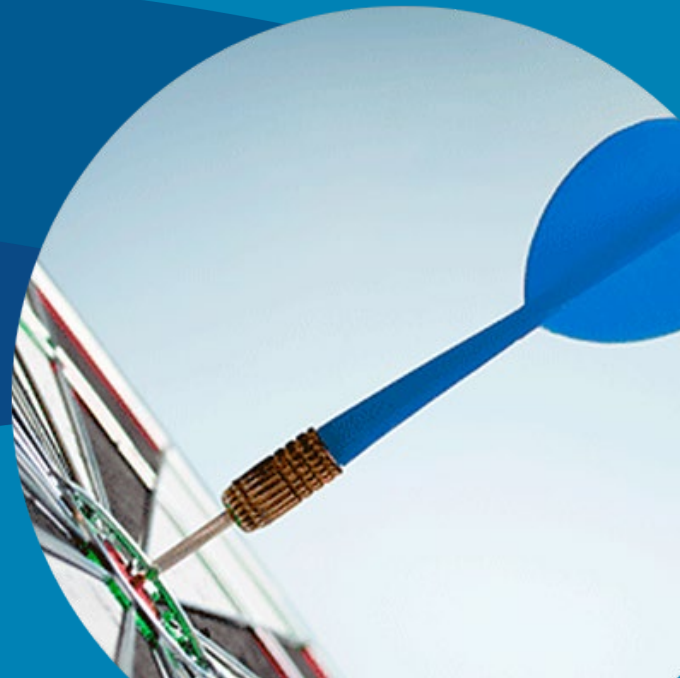




Michigan Public School Employees' Retirement System

Pension Actuarial Valuation Results
as of September 30, 2024



September 30, 2024 Valuation

- Purpose of the September 30, 2024 valuation is twofold:
 - Determine the employer contribution rate for fiscal year (FY) 2027
 - Measure the System's funding progress
- Reflects the Dedicated Gains Policy adopted by the Board of Trustees
 - Starting with the September 30, 2021 funding valuation, in accordance with modifications to the Dedicated Gains Policy, the Policy cannot lower the investment return assumption below 6.00%
 - Investment return assumption remained at 6.00% for Non-Hybrid portion and for Pension Plus Plan (PPP) portion as a result of the Policy
- Investment return assumption for Pension Plus 2 Plan (PPP2) is 6.00% in conjunction with Public Act 92 of 2017

September 30, 2024 Valuation

- Reflects the following provisions of Public Act 127 of 2024
 - The UAAL dollar contribution floor is reset to the actuarially determined UAAL contribution in FY 2025
 - The 3% employee contribution requirement for premium subsidy retiree medical coverage will be eliminated effective FY 2026
 - As refunds associated with the 3% employee contribution requirement for premium subsidy retiree medical coverage are paid from the pension trust, eliminating this requirement prospectively results in a reduction to the pension plan actuarial accrued liability
- Additional provisions of Public Act 127 of 2024 follow
 - The employer UAAL contribution rate cap is reduced from 20.96% to 15.21% for non-university reporting units effective FY 2026
 - The employer normal cost contribution floor is eliminated for the retiree health plan effective FY 2026

September 30, 2024 Valuation

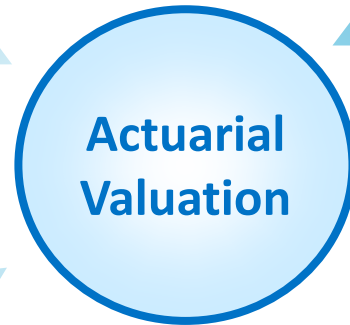
- The Retirement Board has adopted a Funding Policy for use in the September 30, 2023 and later actuarial valuations
- Employer contribution rates included in this presentation do not incorporate the contribution floor provisions of Public Act 92 of 2017 or Public Act 181 of 2018
- Employer contribution rates included in this presentation are in addition to any reconciliation payments as required by subsection 41(9) of MPERS statute

