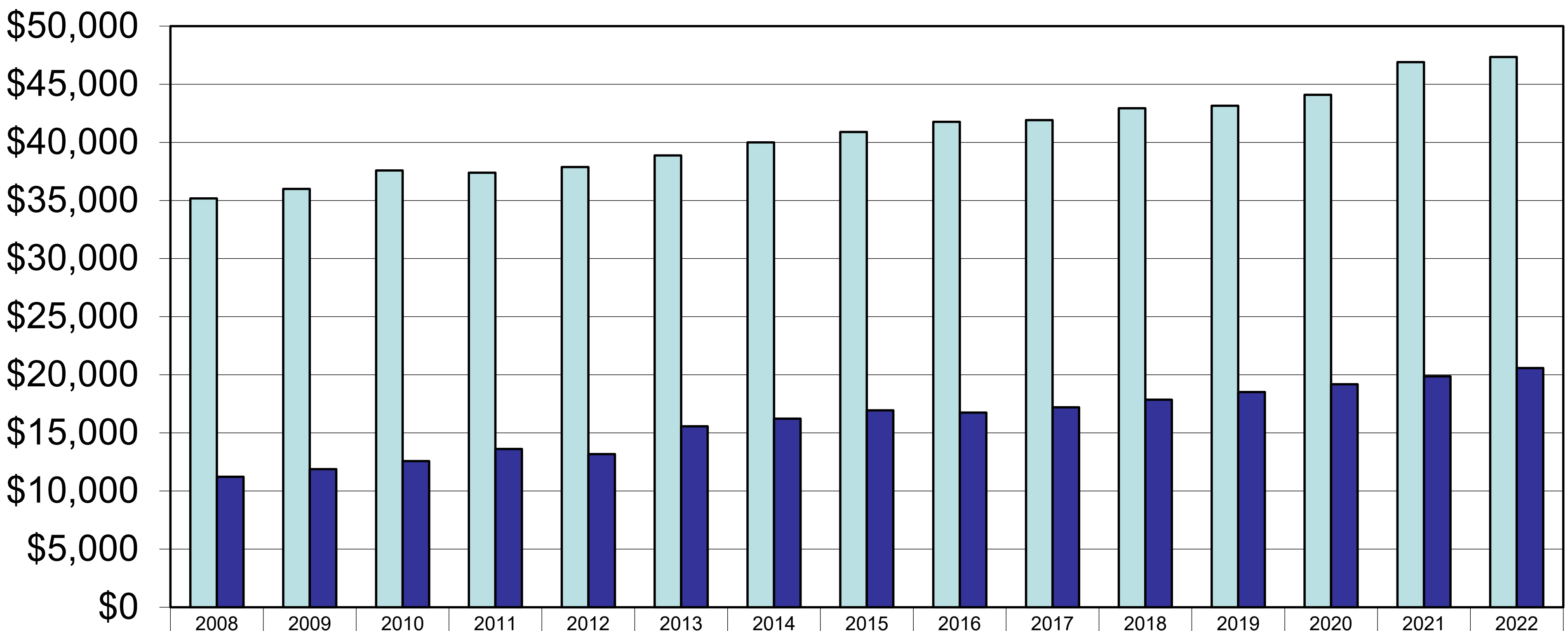
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Actives	28,293	28,983	28,834	28,659	28,548	28,401	28,229	28,237	28,390	29,395	28,646	28,908	29,039	29,028	28,508
Retirees	16,627	17,075	17,512	18,123	18,738	19,451	20,081	20,681	21,333	21,805	22,556	23,245	23,856	24,403	25,128

0.1% annual increase for active members since 2008; 1.8% decrease for 2022.

3.0% annual increase for retired members since 2008; 3.0% increase for 2022.

0.6 retirees per active 14 years ago; 0.88 retirees per active now.

