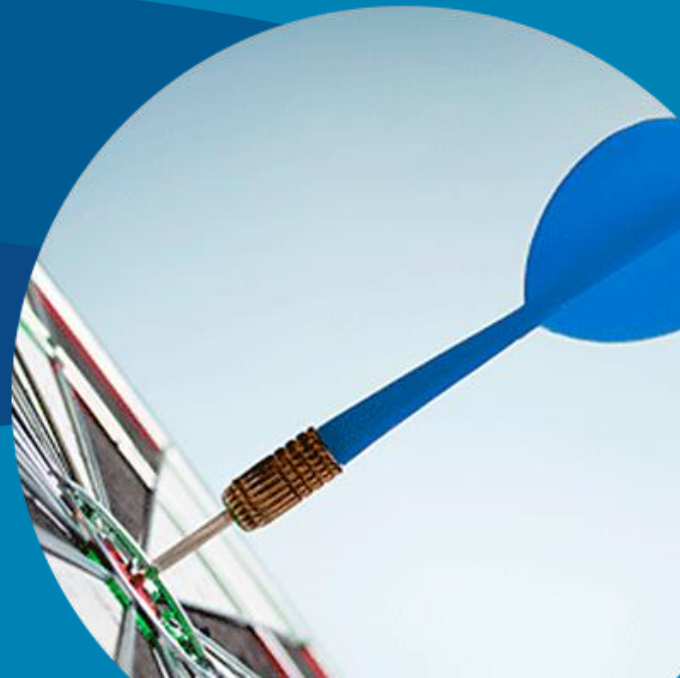


Michigan State Employees' Retirement System and Military Retirement Provisions

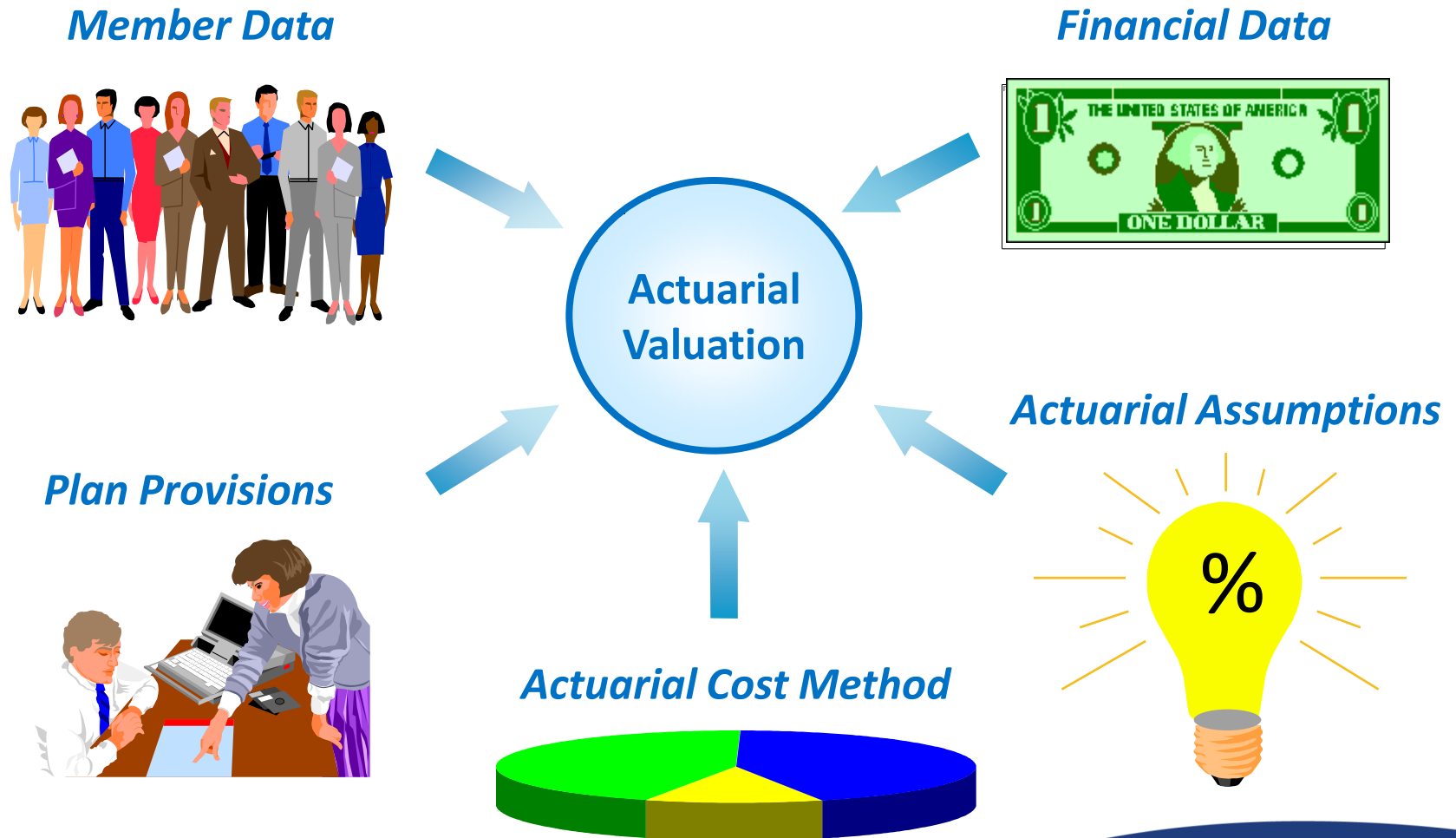
Pension Actuarial Valuation Results
as of September 30, 2018



September 30, 2018 Valuation

- Purpose of the September 30, 2018 valuation for each System is twofold:
 - Determine the employer contribution for fiscal year 2021
 - Measure the System's funding progress
- Reflects the Dedicated Gains Policy adopted by the Board of Trustees
 - For SERS, the investment return assumption was reduced from 7.00% to 6.70% as a result of the Policy
- Reflects the adoption of new assumptions in conjunction with the Experience Studies covering the periods October 1, 2012 through September 30, 2017 for SERS and October 1, 2015 through September 30, 2017 for MRP

