



Cavanaugh Macdonald
CONSULTING, LLC

The experience and dedication you deserve

Montana Public Employees' Retirement Board

Valuation Results June 30, 2017

Presented October 5, 2017

Edward A. Macdonald ASA, FCA, MAAA

Todd B. Green ASA, FCA, MAAA

Matthew Yonz ASA



➤ Basic Retirement Funding Equation

$$C + I = B + E$$

C = Contributions

I = Investment Income

B = Benefits Paid

E = Expenses (administration)

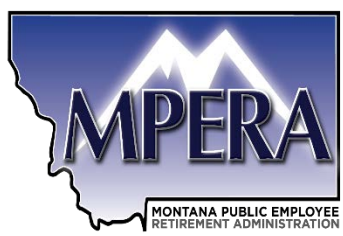
$$C + I = B + E$$

B depends on

- Plan Provisions
- Experience

C depends on

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



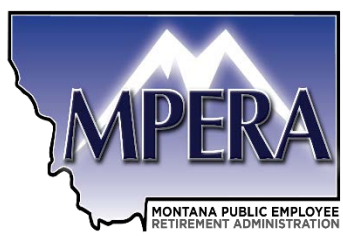
Results

➤ Asset returns

- Market asset returns averaged 11.78% vs. 7.75% expected (4.03% greater than expected).
- Actuarial asset returns averaged 8.10% vs. 7.75% expected (0.35% greater 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 indicates unrecognized investment losses will be recognized over the next two years followed by an actuarial gain.

- Changes since the previous valuation
 - Assumptions have been updated to reflect experience study for the six-year period ending June 30, 2016, effective July 1, 2017
 - Economic Assumption Changes
 - Price Inflation was reduced from 3.00% to 2.75%
 - Wage Inflation was reduced from 4.00% to 3.50%
 - Investment Return was reduced from 7.75% to 7.65%
 - Demographic Assumption Changes
 - Pre and post-retirement non-disabled mortality assumption was updated
 - Withdrawal rates were updated for all systems except JRS and HPORS
 - Merit scale was updated for all systems except for HPORS

- **Funded Ratios**
 - Funded ratios decreased for all systems except for JRS and VFCA.
- **Amortization Periods for Unfunded Liability**
 - Amortization periods decreased for all systems except for PERS, FURS and HPORS. The amortization periods for both GWPORS and HPORS exceed 30 years. Both SRS and GWPORS now amortize.
- **Actuarial Experience**
 - In general, actuarial investment experience exceeded the assumed rate of return which was offset by demographic losses and increases due to changes of assumptions.



Comments on Valuation



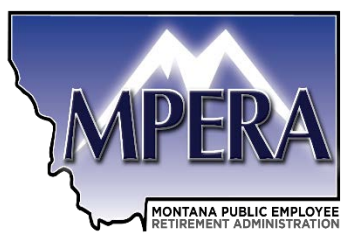
➤ Contributions

– PERS

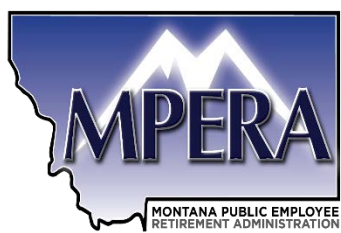
– In accordance with statute, the employer contribution rate was increased by 0.1%.