Actuarial Valuation Process

Member Data



Financial Data



Actuarial Assumptions



Plan Provisions

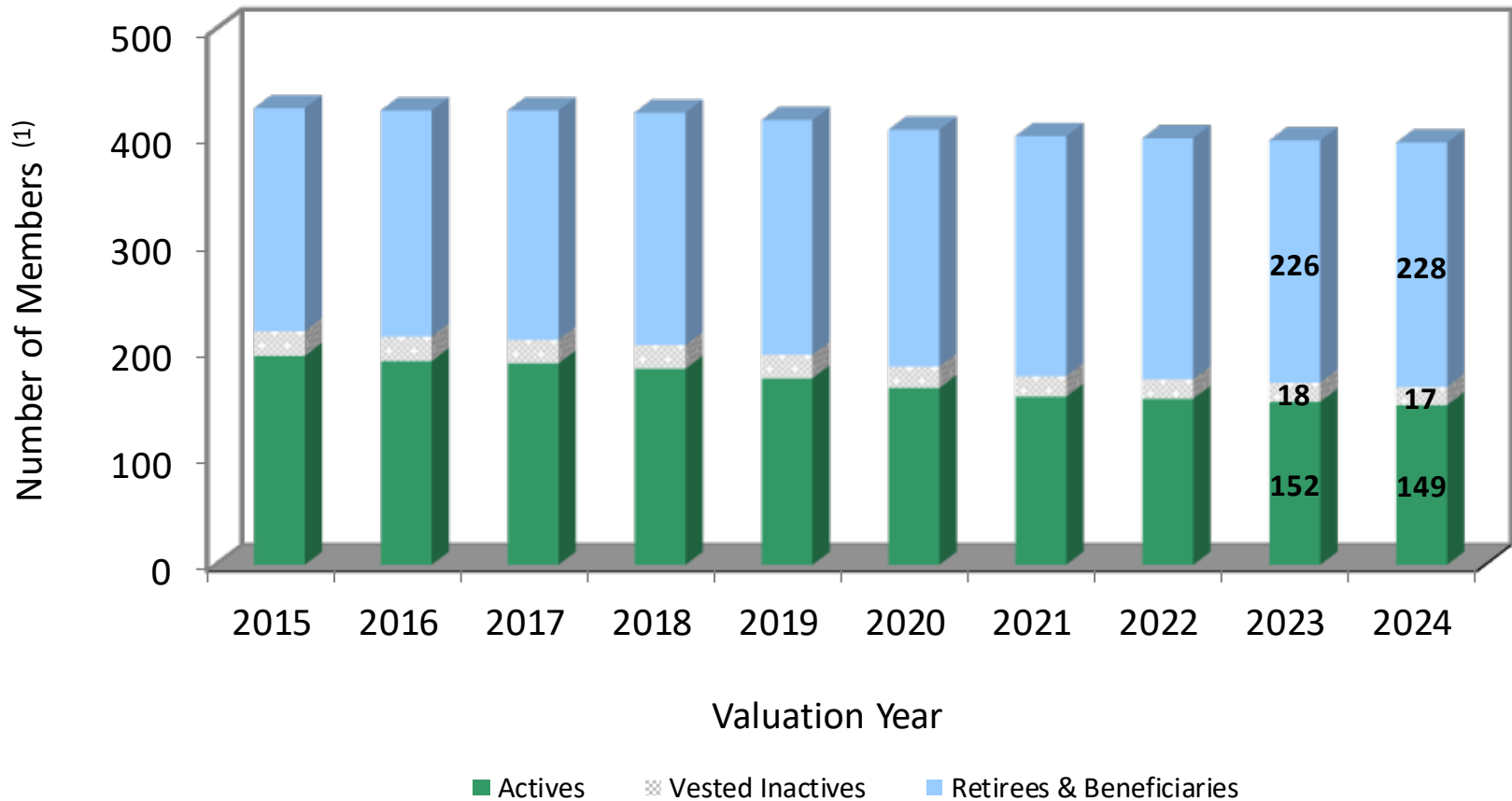


Actuarial Cost Method



Defined Benefit Plan Membership Data

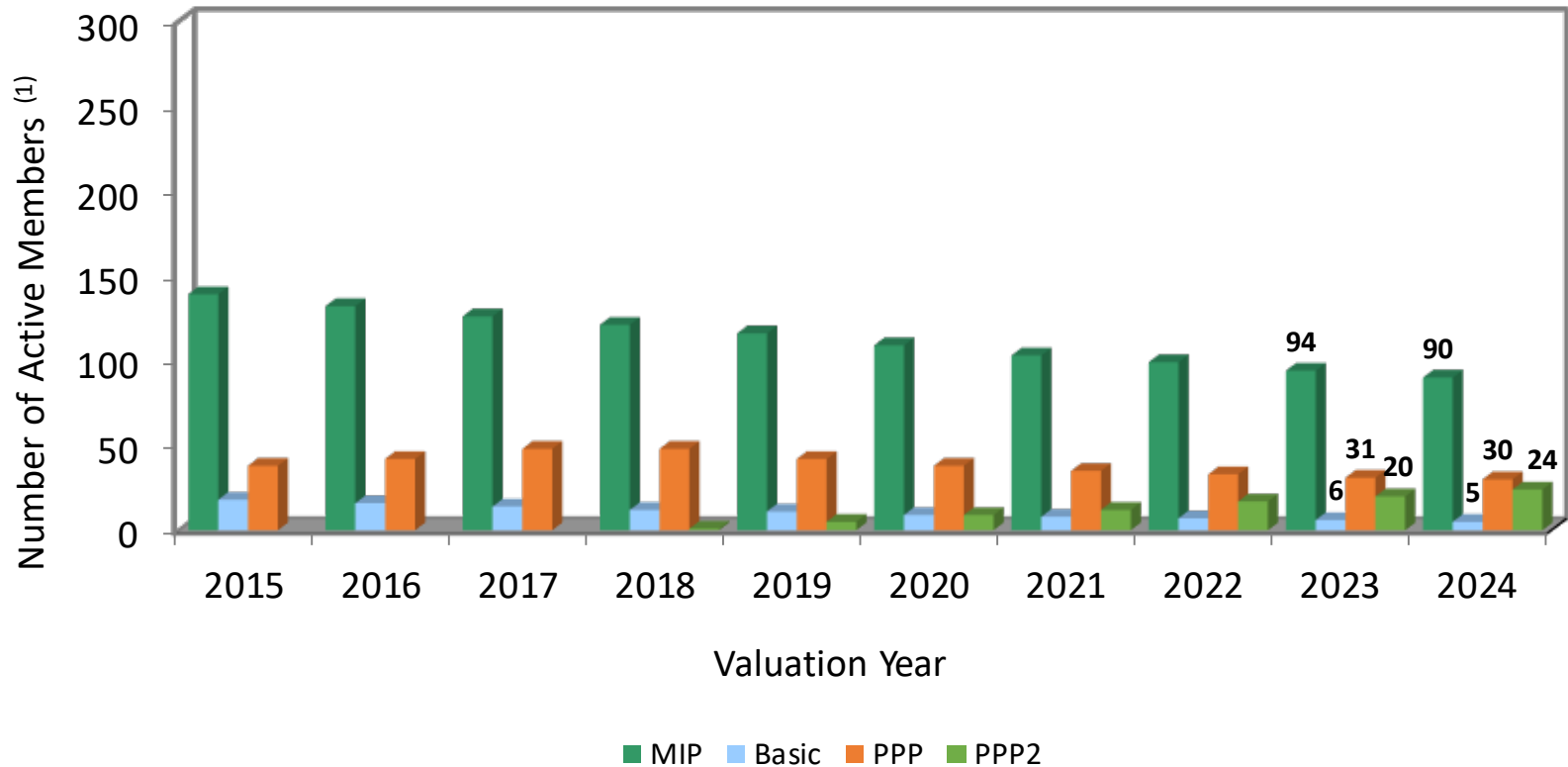
(Counts in Thousands)



(1) Excludes active members covered exclusively by the pure defined contribution plan. Active members who elected not to continue in the defined benefit plan as a result of PA 300 are classified as inactive members.

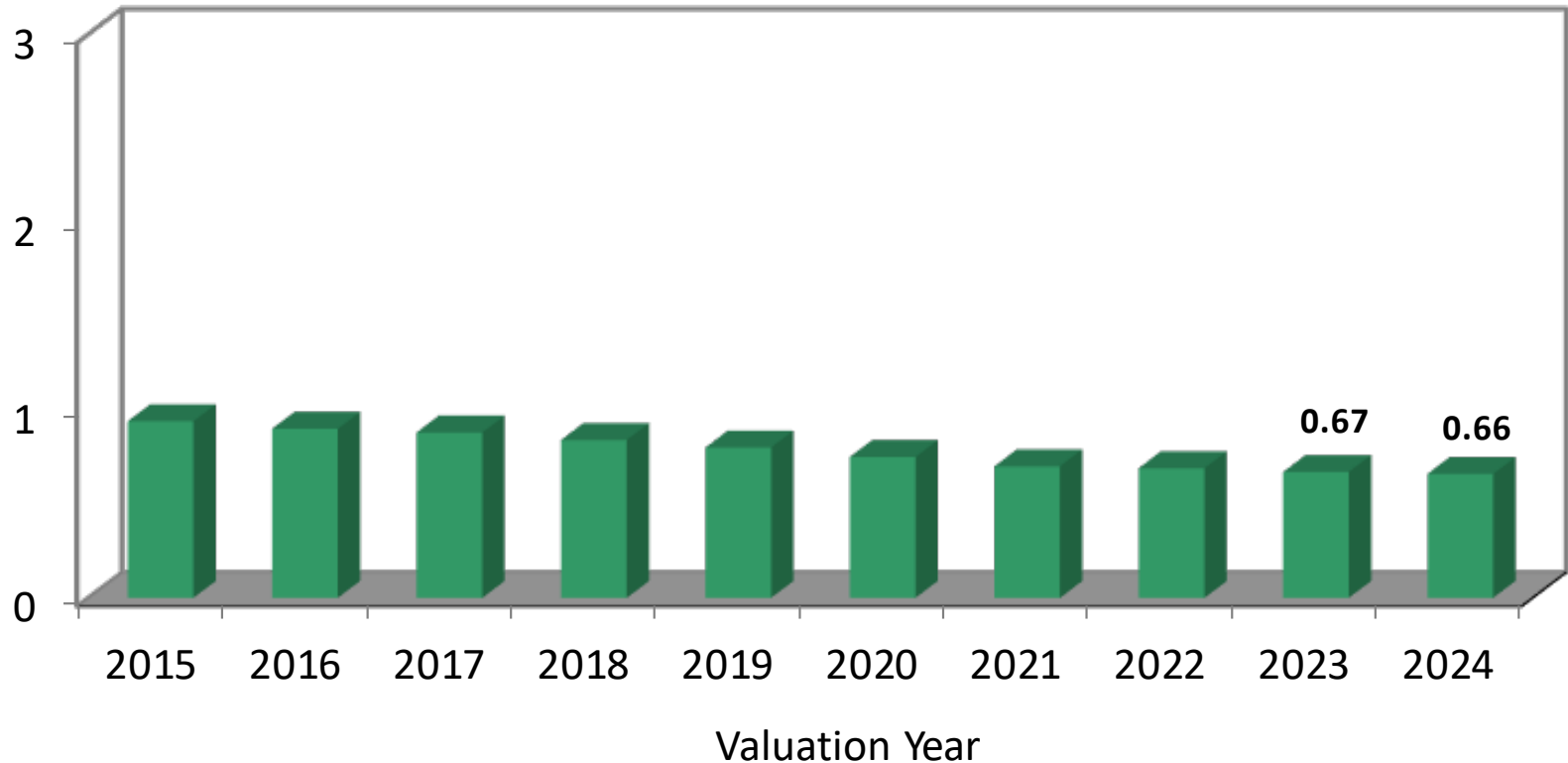
Defined Benefit Plan Active Members by Group

(Counts in Thousands)