PERS Average Salary and Benefits

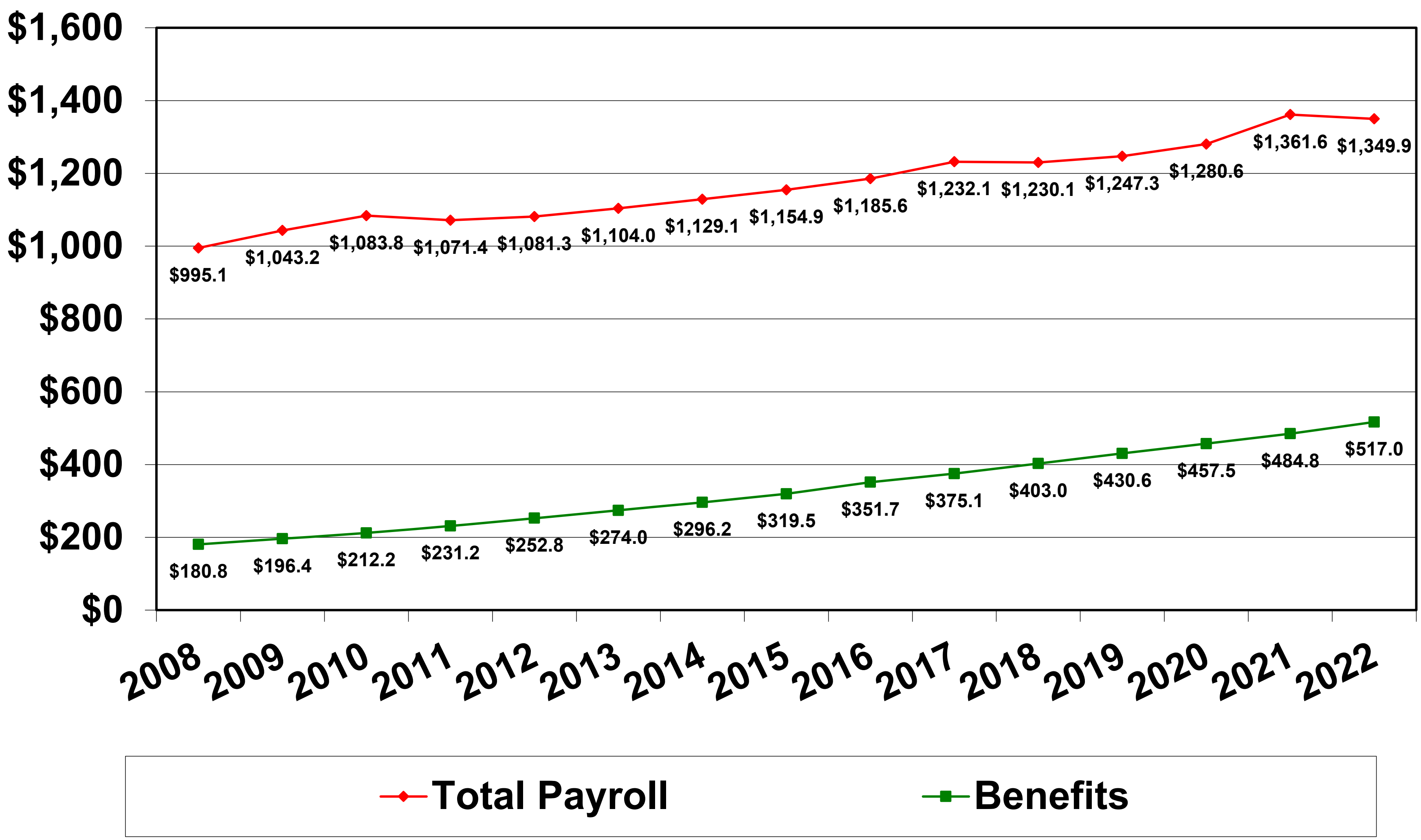


	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Actives	$35,172	$35,994	$37,587	$37,384	$37,876	$38,872	$39,998	$40,899	$41,763	$41,914	$42,942	$43,149	$44,098	$46,906	$47,351
Retirees Benefits	$11,231	$11,884	$12,575	$13,625	$13,177	$15,574	$16,230	$16,945	$16,748	$17,201	$17,866	$18,522	$19,178	$19,865	$20,573

2.1% annual increase for average salary since 2008; 0.9% increase for 2022.

4.4% annual increase for average benefits since 2008; 3.6% increase for 2022.