– SRS

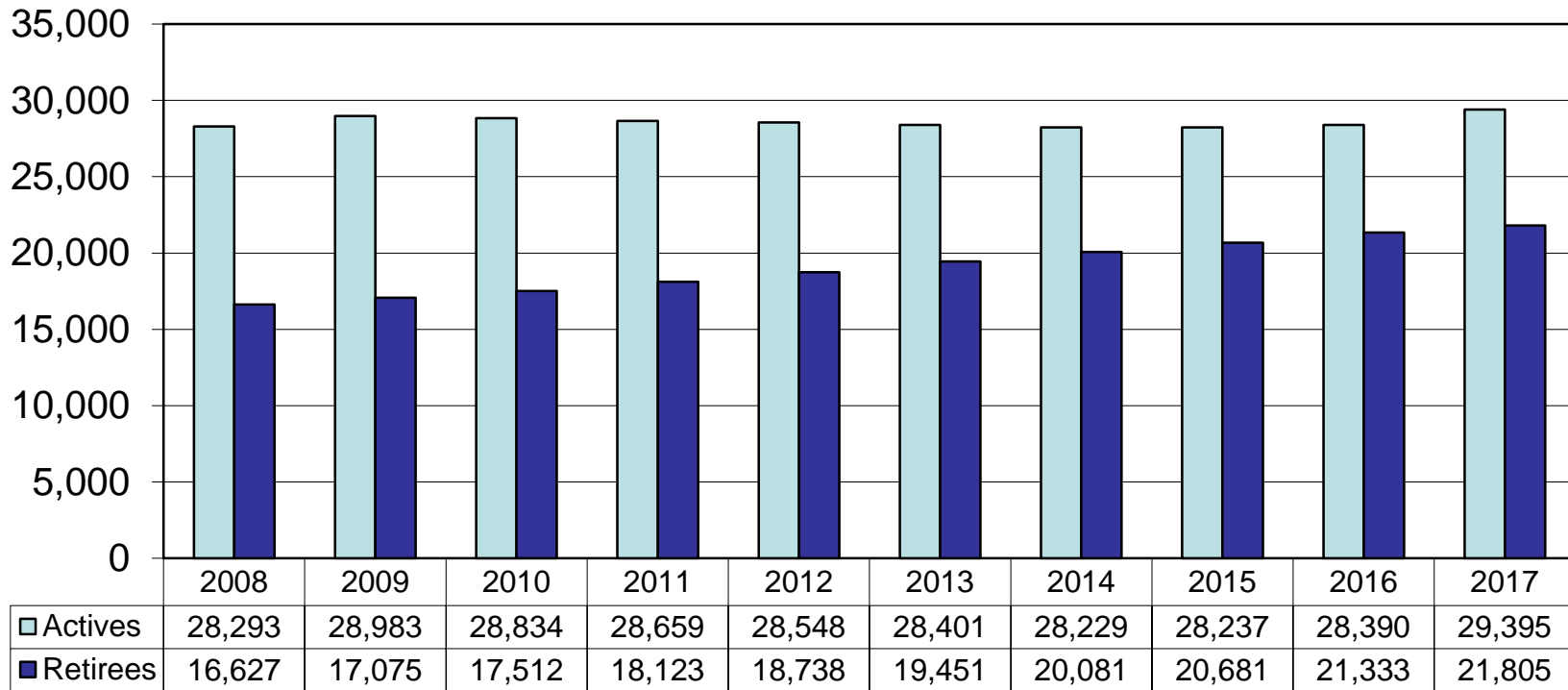
– Member contribution rate was increased from 9.245% to 10.495%. Employer contribution rate was increased from 10.115% to 13.115%.