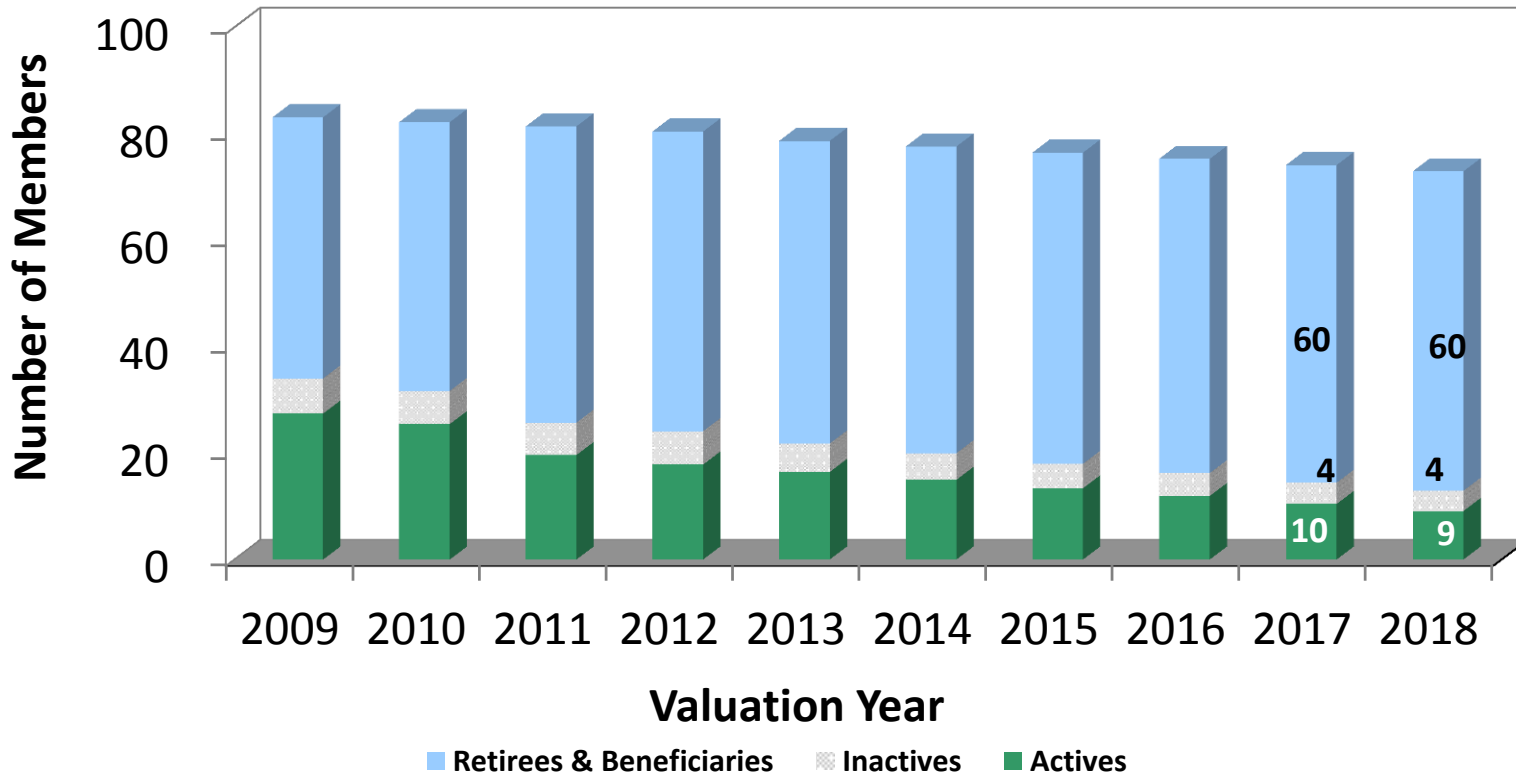
Actuarial Valuation Process



Dedicated Gains Policy

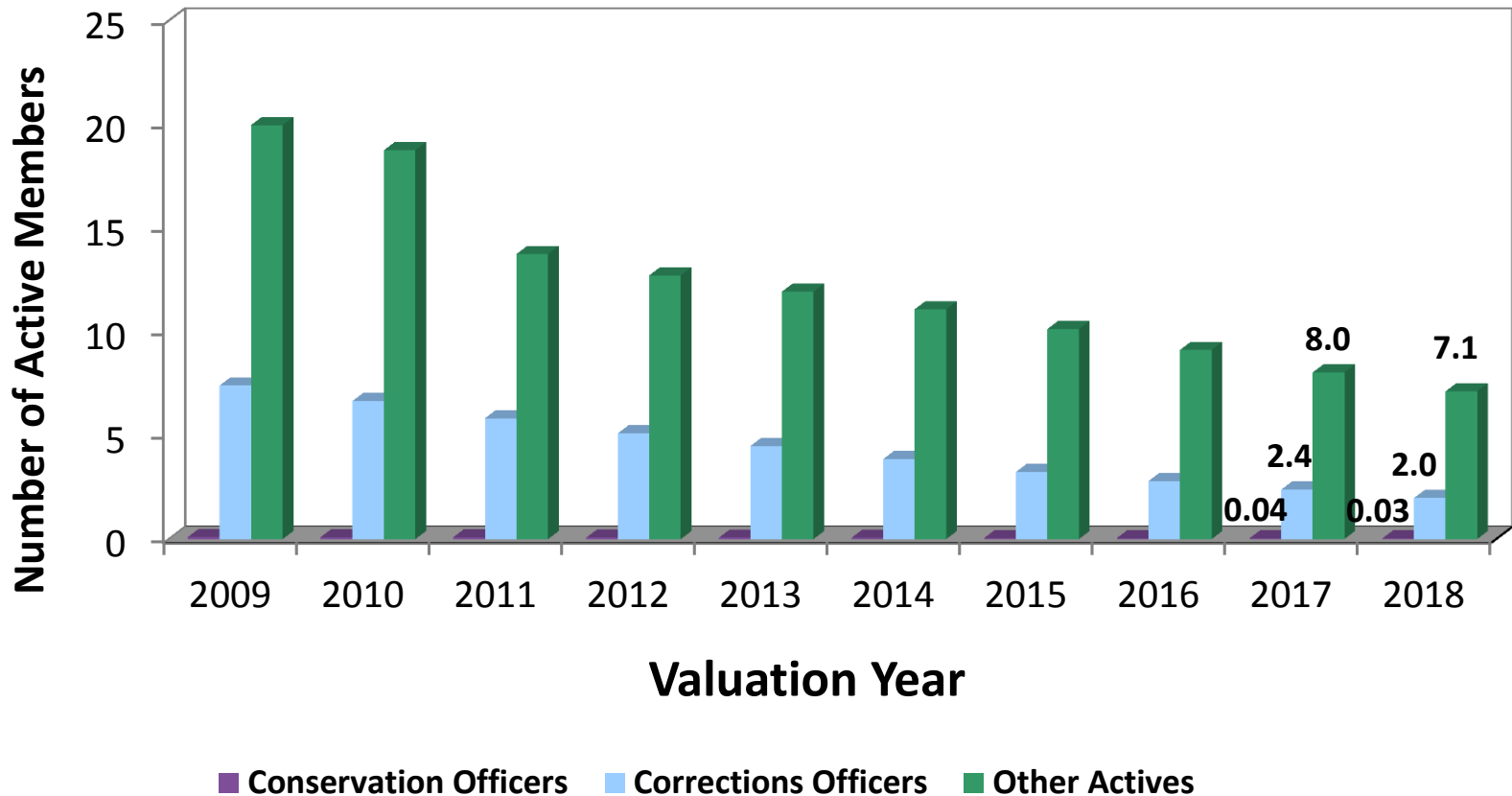
- Adopted in 2017
- The purpose of the Policy is to reduce the investment return assumption for actuarial valuation purposes if the fiscal year's market value rate of return exceeds a certain amount
- The immediate recognition of the market value return is expected to offset the increase in the computed employer contribution from where it otherwise would have been

Defined Benefit Plan Membership Data - SERS (Counts in Thousands¹)