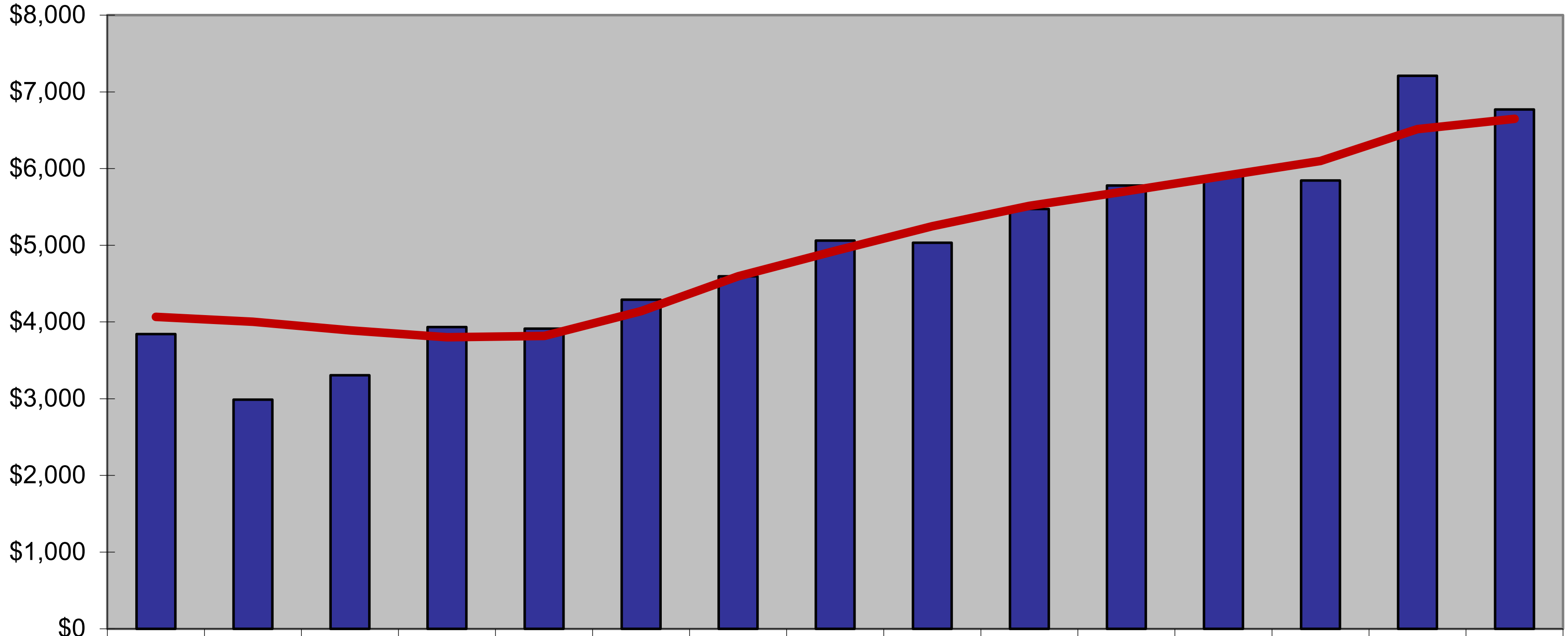
PERS Payroll & Benefits
($ Millions)



PERS Actuarial Experience

- Overall experience gain of $69.9 million
- Actuarial value of assets investment gain of $32.8 million due to unrecognized investment returns greater than the assumed rate of 7.65%
  - If all assumptions met going forward, can expect:
    - 2023: Gain – $8.1 million
    - 2024: Gain – $79.4 million
    - 2025: Loss – $209.3 million
- Experience gain of $39.7 million due to salary increases that were less than anticipated
- $2.6 million experience loss due to all other demographic experience (mortality, retirement, termination, disability, misc.)
- Increase in actuarial accrued liability due to change in assumptions of $296.4 million

PERS Assets
($ Millions)



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Market Value	$3,841	$2,988	$3,304	$3,933	$3,913	$4,290	$4,596	$5,061	$5,033	$5,473	$5,780	$5,903	$5,845	$7,210	$6,771
Actuarial Value	$4,065	$4,002	$3,890	$3,801	$3,817	$4,140	$4,596	$4,927	$5,248	$5,514	$5,705	$5,903	$6,099	$6,515	$6,649

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Market Return	(4.9)%	(20.9)%	12.9%	21.7%	2.3%	13.0%	17.1%	4.6%	2.0%	11.9%	8.9%	5.7%	2.7%	27.8%	(4.2)%
Actuarial Return	7.6%	(0.2)%	(1.2%)	(0.1)%	3.3%	11.9%	13.2%	9.6%	9.3%	8.1%	6.7%	7.1%	7.1%	10.8%	8.2%

PERS Funding Results

		Before Exp. Study	After Exp. Study
	July 1, 2021 Valuation	July 1, 2022 Valuation	July 1, 2022 Valuation
Total Normal Cost Rate	9.71%	9.65%	9.72%
Administrative Expense Load	0.29%	0.35%	0.00%
Rate to Amortize UAL	6.83%	6.93%	7.21%
Transfer to DB Education Fund	0.04%	0.04%	0.04%
Statutory Funding Rate*	16.87%	16.97%	16.97%
Actuarial Accrued Liability	$8.534.6 million	$8,730.4 million	$9.026.8 million
Actuarial Value of Assets	$6,515.0 million	$6,770.8 million	$6,770.8 million
Unfunded Accrued Liability	$2,019.6 million	$1,959.6 million	$2,256.0 million
Funded Ratio	76.34%	77.55%	75.01%
Amortization Period*	28 Years	27 Years	32 Years

* Reflects anticipated increases in employer supplemental contribution rates and projected State revenue. Payable in fiscal year immediately following the valuation date.