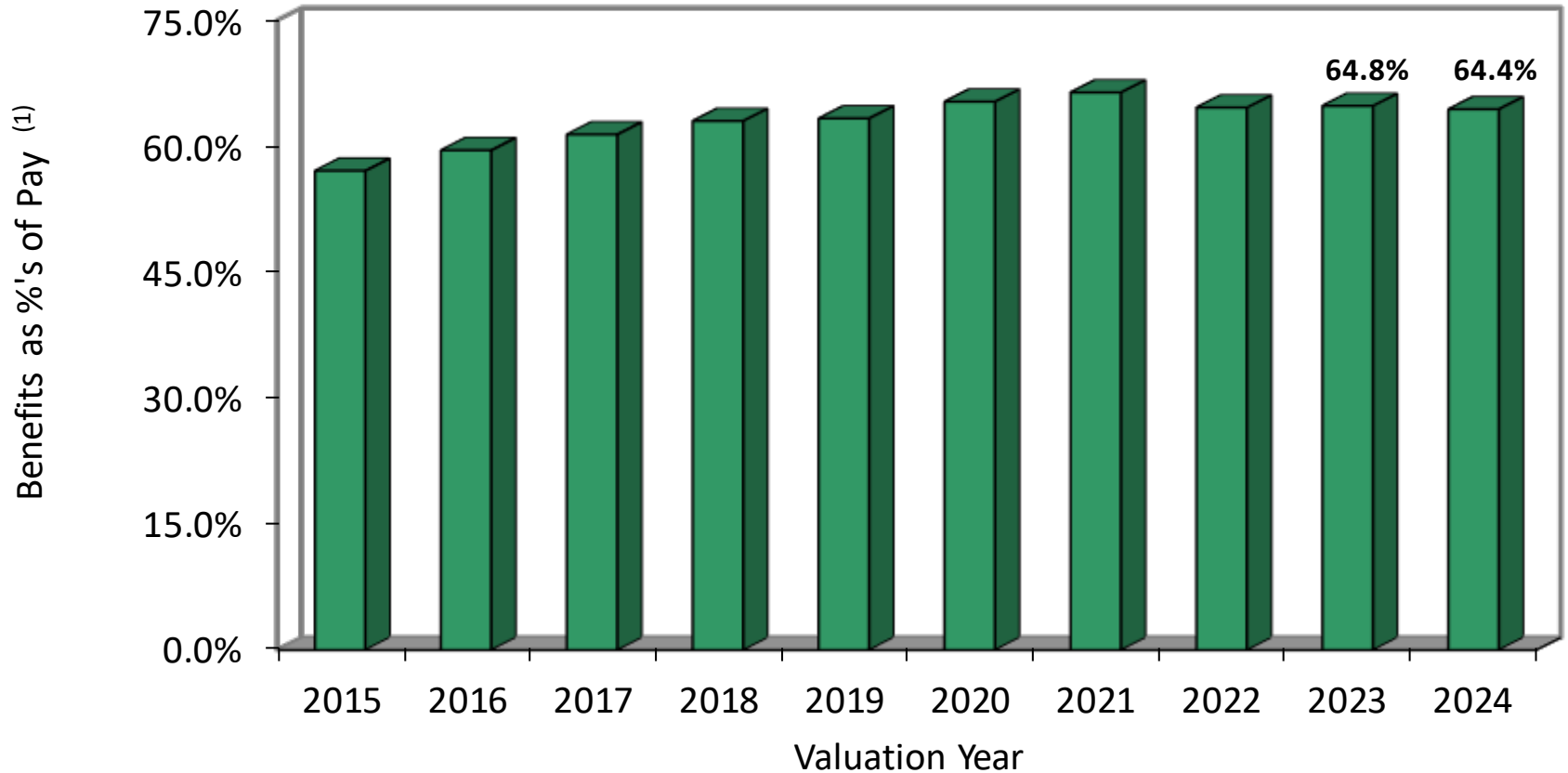
(1) Excludes active members covered exclusively by the pure defined contribution plan. Active members who elected not to continue in the defined benefit plan as a result of PA 300 are classified as inactive members.

Ratio of Active Members⁽¹⁾ to Pension Benefit Recipients



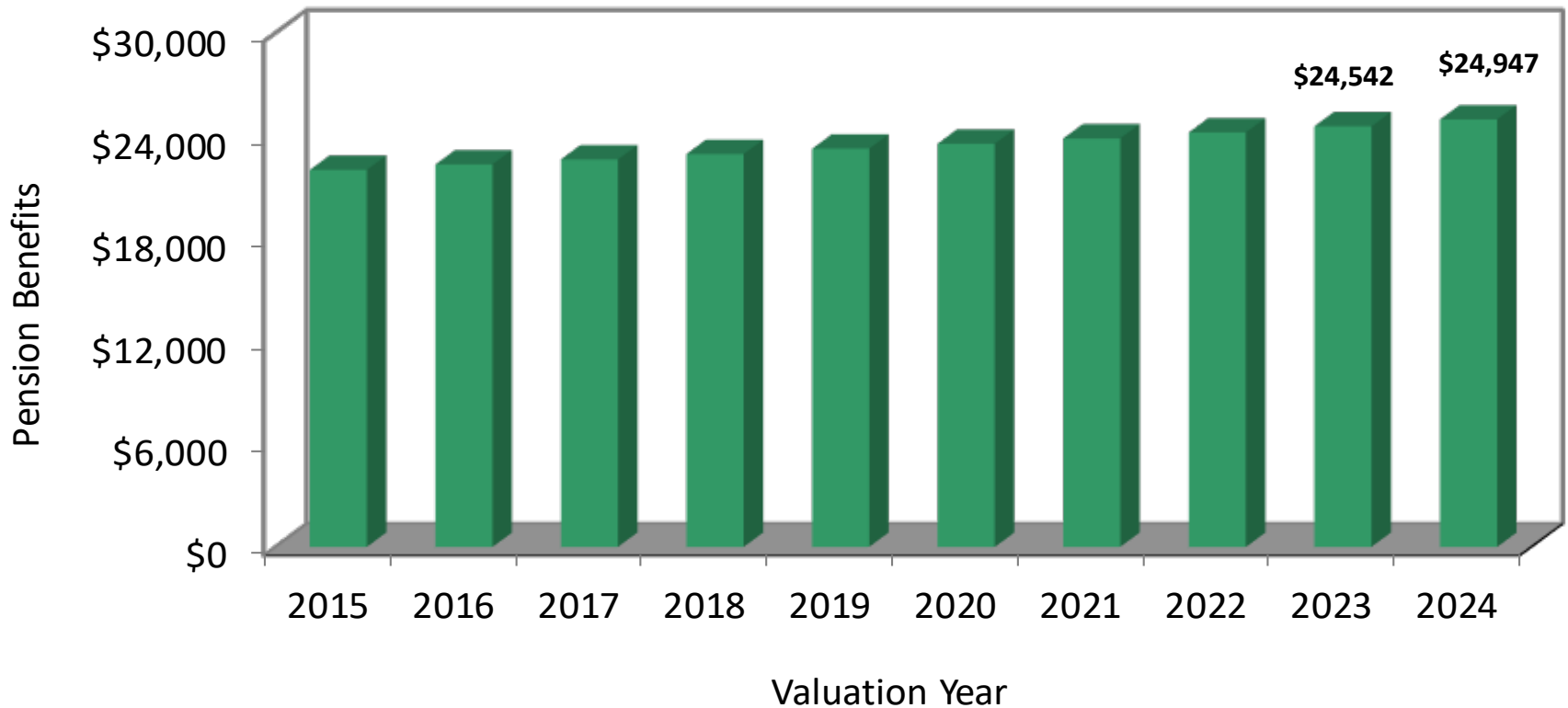
(1) Excludes active members covered exclusively by the pure defined contribution plan. Active members who elected not to continue in the defined benefit plan as a result of PA 300 are classified as inactive members.

