

Municipal Employees' Annuity And Benefit Fund of Chicago

Actuarial Valuation as of December 31, 2016

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Discussion Topics – Valuation and Projections



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- **Summary of Valuation Results**
- **50-Year Projection**
- **GASB 67, Membership, and Assets**
- **Appendix**

Purposes of the Actuarial Valuation

- Report the Fund's actuarial assets
- Calculate the Fund's liabilities
- Determine the net pension liability and pension expense under Governmental Accounting Standards Board (GASB) Statements 67 and 68
- Calculate the Actuarially Determined Contribution (ADC) for the upcoming year and compare to the statutorily required contribution
- Provide information for annual financial statements

Summary of Valuation Highlights

- **The Fund is in imminent danger of insolvency**
 - Projected to become insolvent in 9 years (during 2025)
 - Projected to have less assets than accumulated member contributions in 6 years
- Market value of assets returned 6.3% for year ended 12/31/2016
 - Gradual recognition of deferred gains resulted in 8.0% return on actuarial value of assets
- The funded ratio declined from last year primarily due to contributions being less than the cost of benefits accrued during the year and interest on the unfunded liability
 - Market value basis decreased from 32.4% (as of 12/31/2015) to 29.5% (as of 12/31/2016)
 - Actuarial value basis decreased from 32.9% to 30.5%
- Employer contributions booked for 2017 and to be received in 2018 are 1.25 times the applicable member contributions from 2015 (\$130,851,422), or \$163,564,278
- The actuarially determined contribution for 2017 is \$1,005,456,621
 - Shortfall of over \$840,000,000
 - Would require a 7.68 multiple

Valuation Results (\$ in millions)

	December 31, 2016	December 31, 2015*
Actuarial Accrued Liability:		
• Active Members	\$5,896	\$5,835
• Inactive Members	434	392
• Retirees and Beneficiaries	<u>8,725</u>	<u>8,428</u>
Total	\$15,055	\$14,655
Actuarial Assets	<u>4,590</u>	<u>4,815</u>
Unfunded Accrued Liability	\$10,465	\$9,840
Funded Ratio	30.5%	32.9%