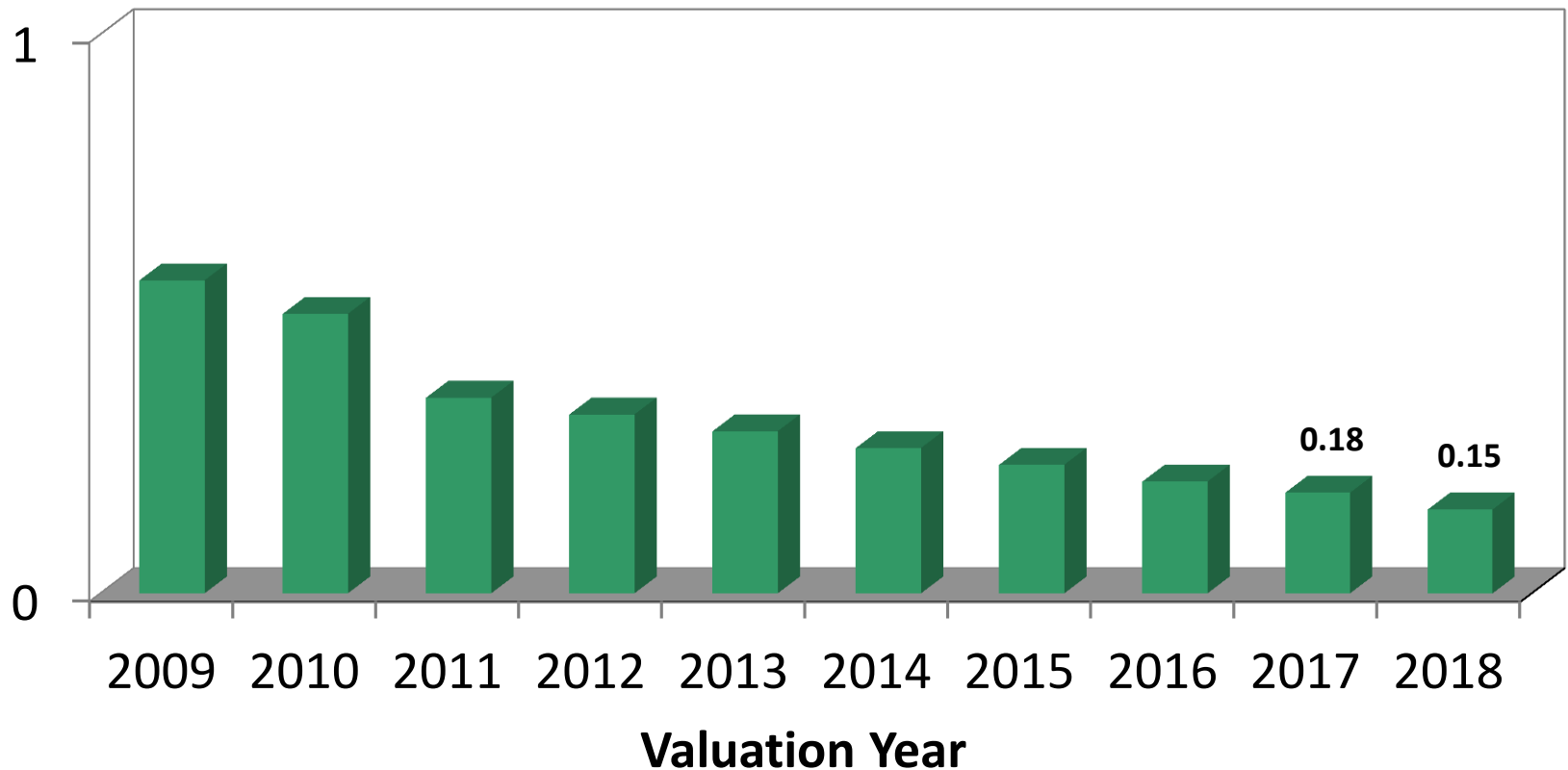


¹ Number counts rounded to zero decimal places

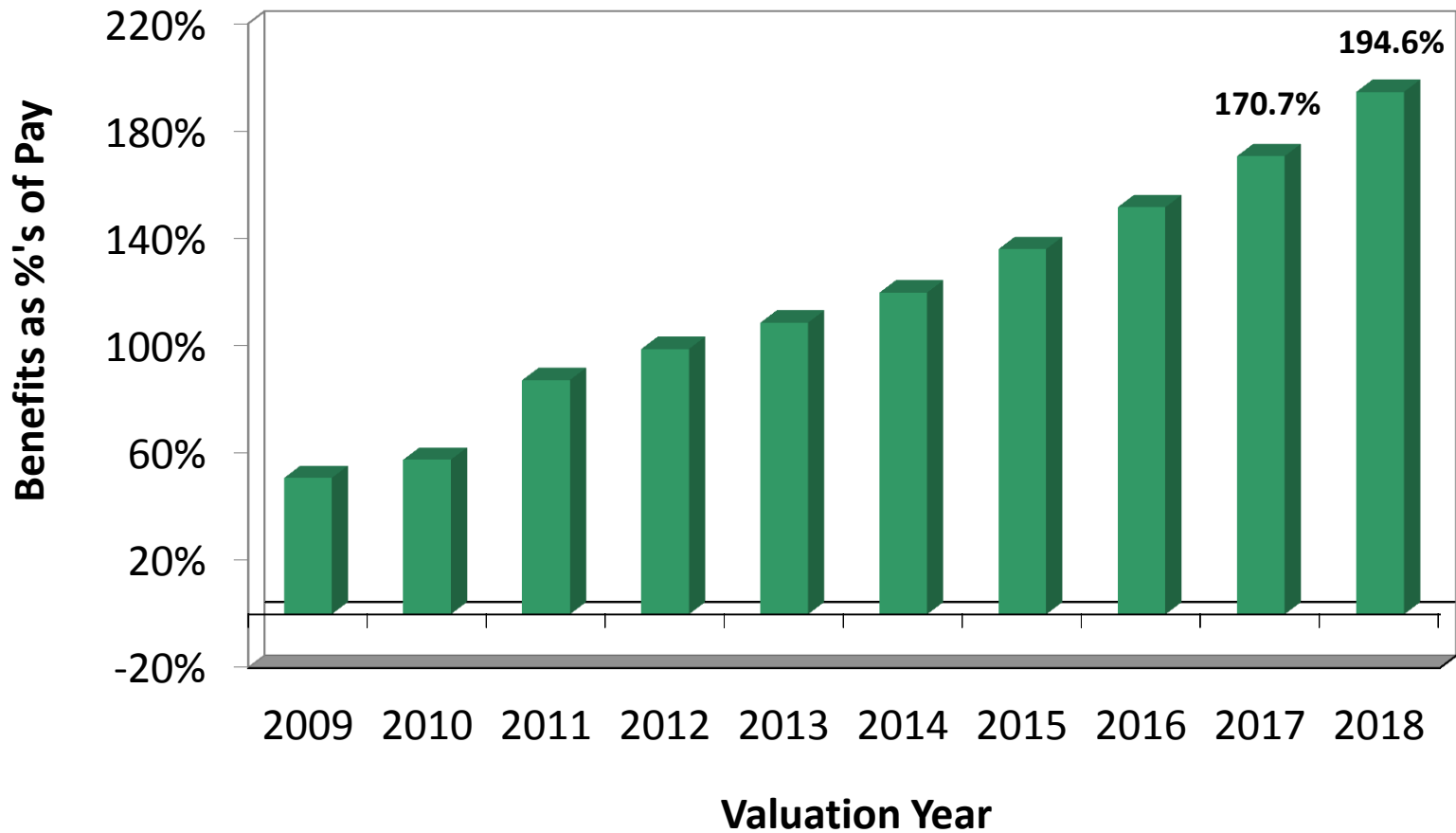
Defined Benefit Plan Active Members by Group - SERS (Counts in Thousands)