PERS Valuation Results



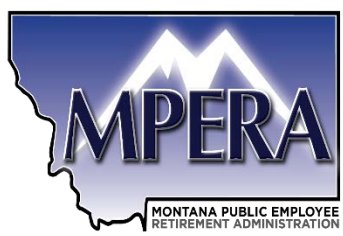
PERS Active and Retired Membership



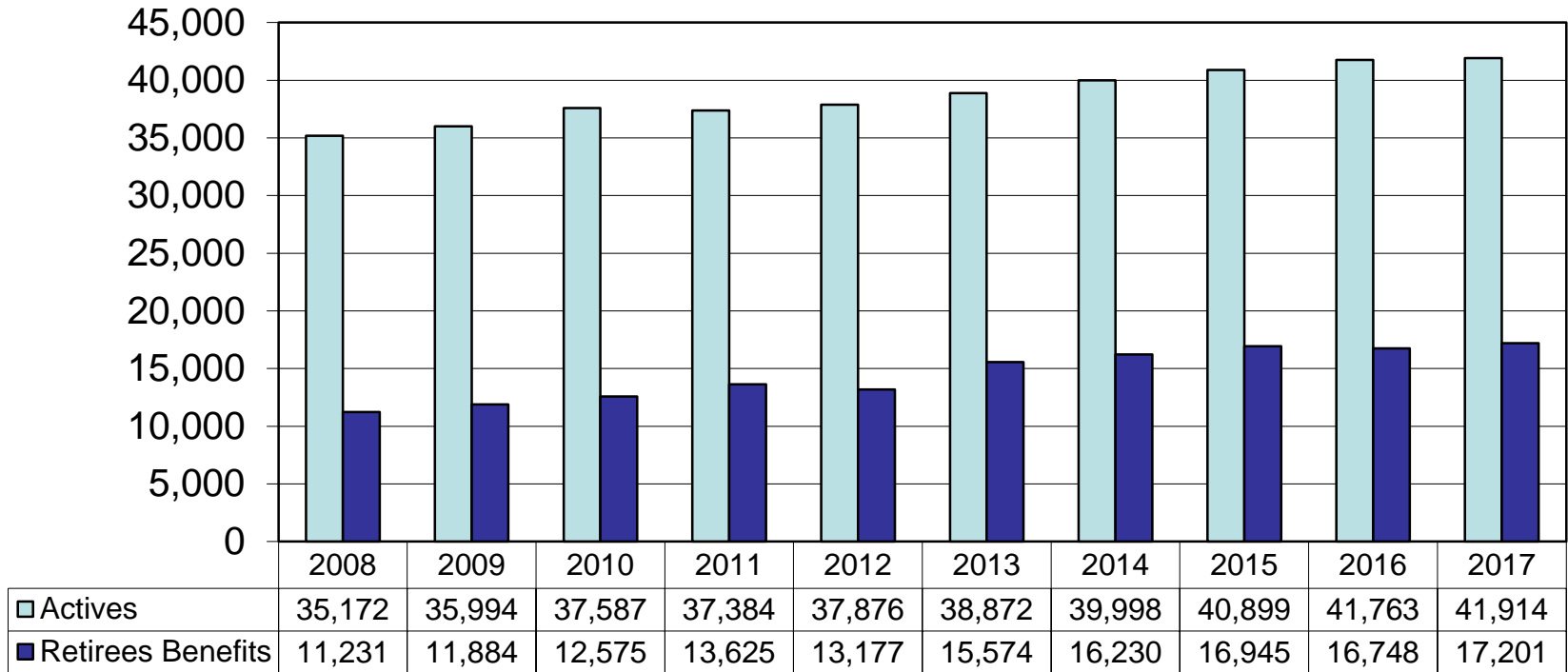
0.42% annual increase for active members since 2008; 3.54% increase for 2017.

3.06% annual increase for retired members since 2008; 2.21% increase for 2017.

0.59 retirees per active 9 years ago; 0.74 retirees per active now.