Valuation Results – Other Plans

	Funded Ratio			Amortization Period				30-Year Funding Rate		
		2022			2022				2022	
		Exp. Study			Exp. Study		Statutory		Exp. Study	
System	2021	Before	After	2021	Before	After	Rate	2021	Before	After
JRS***	177%	180%	174%	0	0	0	7.00%	(11.97%)	(13.76%)	(8.99%)
HPORS**	67%	70%	66%	26	22	47	51.38%	48.81%	46.61%	56.53%
SRS	83%	84%	79%	18	17	33	23.61%	21.36%	21.05%	23.88%
GWPORS	85%	89%	83%	35	34	DNA	19.56%	19.85%	19.76%	24.21%
MPORS	74%	76%	71%	15	13	24	52.78%	43.13%	41.92%	50.67%
FURS	86%	88%	81%	6	5	12	57.66%	34.03%	32.65%	45.83%
VFCA*	99%	107%	91%	1	0	3	5% of premium taxes	$351,815	$0	$1,060,482

* The actual contributions for the fiscal year ending 2021 and 2022 were $2,591,791 and $2,851,975, respectively.

** Calculation of amortization period Includes state special revenue transfers

*** Employer contribution holiday beginning July 1, 2021 through June 30, 2023. Beginning July 1, 2023, employer contributions will resume at a reduced rate of 14.00% until the funded ratio drops below 120%.

PERS DCRP Long Term Disability Plan

		Before Exp. Study	After Exp. Study
	July 1, 2021 Valuation	July 1, 2022 Valuation	July 1, 2022 Valuation
Total Normal Cost Rate	0.29%	0.29%	0.05%
Rate to Amortize UAL	0.01%	0.01%	0.25%
Statutory Funding Rate	0.30%	0.30%	0.30%
Actuarial Accrued Liability	$5,778,856	$5,778,856	$1,610,180
Actuarial Value of Assets (Market Value)	$7,992,719	$7,992,719	$7,180,523
Unfunded Accrued Liability	($2,013,863)	($2,013,863)	($5,570,343)
Funded Ratio	134.85%	134.85%	445.95%
Amortization Period	0 Years	0 Years	0 Years
30-Year Funding Rate	0.25%	0.27%	(0.12)%

ASOP 4

- Effective for measurement dates on/after February 15, 2023 (June 30, 2023 valuation for PERA)
- Changes Impacting Public Plans
  - Disclose Low-Default Risk Obligation Measure (LDROM)
  - Disclose Reasonable Actuarially Determined Contribution (ADC)
    - New guidance on amortization of the unfunded actuarial accrued liability
  - Assess implications of Contribution Allocation Procedure (CAP) or Funding Policy
  - Other changes
    - Output Smoothing Methods
    - Addressing contribution lag
    - Gain/loss analysis

Low Default Risk Obligation Measure

- Liability measure that must use a discount rate that reflects low default risk fixed income securities whose cash flows are reasonably consistent with the benefits expected to be paid

- Can be interpreted that the difference in the LDROM and AAL measures the reduction in liability (savings) from investing in a diversified portfolio

- Only the liability measure must be disclosed, not the funded status, unfunded portion of the liability or amortization period

- Communication of the measure may prove challenging
  - Some may call the LDROM the “true cost” of the plan

Reasonable Actuarially Determined Contribution

- With any funding valuation, the actuary should calculate and disclose a reasonable actuarially determined contribution (ADC) except when assumptions/methods are set by law
- New guidance on UAAL amortization states that each individual base must be either:
  - Fully amortized in a reasonable period of time or
  - Reduces outstanding balance by reasonable amount each year
- Fixed contribution rate plans must determine if fixed rate is the ADC or a different ADC is determined
  - 30-year period may not meet criteria of reasonable
- **Actuarial profession CANNOT force systems to change their funding – these are just disclosures**

Actuarial Certifications & Disclosures

- Additional information regarding the assumptions and methods can be found in the June 30, 2022 actuarial valuation reports.

- The actuaries who prepared these results, Todd B. Green, ASA, EA, FCA, MAAA, and Bryan Hoge, FSA, EA, FCA, MAAA, 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.