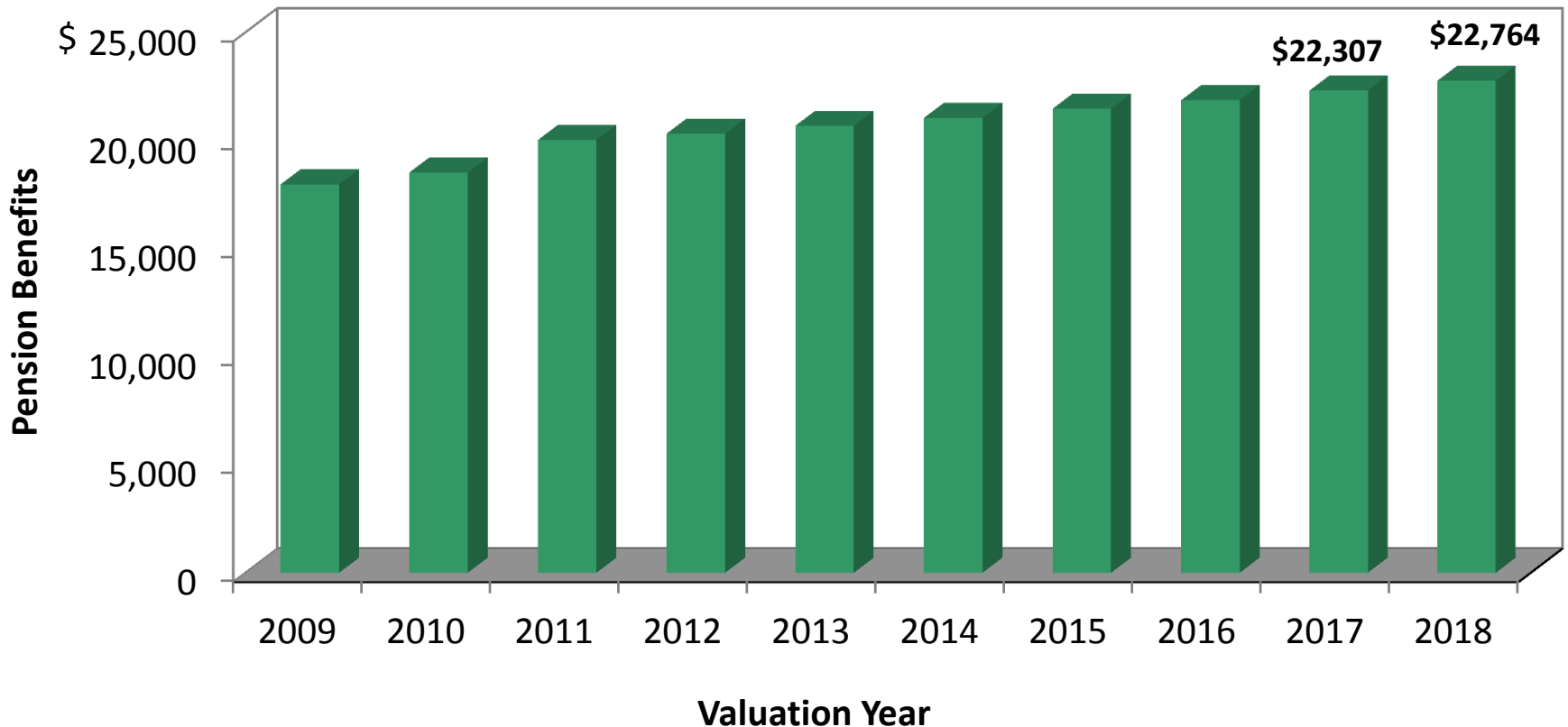
Ratio of Active Members to Pension Benefit Recipients - SERS