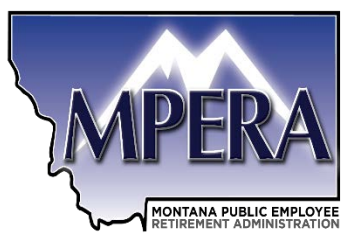


PERS Average Salary and Benefits

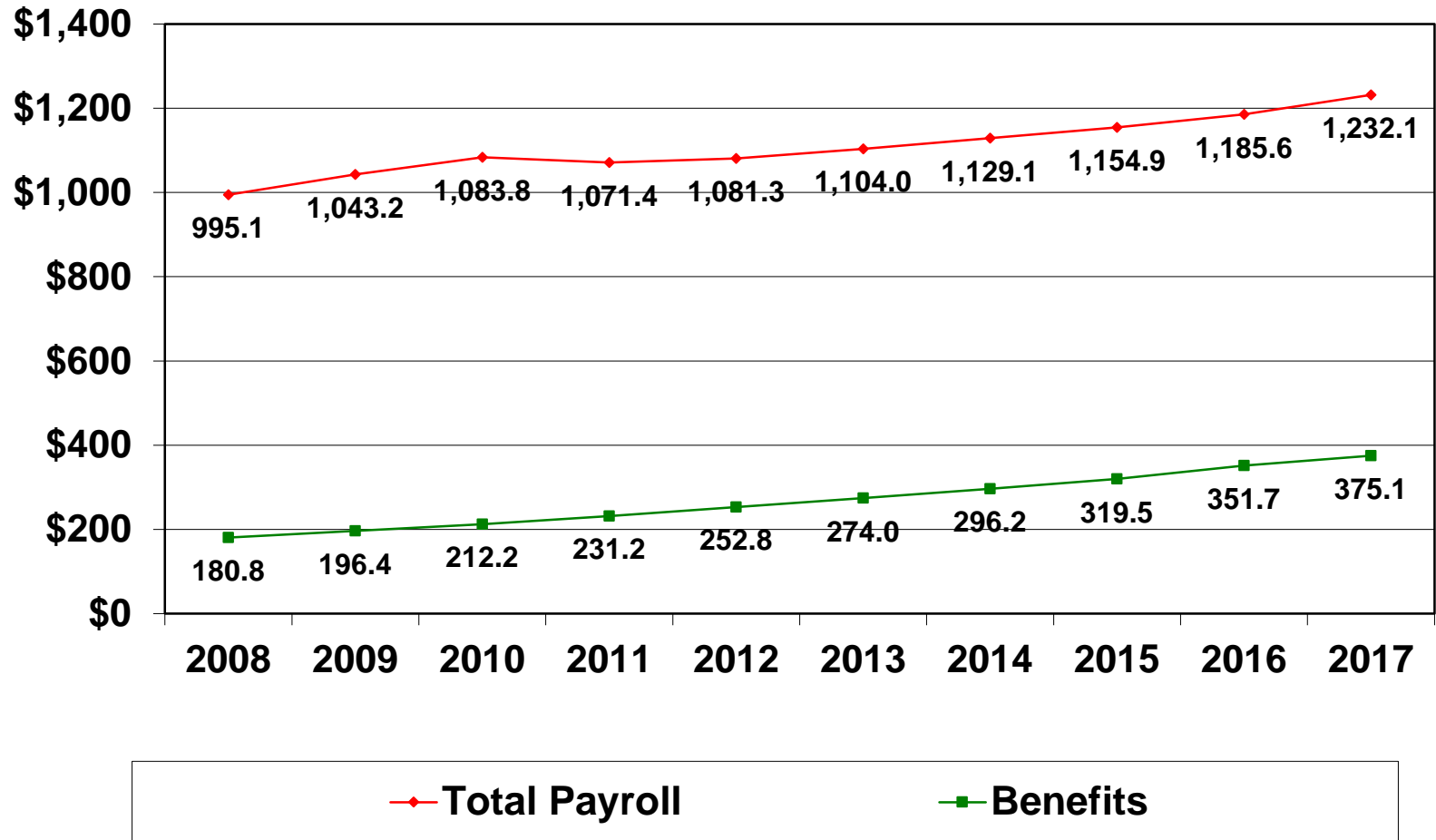


2.0% annual increase for average salary since 2008; 0.4% increase for 2017.

4.9% annual increase for average benefits since 2008; 2.7% increase for 2017.