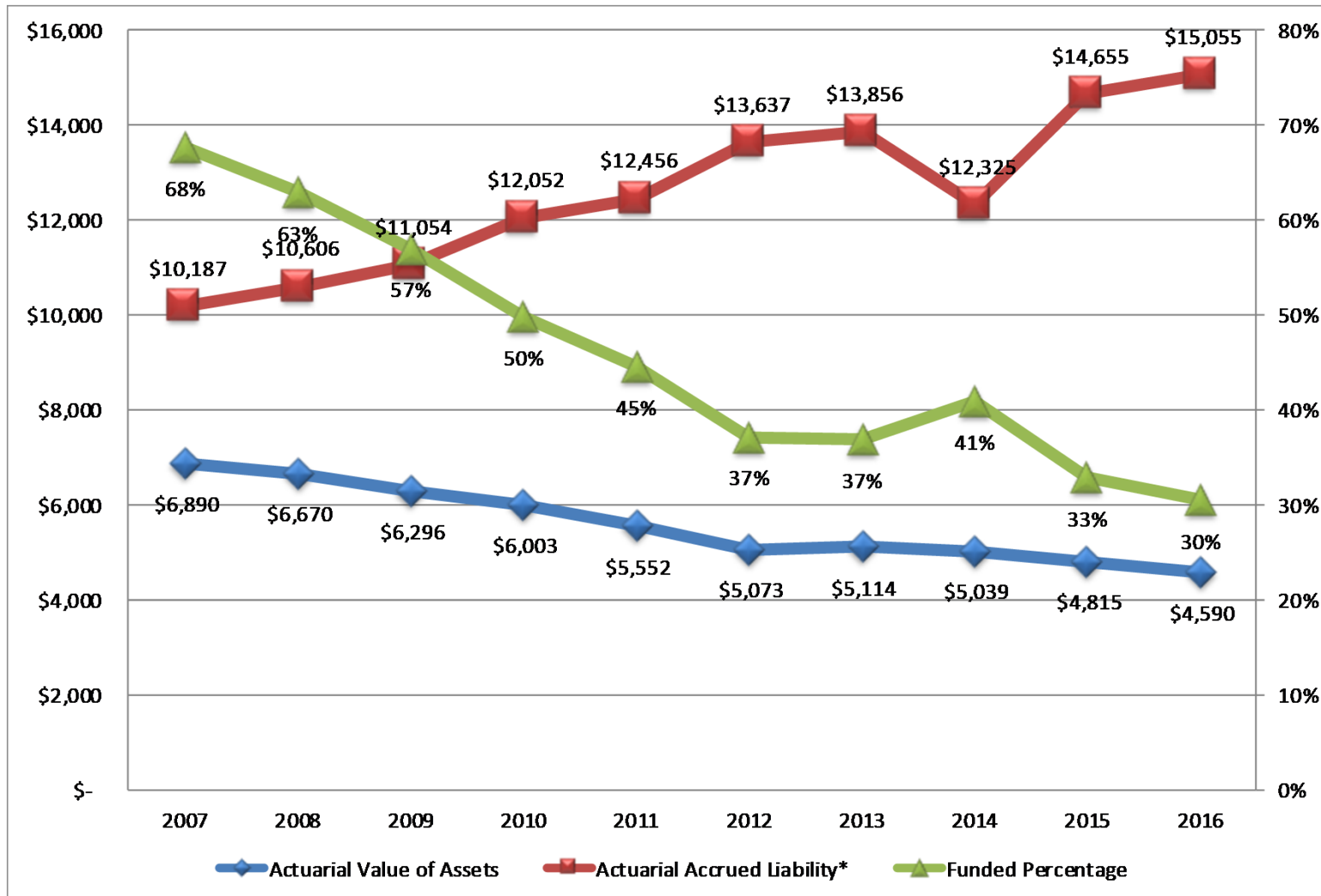
* Includes pension and OPEB

Reconciliation of Unfunded Liability

Reconciliation of Unfunded Actuarial Accrued Liability (\$ Millions)	
Unfunded Liability as of December 31, 2015	\$9,840
Effect of Contributions Less than Normal Cost and Interest on Unfunded Liability	<u>720</u>
Expected Unfunded Liability as of December 31, 2016	10,560
Changes Due to (Gain)/Loss from:	
• Investments	(23)
• Demographics	<u>(72)</u>
• Total	<u>(95)</u>
Unfunded Liability as of December 31, 2016	\$10,465