Pension Benefits Expressed as Percents of Active Member Pay - SERS

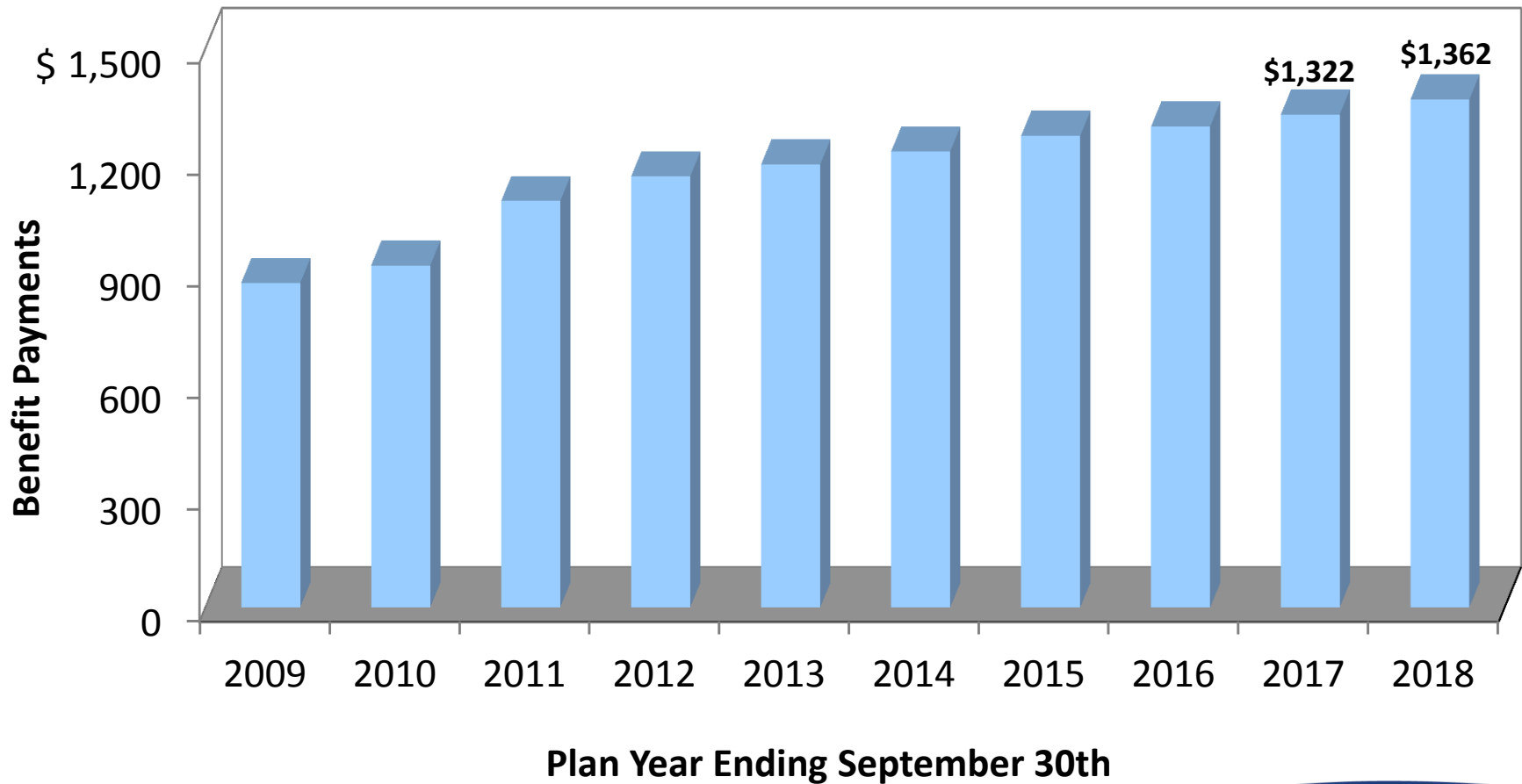


Average Annual Pensions - SERS



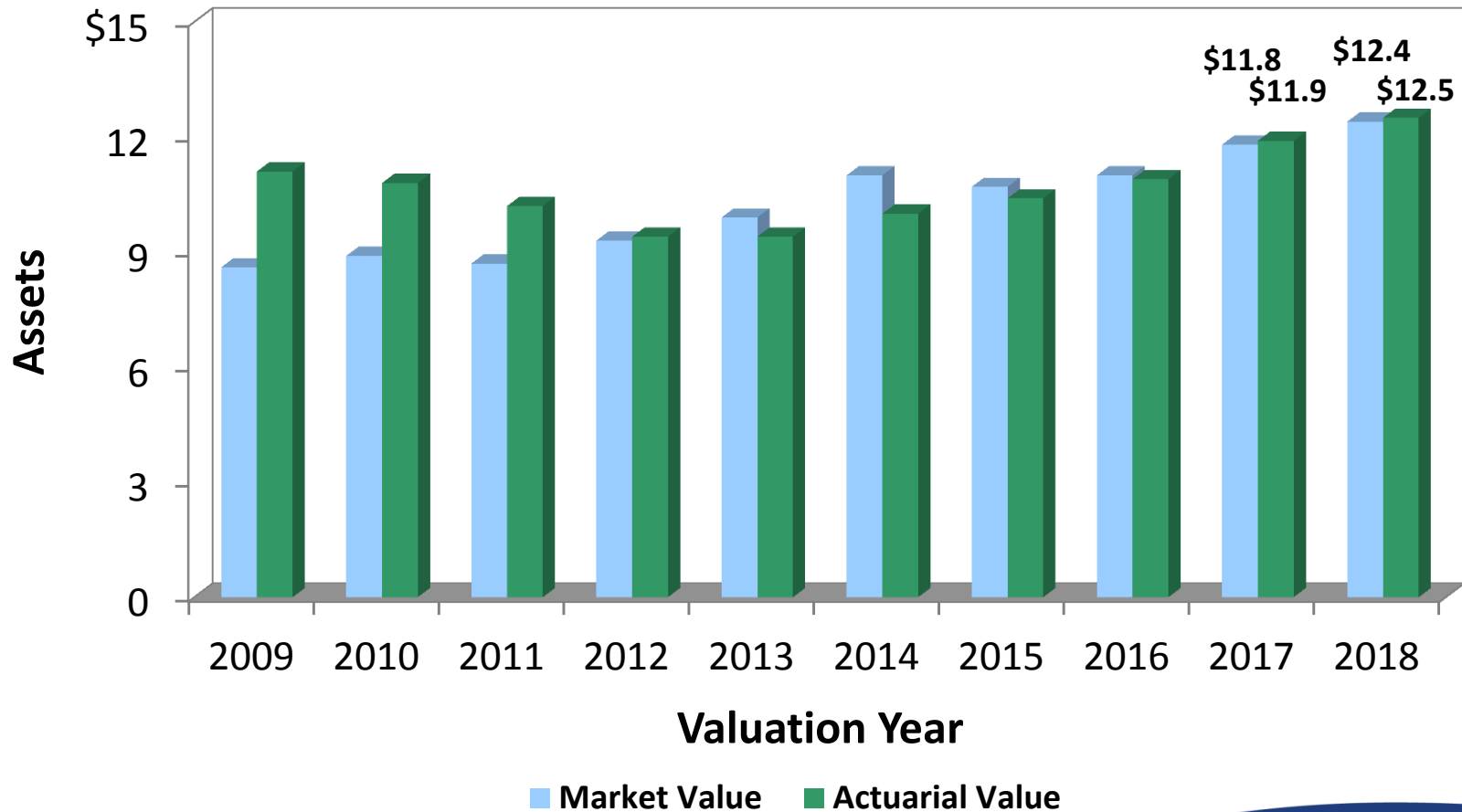
Total Benefit Payments by Plan Year - SERS

(Amounts in Millions)

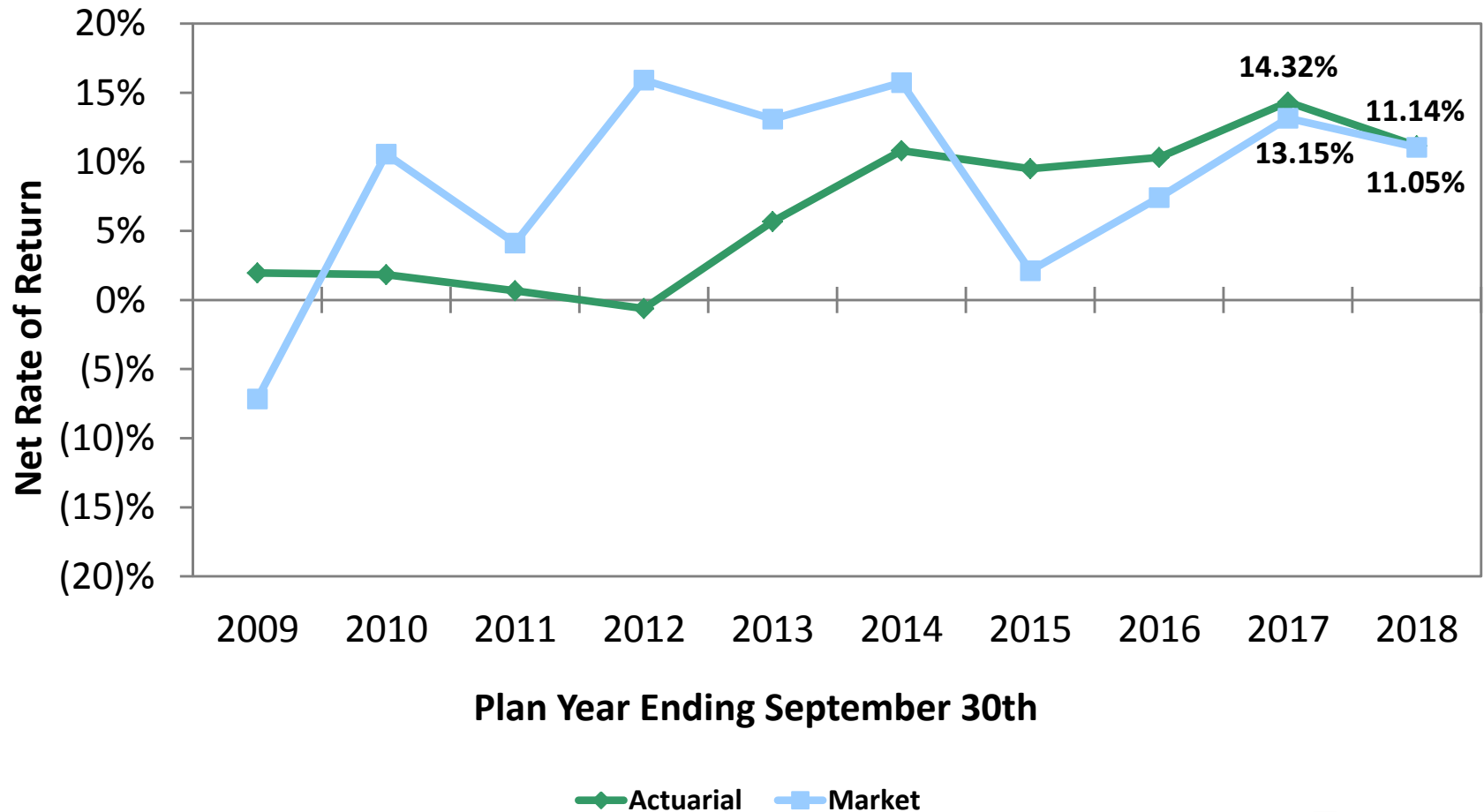


Growth of Pension Assets - SERS

(Amounts in Billions)