Pension Benefits Expressed as %'s of Active Member Pay



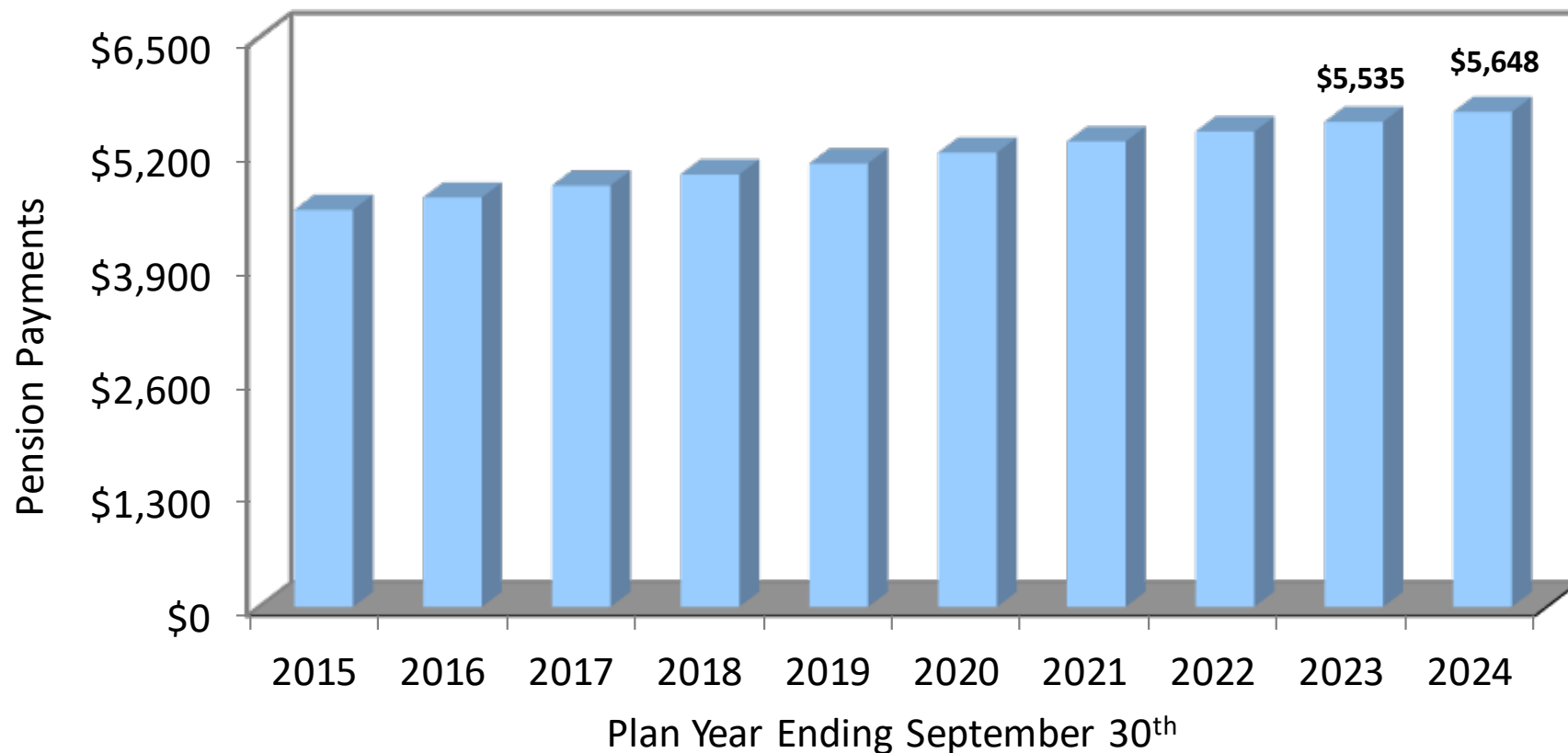
(1) Percentage of defined benefit MPSERS payroll (excludes payroll of those covered exclusively by the pure defined contribution plan and of those who elected not to continue in the defined benefit plan as a result of PA 300).