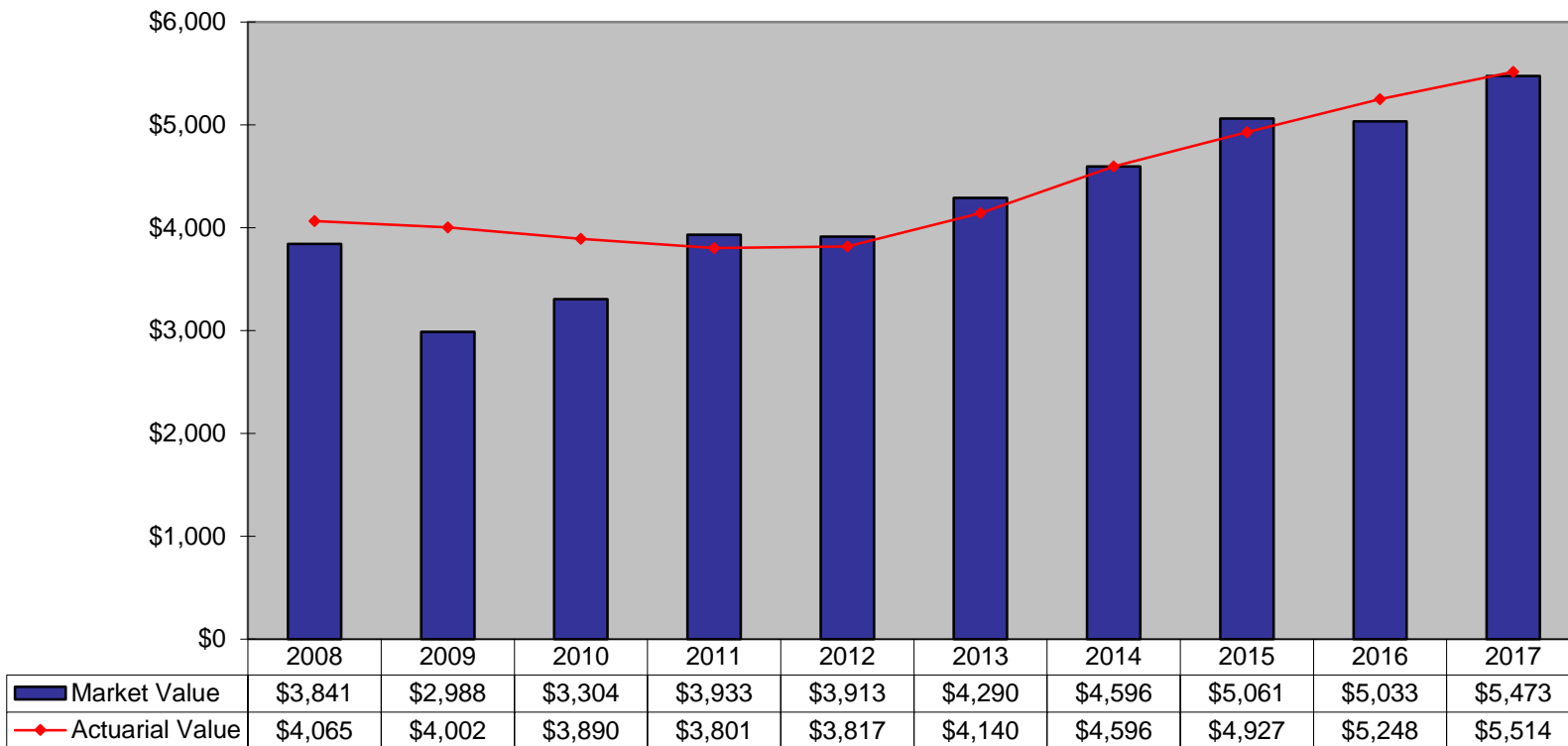


PERS Payroll & Benefits (\$ Millions)

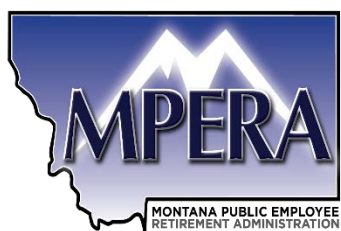




PERS Assets (\$ Millions)



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Market Return	(4.9)%	(20.9)%	12.9%	21.7%	2.3%	13.0%	17.1%	4.6%	2.0%	11.9%
Actuarial Return	7.6%	(0.2)%	(1.2)%	(0.1)%	3.3%	11.9%	13.2%	9.6%	9.3%	8.1%