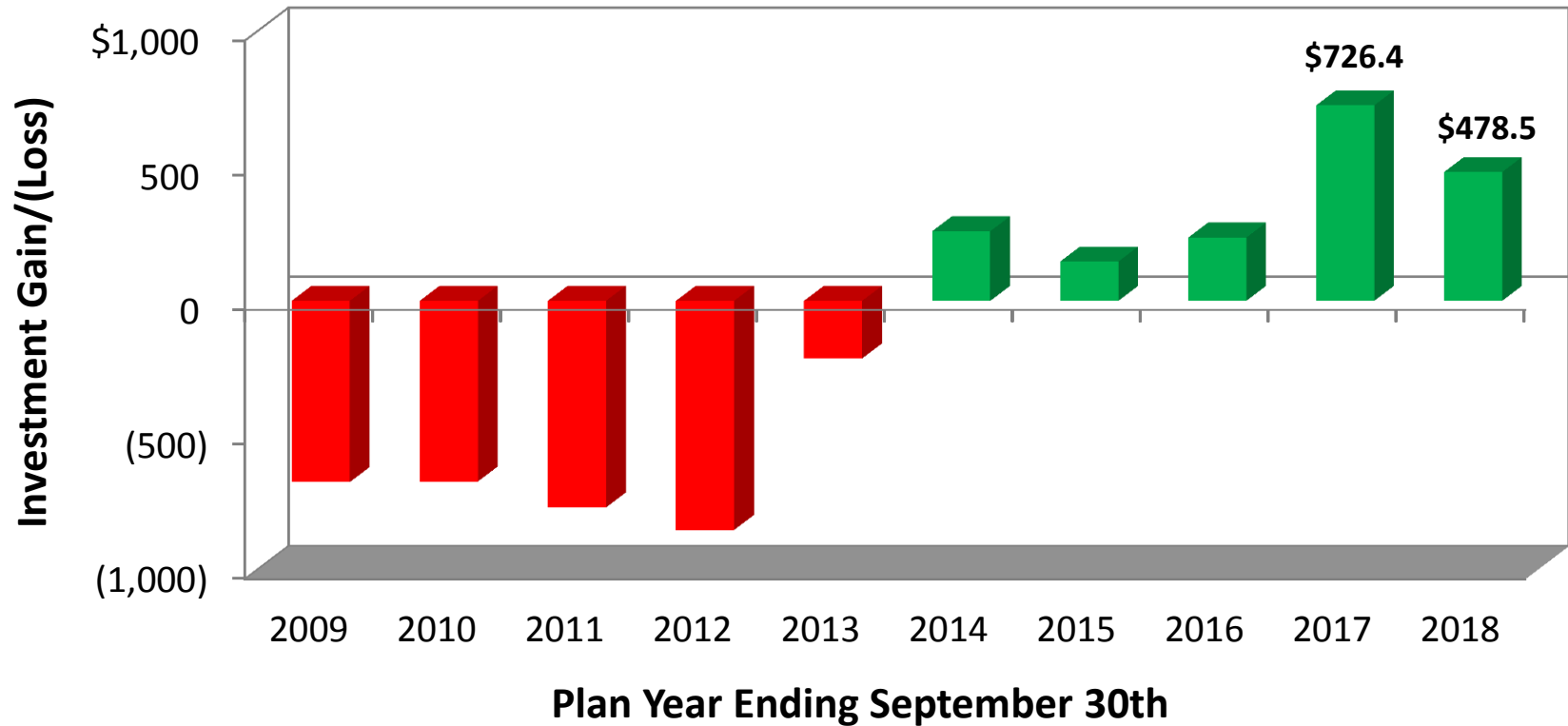


Actuarial & Market Net Rates of Return - SERS



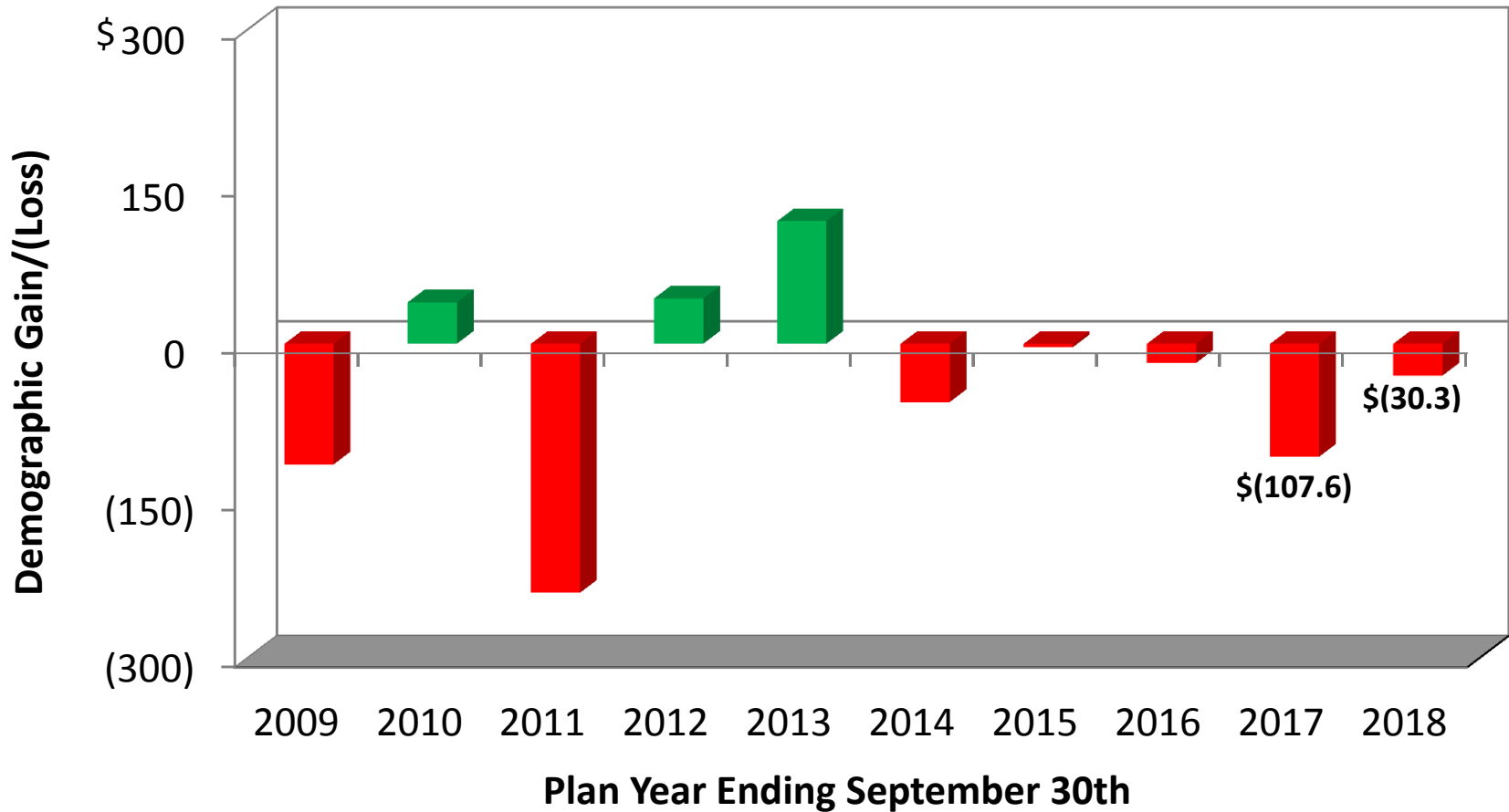
Investment Gain/(Loss) – SERS

(Amounts in Millions)