Average Annual Pensions

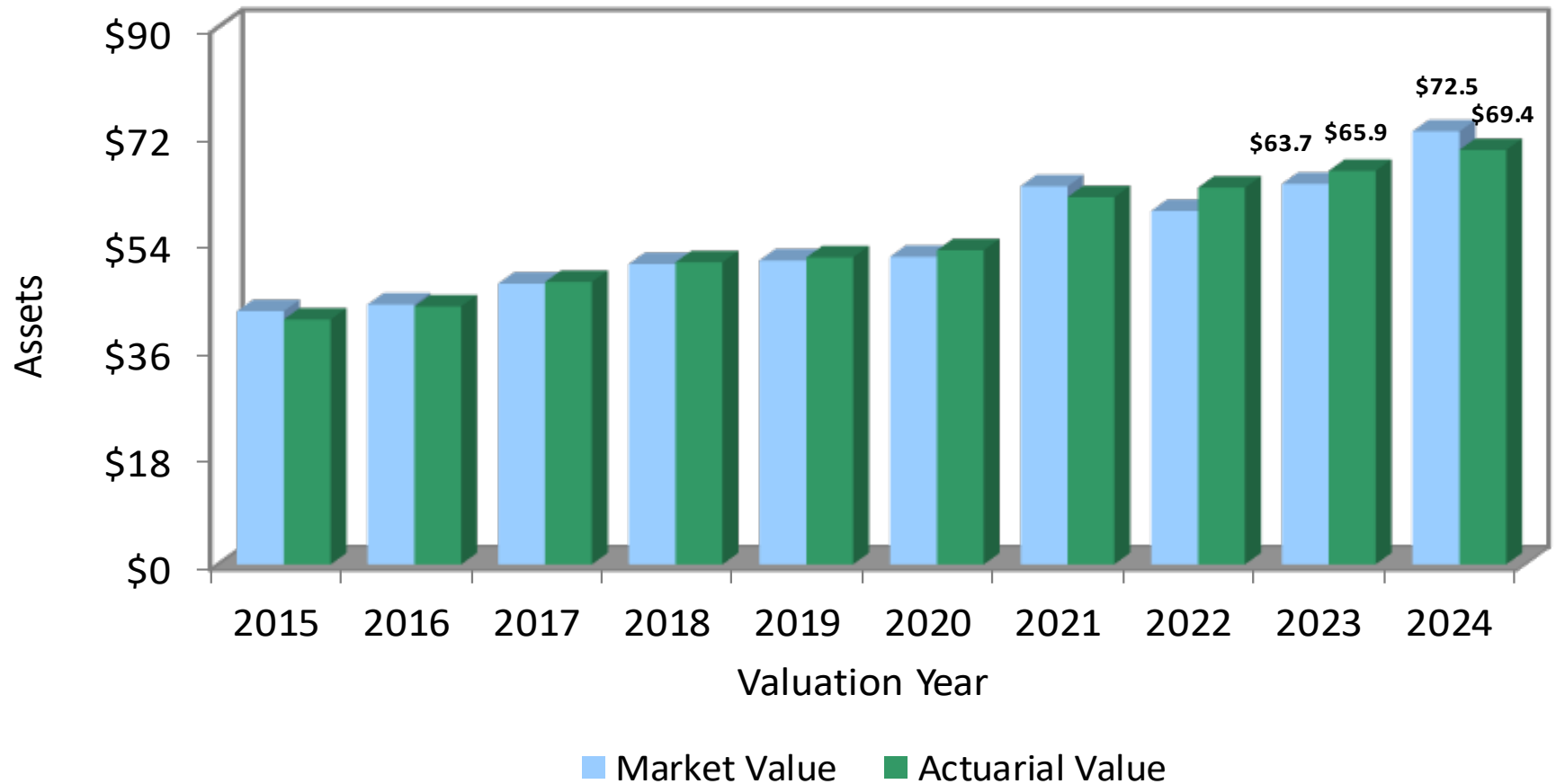


Reported Pension Payments by Plan Year

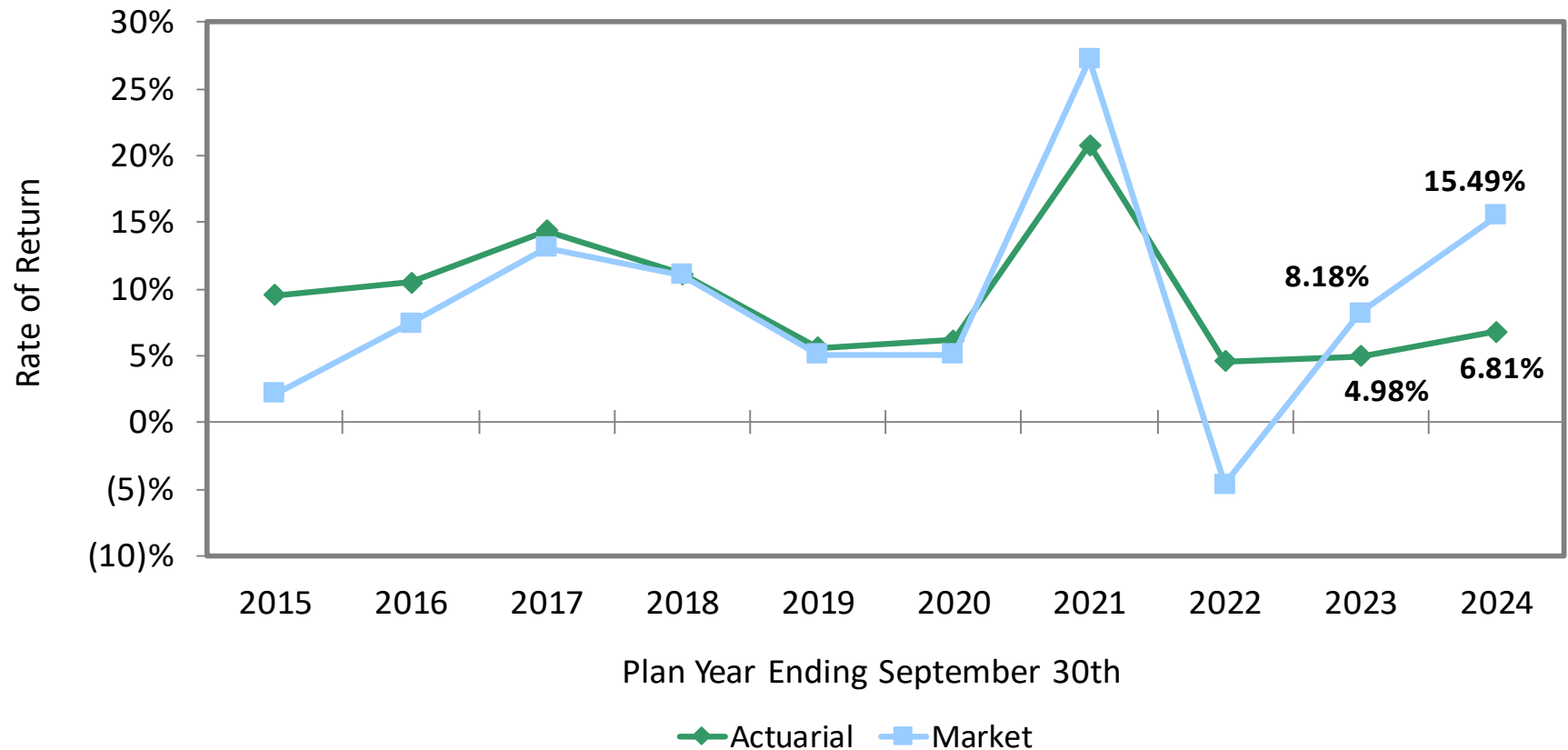
(Amounts in Millions)



Growth of Pension Assets (\$ in Billions)