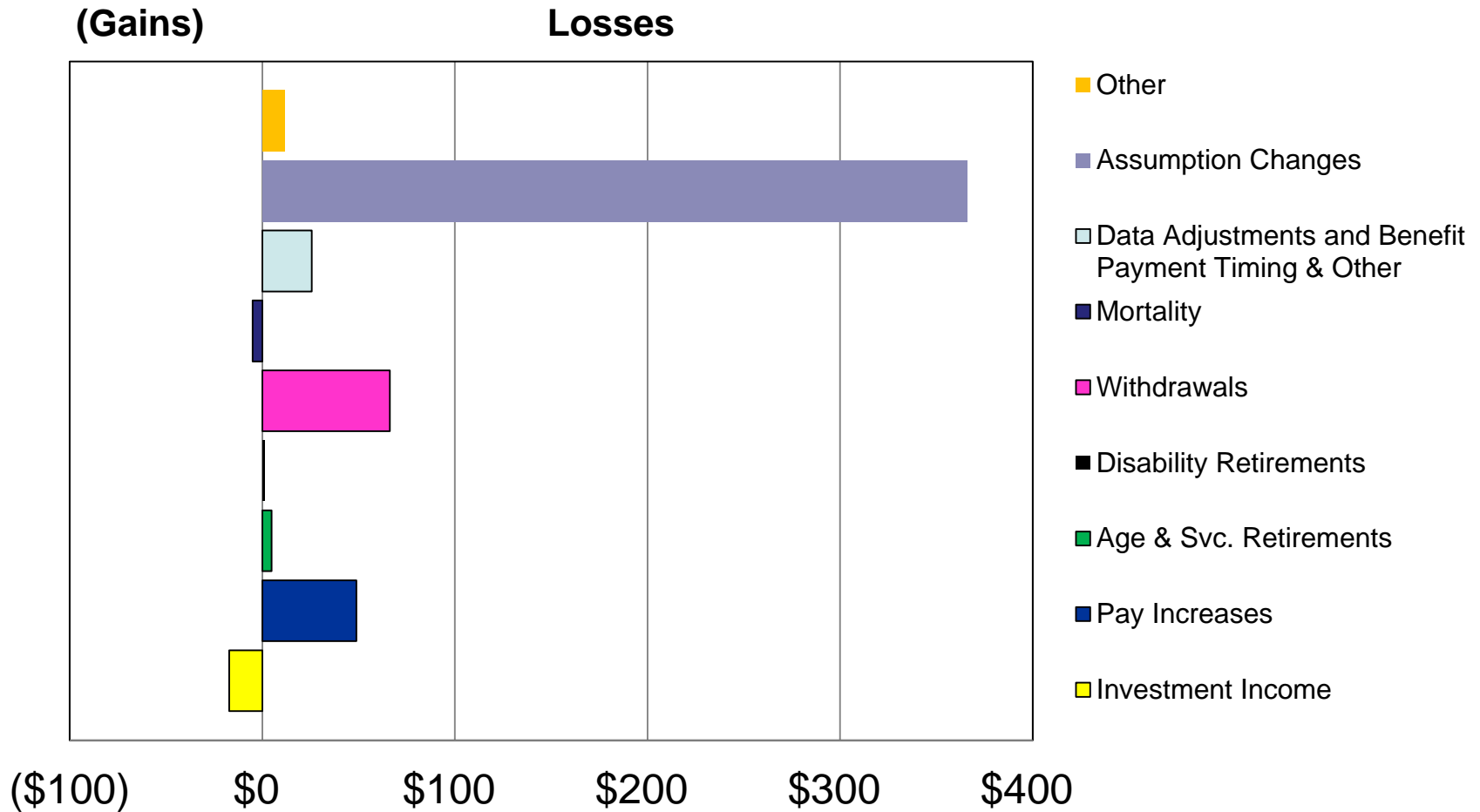
PERS Funding Results

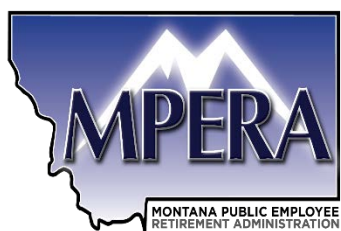


	July 1, 2016 Valuation	July 1, 2017 Valuation
Total Normal Cost Rate	11.34%	9.86%
Administrative Expense Load	0.27%	0.26%
Rate to Amortize UAL	4.72%	6.31%
Transfer to DB Education Fund	<u>0.04%</u>	<u>0.04%</u>
Statutory Funding Rate*	16.37%	16.47%
Actuarial Accrued Liability	\$6,788.0 million	\$7,578.4 million
Actuarial Value of Assets	\$5,247.7 million	\$5,514.0 million
Unfunded Accrued Liability	\$1,540.3 million	\$2,064.4 million
Funded Ratio	77.31%	72.76%
Amortization Period*	26 Years	30 Years

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

PERS 2017 (Gain)/Loss Analysis (\$ Millions)