Demographic Gain/(Loss)- SERS

(Amounts in Millions)



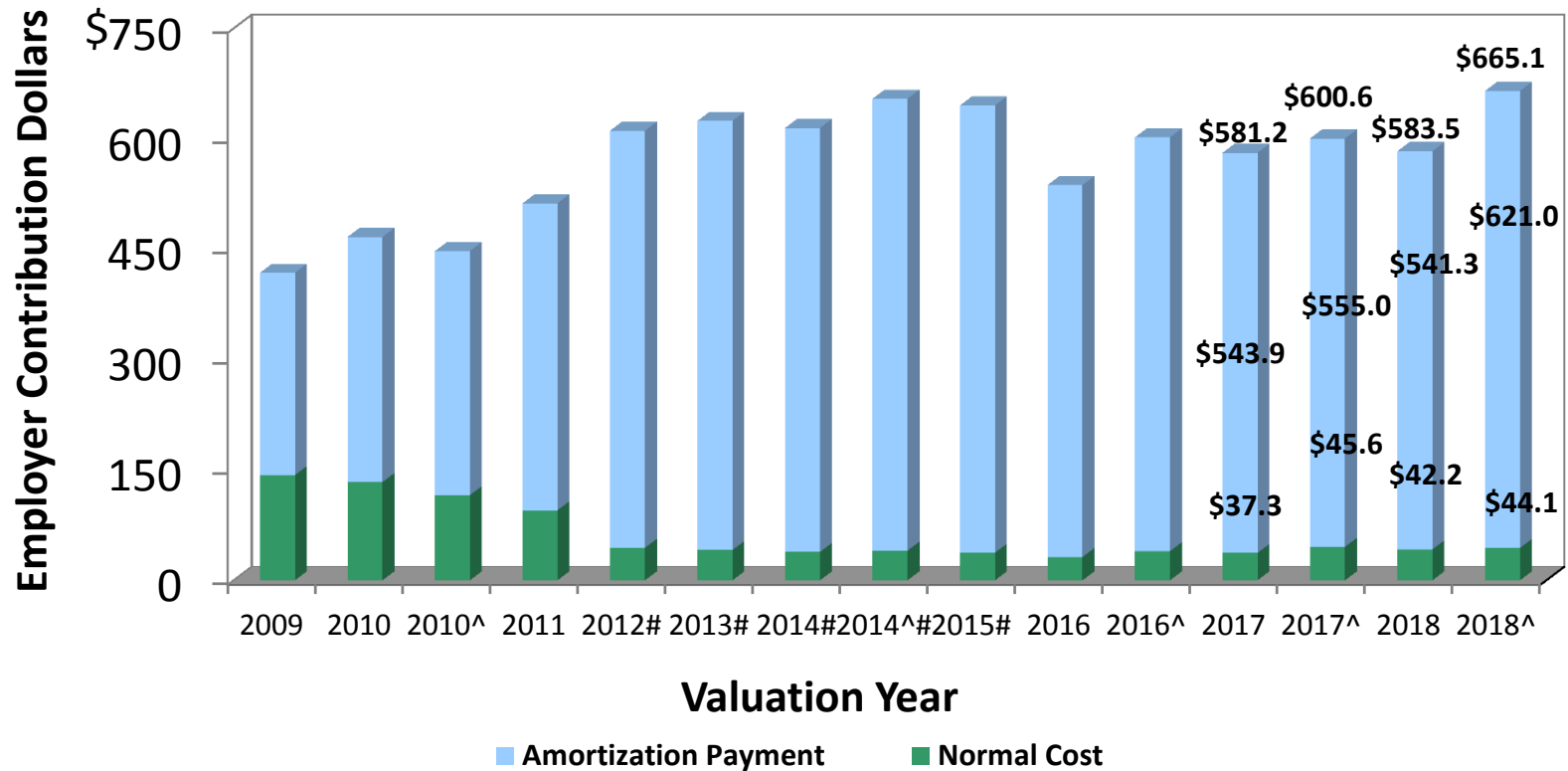
Gain/(Loss) by Type of Activity - SERS

(Amounts in Millions)

Plan Year Ending 9/30	2018	2017	2016	2015	2014
Rehires	\$ 0.00	\$ 0.00	\$ (4.90)	\$ (9.95)	\$ (5.61)
Retiree Deaths	(2.67)	(9.63)	0.87	3.40	(21.37)
Investments	478.52	726.40	235.04	145.96	258.49
Pay Increases	3.29	(59.91)	12.64	39.61	28.47
Withdrawals	(0.92)	2.40	(3.04)	(1.30)	(9.24)
Retirements	(25.42)	(29.69)	(13.85)	(31.33)	(9.86)
Other	(4.53)	(10.80)	(9.89)	(3.62)	(37.95)
Total	448.27	618.77	216.87	142.77	202.93

Employer Contribution Dollars - SERS

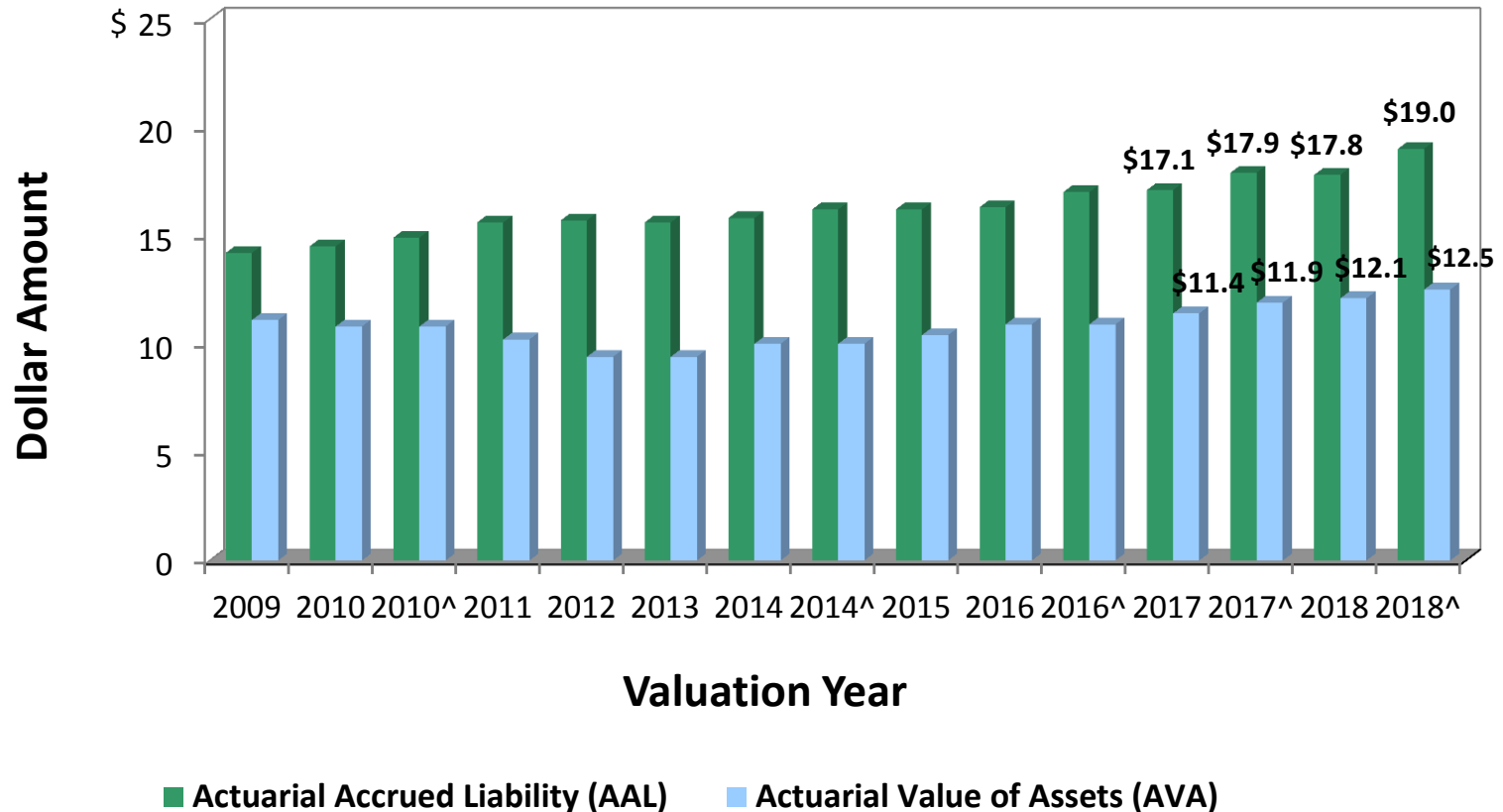
Valuation as of September 30 (Amounts in Millions)