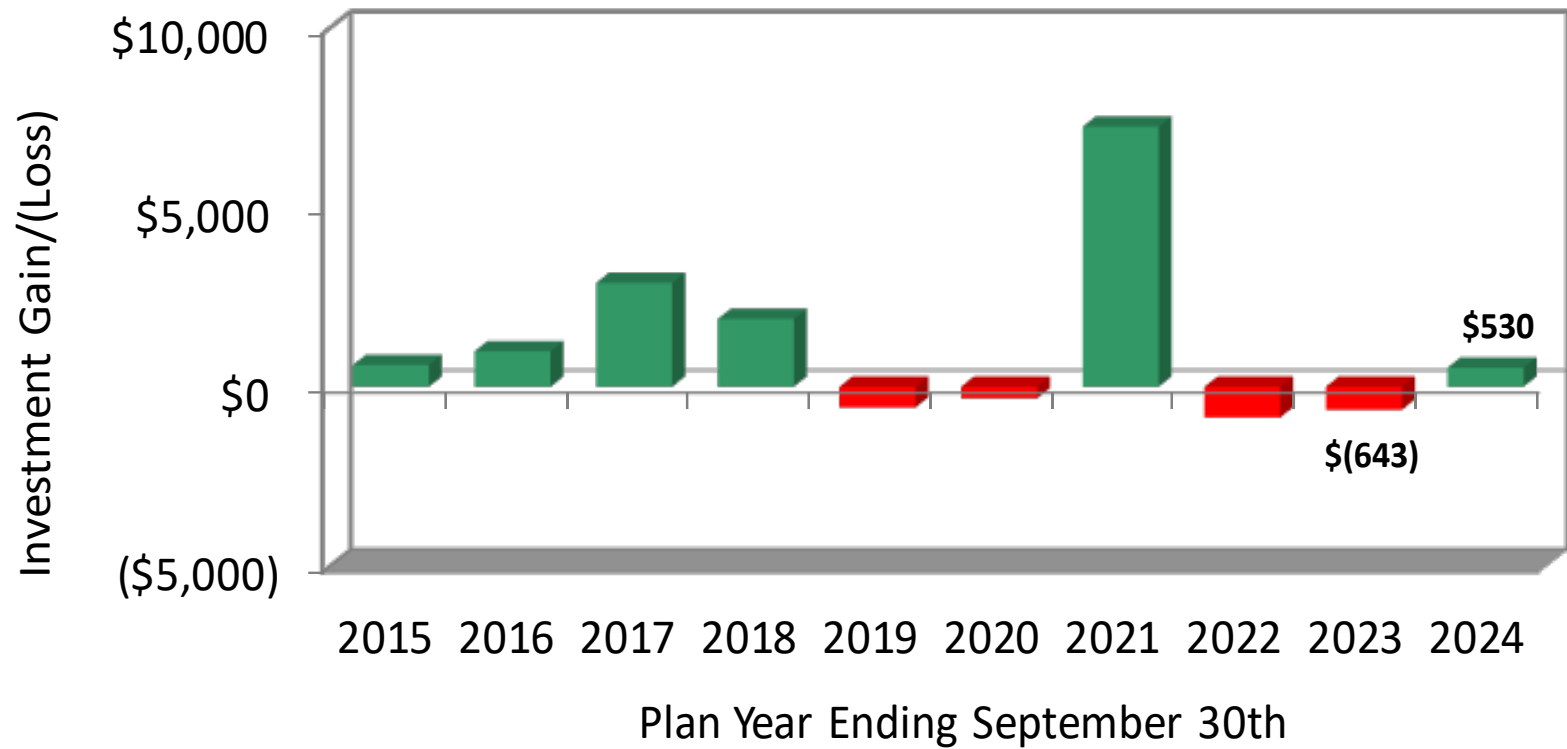
Actuarial & Market Net Rates of Return



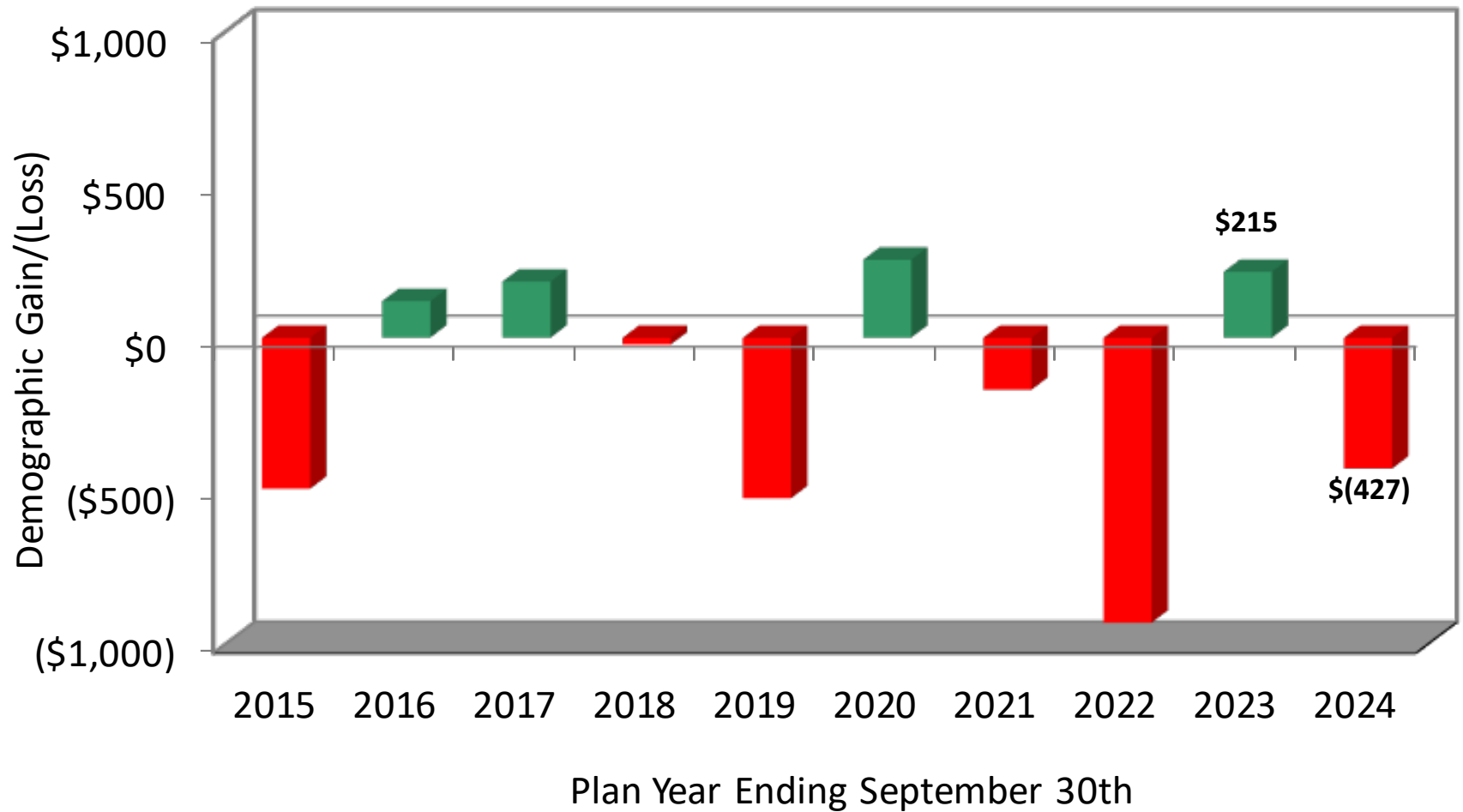
Rates of return shown above are for Non-Hybrid assets.



Investment Gain/(Loss) (\$ in Millions)



Demographic Gain/(Loss) (\$ in Millions)

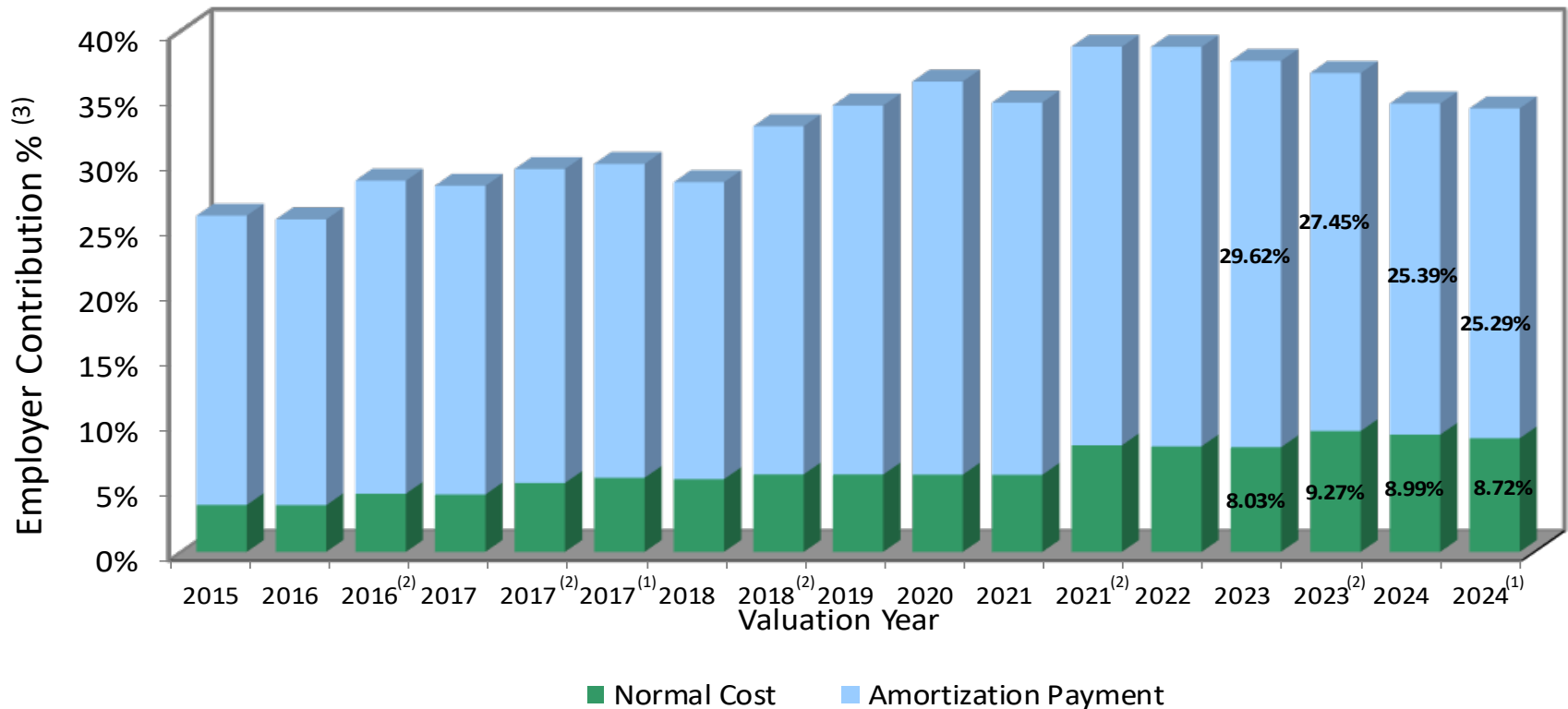


Gain/(Loss) by Type of Activity

(Amounts in Millions)