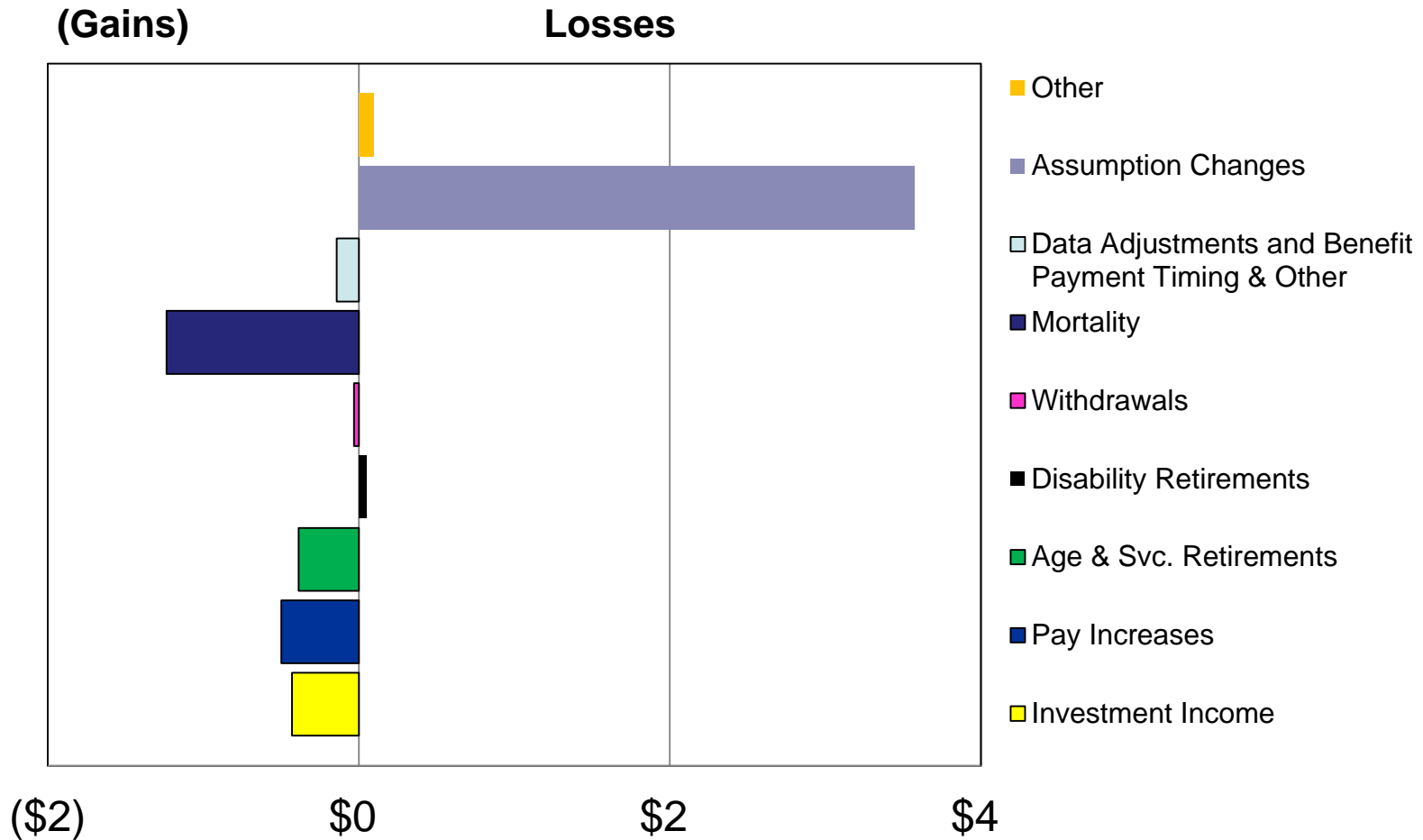
Valuation Results – Other Plans



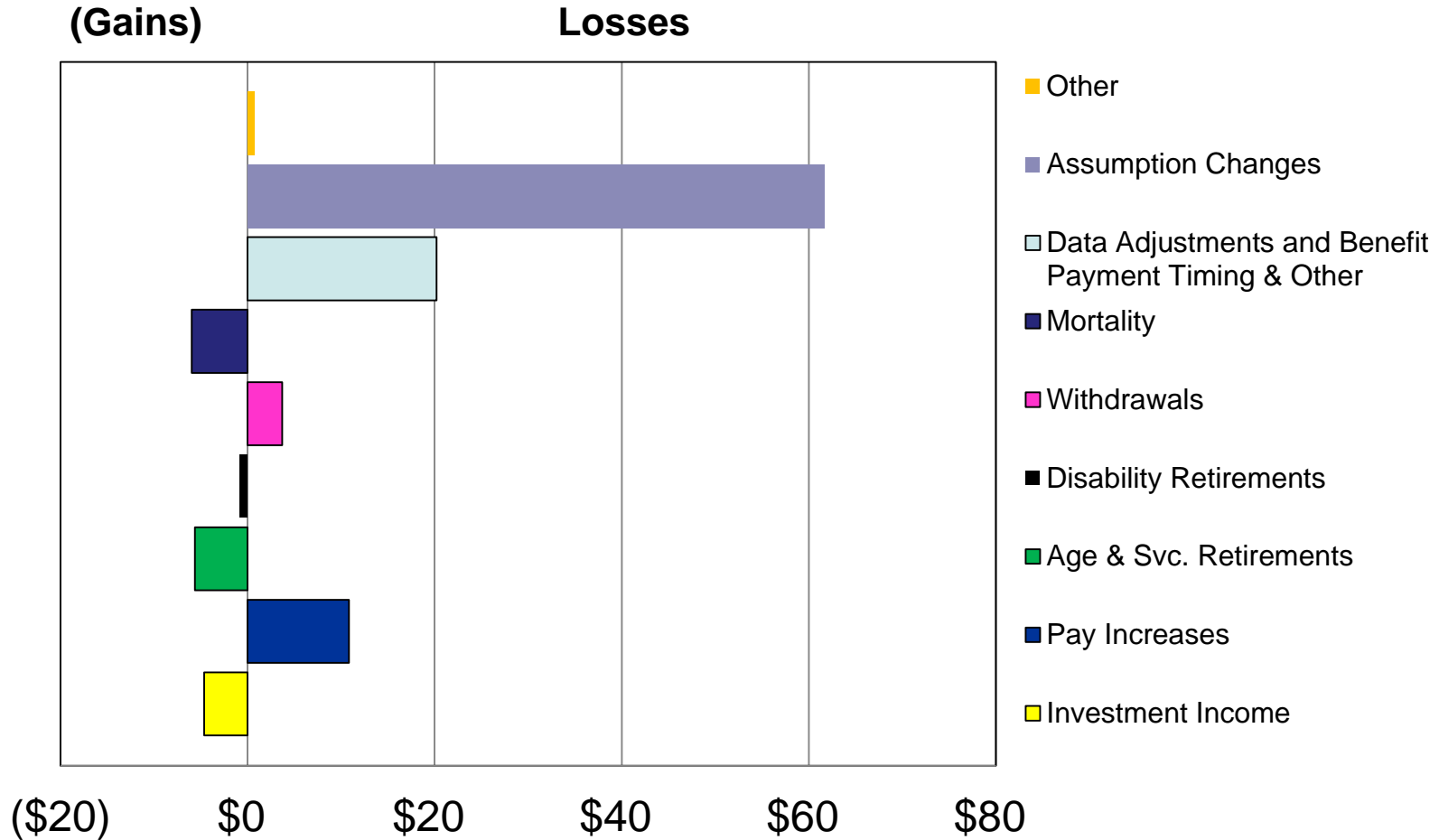
System	Funded Ratio		Amortization Period		Statutory Rate		30-Year Funding Rate	
	2016	2017	2016	2017	2016	2017	2016	2017
JRS	166%	167%	0	0	32.81%	32.81%	(3.43%)	(6.04%)
HPORS	66%	64%	28	37	51.38%	51.38%	50.20%	54.02%
SRS	83%	81%	Does not amortize	25	19.36%	23.61%	22.75%	22.82%
GWPORS	84%	81%	Does not amortize	70	19.56%	19.56%	21.64%	20.73%
MPORS	69%	69%	18	16	52.78%	52.78%	45.79%	44.58%
FURS	78%	76%	9	10	57.67%	57.67%	39.02%	40.28%
VFCA	80%	81%	7	6	5% of premium taxes		\$1,109,996	\$915,642

* The actual contributions for the fiscal year ending 2016 and 2017 were \$2,036,297 and \$2,064,561, respectively.

JRS 2017 (Gain)/Loss Analysis (\$ Millions)



Public Safety 2017 (Gain)/Loss Analysis (\$ Millions)



PERS DCRP Long Term Disability Plan

	July 1, 2016 Valuation	July 1, 2017 Valuation
Total Normal Cost Rate	0.30%	0.28%
Rate to Amortize UAL	<u>0.00%</u>	<u>0.02%</u>
Statutory Funding Rate	0.30%	0.30%
Actuarial Accrued Liability	\$3,591,249	\$3,967,262
Actuarial Value of Assets	\$3,118,397	\$3,456,936
Unfunded Accrued Liability	\$472,852	\$510,326
Funded Ratio	86.83%	87.14%
Amortization Period	Does not amortize	19 Years
30-Year Funding Rate	0.31%	0.29%