^ Revised actuarial assumptions and/or methods.

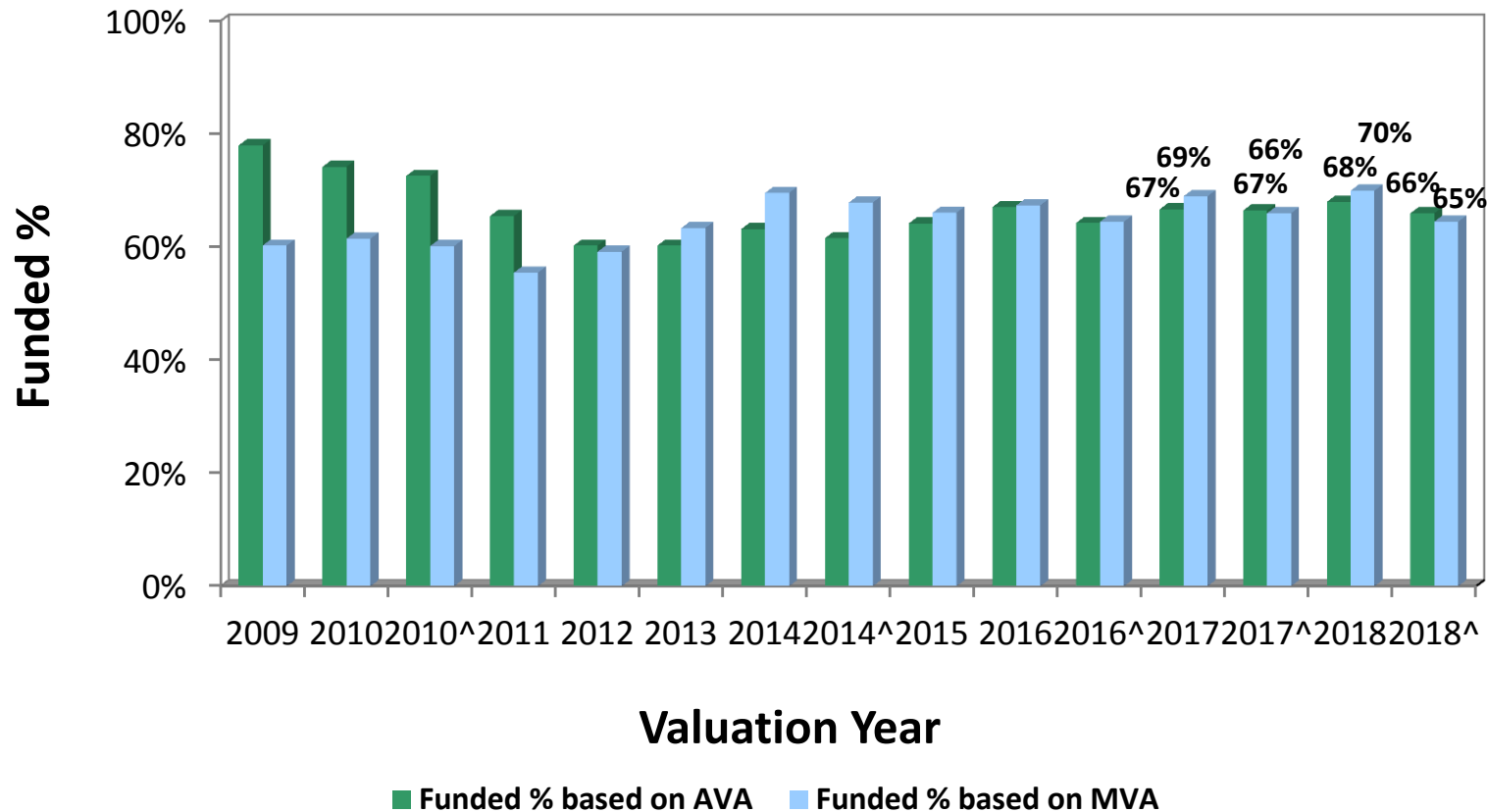
Includes ERI payment.

Actuarial Accrued Liability Compared to Actuarial Value of Assets – SERS (Amounts in Billions)



^ Revised actuarial assumptions and/or methods.

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



^ Revised actuarial assumptions and methods.

Military Retirement Provisions

Select Valuation Results

	Results as of	
	September 30, 2018	September 30, 2017
Total Computed Employer Contribution	\$ 657,103	\$ 3,542,423
Amortization Period of UAAL (years)	18	19
Total Accrued Liability	\$ 56,801,686	\$ 49,950,120
Funding Value of Assets	<u>17,213,520</u>	<u>4,602,232</u>
Unfunded Actuarial Accrued Liabilities (UAAL)	\$ 39,588,166	\$ 45,347,888
	Plan Membership as of	
	September 30, 2018	September 30, 2017
Current Employees	10,554	10,394
Retired Members Including Beneficiaries	4,455	4,362
Inactive Employees ⁽¹⁾	<u>911</u>	<u>563</u>
Total Participants	15,920	15,319

(1) For the September 30, 2017 valuation, inactive counts include Army inactive employees only. Air inactive employees were not provided. Beginning with the September 30, 2018 valuation, the System was able to provide all inactive employees.

Military Retirement Provisions

Other Annual Valuation Comments

- Valuation results based upon a 6.75% discount rate based on the recent experience study
- Computed employer contribution is for fiscal year 2021
 - Normal cost component includes an administrative expense contribution of \$396,294
 - Reflects an additional employer contribution of \$35.8 million in FY 2019
- UAAL amortization period of 18 years
- Fiscal year 2018 benefit payments were reported to be \$3,939,098

Disclaimers

- This presentation is intended to be used in conjunction with the September 30, 2018 pension annual actuarial valuation reports issued for SERS and MRP in 2019. This presentation should not be relied on 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 and Louise Gates) 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.