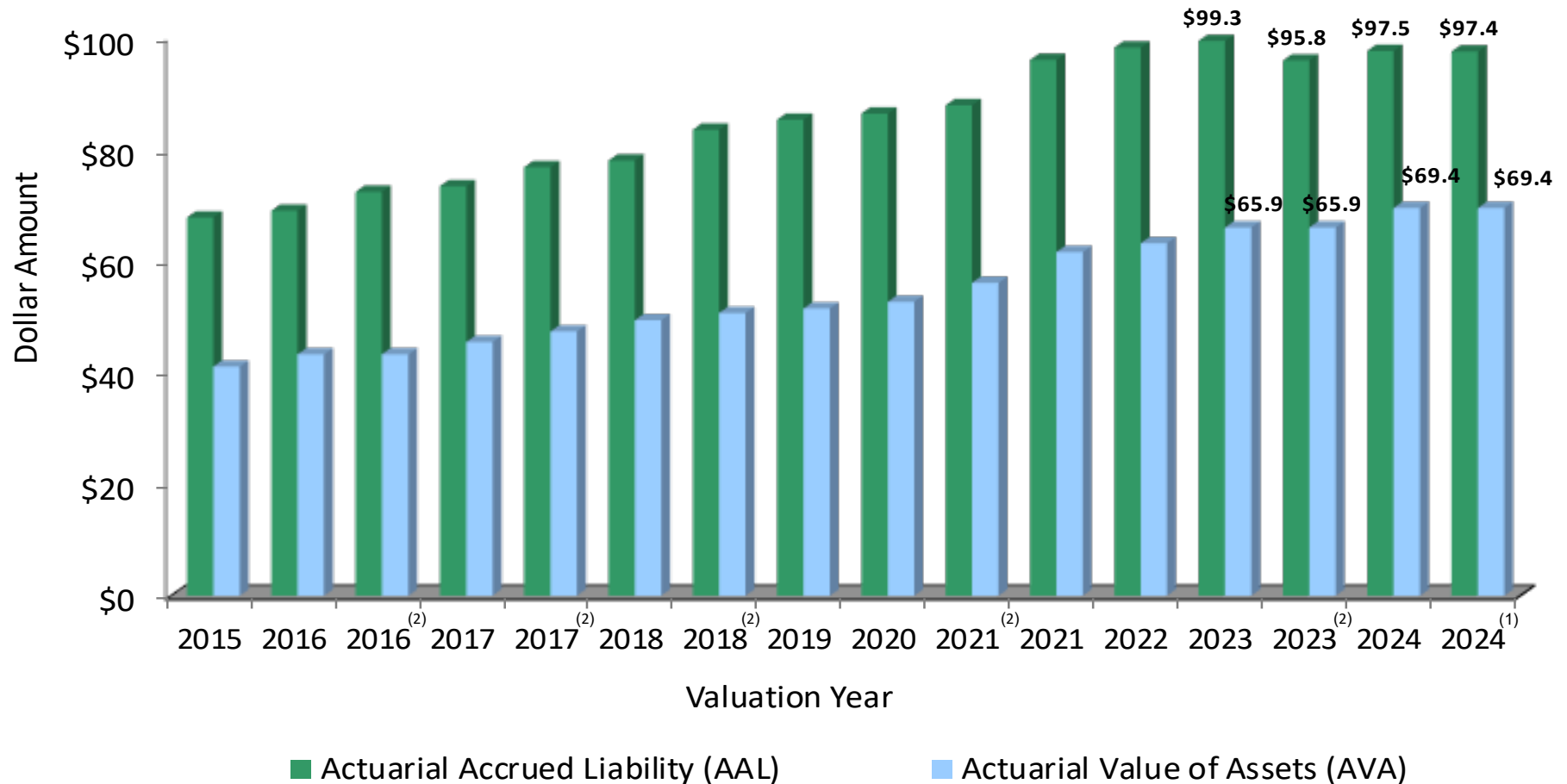
| Plan Year Ending 9/30 | 2020 | 2021 | 2022 | 2023 | 2024 |
|--------------------------|---------------|----------------|------------------|----------------|--------------|
| Rehires | \$ (1.8) | \$ 9.2 | \$ 1.7 | \$ 7.5 | \$ (4.7) |
| Retiree Deaths | 109.1 | 156.7 | 120.2 | 99.6 | (15.0) |
| Investments | (321.4) | 7,245.2 | (853.9) | (643.0) | 530.3 |
| Pay Increases | 72.3 | (234.8) | (1,029.1) | 83.2 | (394.2) |
| Withdrawal | (26.1) | (60.9) | (47.1) | (32.5) | (17.3) |
| Retirements | 18.6 | 5.6 | 24.3 | 85.3 | 66.2 |
| Other | 82.4 | (45.5) | 0.1 | (28.0) | (62.3) |
| Total | (66.9) | 7,075.5 | (1,783.7) | (427.9) | 103.1 |

Historical Employer Contribution %'s Valuation as of September 30



- (1) Revised benefit provisions.
- (2) Change in assumptions and/or methods shown for years where assumptions other than the amortization payroll growth assumption have changed.
- (3) The normal cost is expressed as a percentage of defined benefit participating active member payroll, while the Amortization Payment is expressed as a percentage of total MPSERS active member payroll (including that of defined benefit and defined contribution active members).

Actuarial Accrued Liability Compared to Actuarial Value of Assets (\$ in Billions)

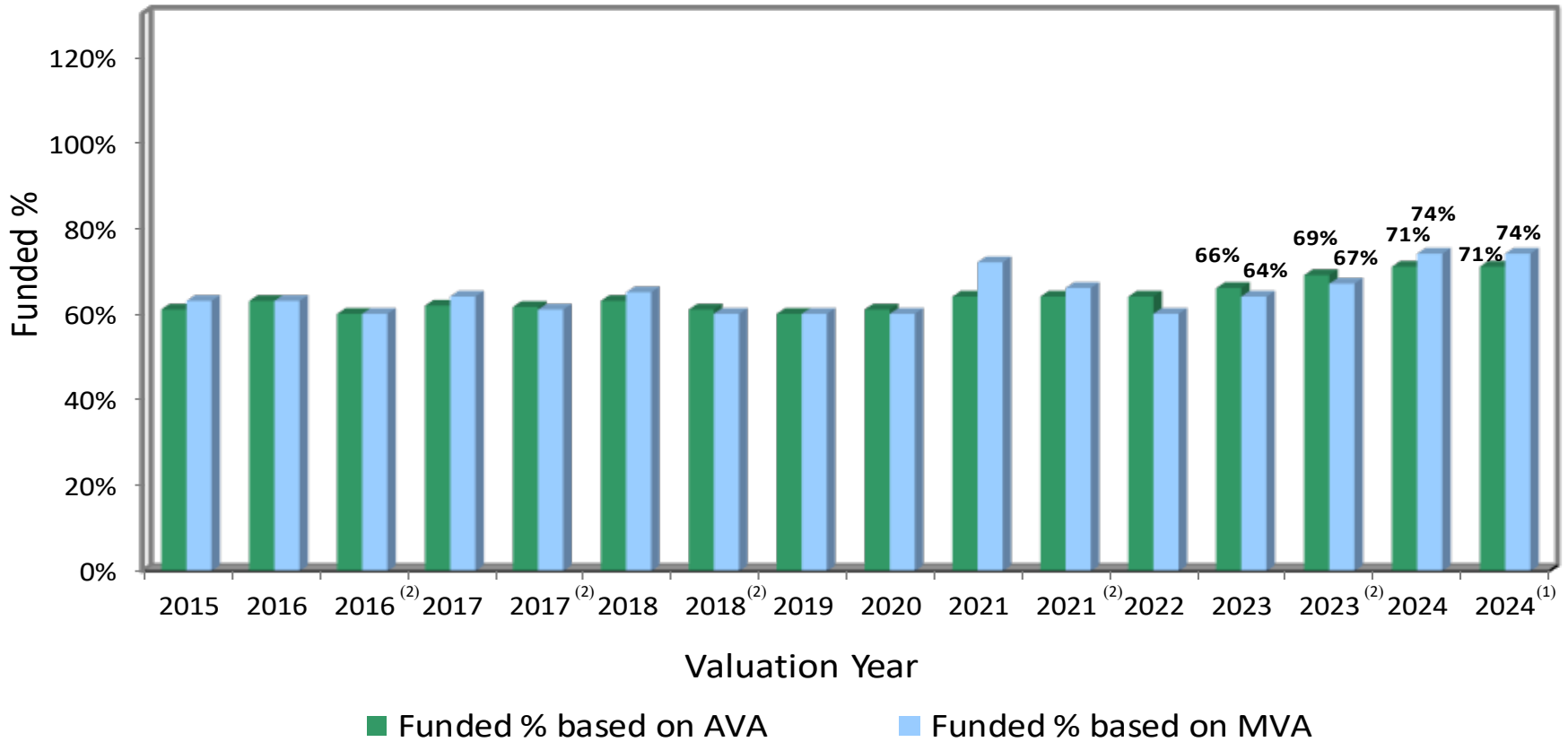


(1) Revised benefit provisions.

(2) Reflects actuarial assumptions and/or methods changes.



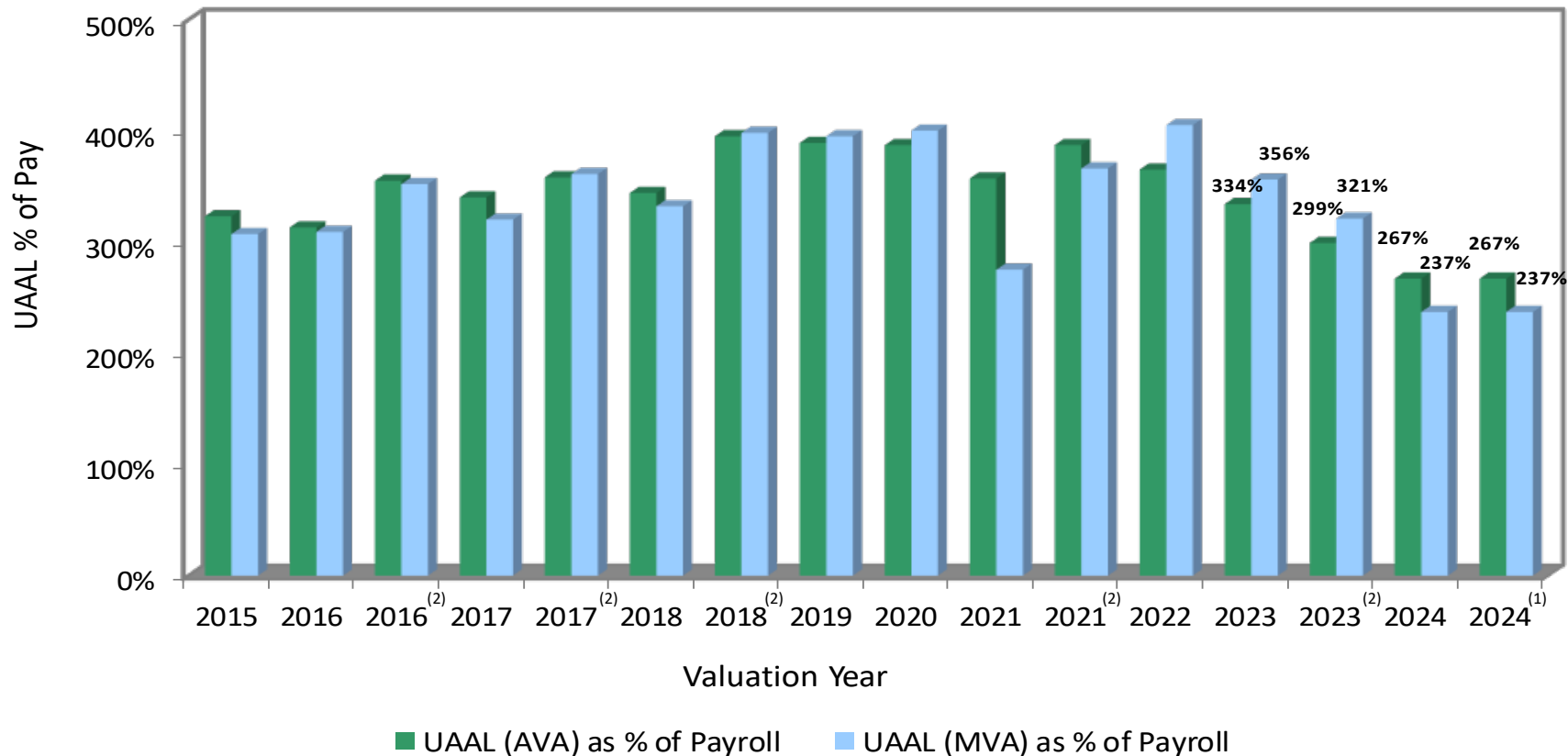
Retirement System Funded % Based on Actuarial Value and Market Value of Assets



(1) Revised benefit provisions.

(2) Reflects actuarial assumptions and/or methods changes.

Unfunded Actuarial Accrued Liability as a Percentage of Payroll⁽³⁾



- (1) Revised benefit provisions.
- (2) Reflects actuarial assumptions and/or methods changes.
- (3) Percentage of total MPSERS payroll (including both DB and DC active member payroll).



Risk Metrics

- The determination of the actuarial accrued liability and the total computed employer contribution requires the use of assumptions regarding future economic and demographic experience
- Risk measures are intended to aid in the understanding of the effects of future experience differing from the assumptions
- Risk measures may also help with illustrating the potential volatility in the actuarial accrued liability and the total computed employer contribution

Risk Metrics

1. **Funded Ratio (Funding Value of Assets basis)**
 - This is the most widely known measure of a plan's financial strength. The trend in the funded ratio and the actual funded ratio are both important metrics. A trend approaching 100% is desirable.
2. **Funded Ratio (Market Value of Assets basis)**
 - This is similar to the above metric, except that the asset value is the market value.
3. **Unfunded Actuarial Accrued Liability (UAAL) Amortization Period**
 - For level % of payroll, periods above about 17 to 23 years generally indicate that the UAAL payment is less than the interest on the UAAL. This situation is referred to as "negative amortization." Negative amortization is increasingly viewed as undesirable.
4. **Total UAAL / Total Payroll**
 - The ratio of UAAL to payroll gives an indication of the plan sponsor's ability to pay off the UAAL. A declining ratio is desirable. A ratio above approximately 3.0 to 4.0 may indicate difficulty in discharging the unfunded liability in some circumstances.

Risk Metrics

5. Total Funding Value of Assets / Total Payroll
 - The ratio of assets to payroll gives an indication of both maturity and volatility. Many systems have ratios between 5.0 and 7.0. Social Security Replacement Plans may fall above that range. A high ratio can indicate volatility of contribution rates.
6. Total Actuarial Accrued Liability (AAL) / Total Payroll
 - This is similar to the above metric. It illustrates the expected ratio of assets to payroll when the plan is fully funded.
7. Standard Deviation of Investment Return / Total Payroll
 - The portfolio standard deviation measures the volatility of investment return. When divided by payroll, it gives the effect of a one standard deviation asset gain or loss as a percent of payroll. A market value asset loss of this magnitude or larger has roughly a 16% chance of occurring in any particular year.

Risk Metrics

| Valuation Date September 30, | Funded Ratio | | UAAL Amortization Period ³ | Total UAAL / Total Payroll ² | Total Funding Value of Assets / Total Payroll ² | Total AAL / Total Payroll ² | Standard Deviation of Investment Return / Total Payroll ² |
|---------------------------------|-----------------|-----------------|---|--|--|---|--|
| | Based on AVA | Based on MVA | | | | | |
| 2015 | 61 % | 63 % | 21 | 3.2 | 5.0 | 8.2 | n/a |
| 2016 ¹ | 60 | 60 | 20 | 3.5 | 5.3 | 8.8 | n/a |
| 2017 ¹ | 62 | 61 | 19 | 3.6 | 5.7 | 9.3 | n/a |
| 2018 ¹ | 61 | 60 | 18 | 3.9 | 6.1 | 10.0 | 80% |
| 2019 | 60 | 60 | 17 | 3.9 | 5.9 | 9.8 | 77 |
| 2020 | 61 | 60 | 16 | 3.9 | 6.0 | 9.9 | 78 |
| 2021 ¹ | 64 | 66 | 15 | 3.9 | 6.9 | 10.8 | 94 |
| 2022 | 64 | 60 | 14 | 3.7 | 6.6 | 10.2 | 81 |
| 2023 ¹ | 69 | 67 | Multiple | 3.0 | 6.6 | 9.6 | 83 |
| 2024 ¹ | 71 | 74 | Multiple | 2.7 | 6.6 | 9.3 | 90 |

¹ After changes in actuarial assumptions and/or plan provisions.

² Payroll for UAAL purposes (Total MPSERS Payroll).

³ Non-Hybrid and PPP UAAL amortization period. Starting with the September 30, 2023 valuation, layered amortization was introduced for the Non-Hybrid and PPP structures.

Disclaimers

- This presentation is intended to be used in conjunction with the September 30, 2024 pension actuarial valuation report. This presentation should not be relied upon for any purpose other than the purpose described in the valuation report.
- This presentation shall not be construed to provide tax advice, legal advice or investment advice.
- The actuaries submitting this presentation (Mita Drazilov, Louise Gates, and Christopher Smith) 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.