Actuarial Accrued Liability Vs. Actuarial Assets

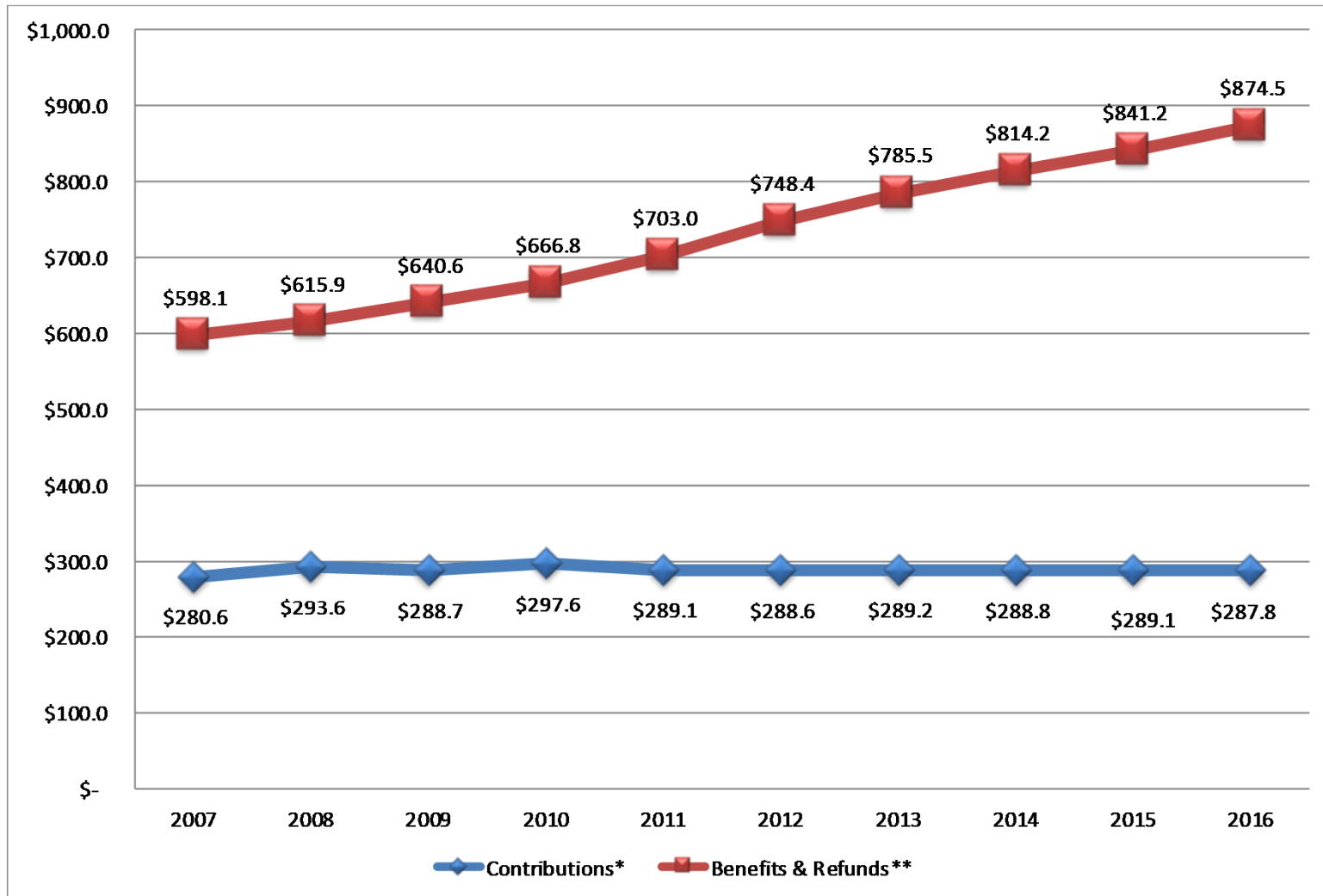
\$ Millions



* Includes pension and OPEB

Contributions vs. Benefits and Refunds

\$ Millions



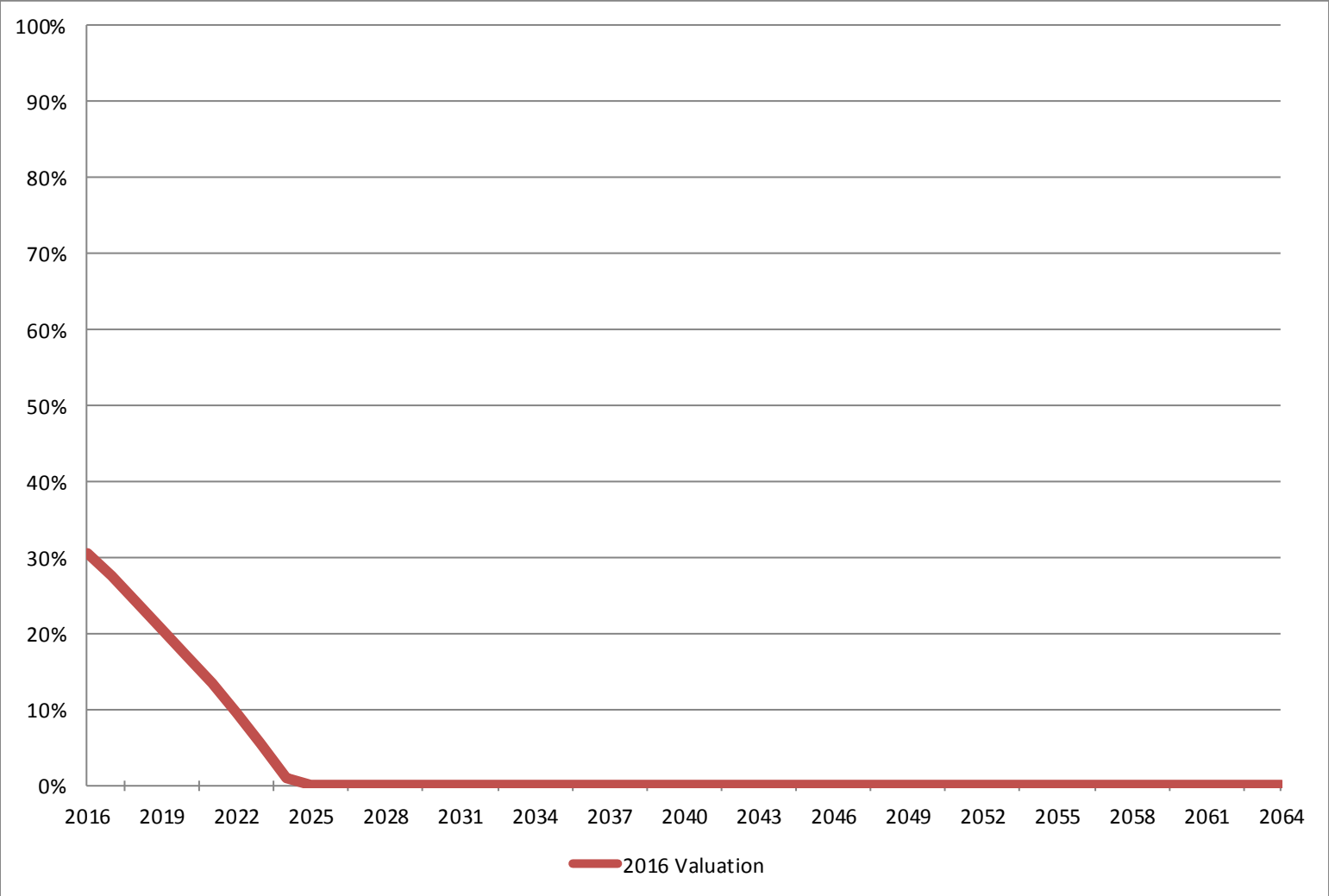
* Includes member and employer contributions

** Includes OPEB benefits and administrative expenses

50-Year Projection

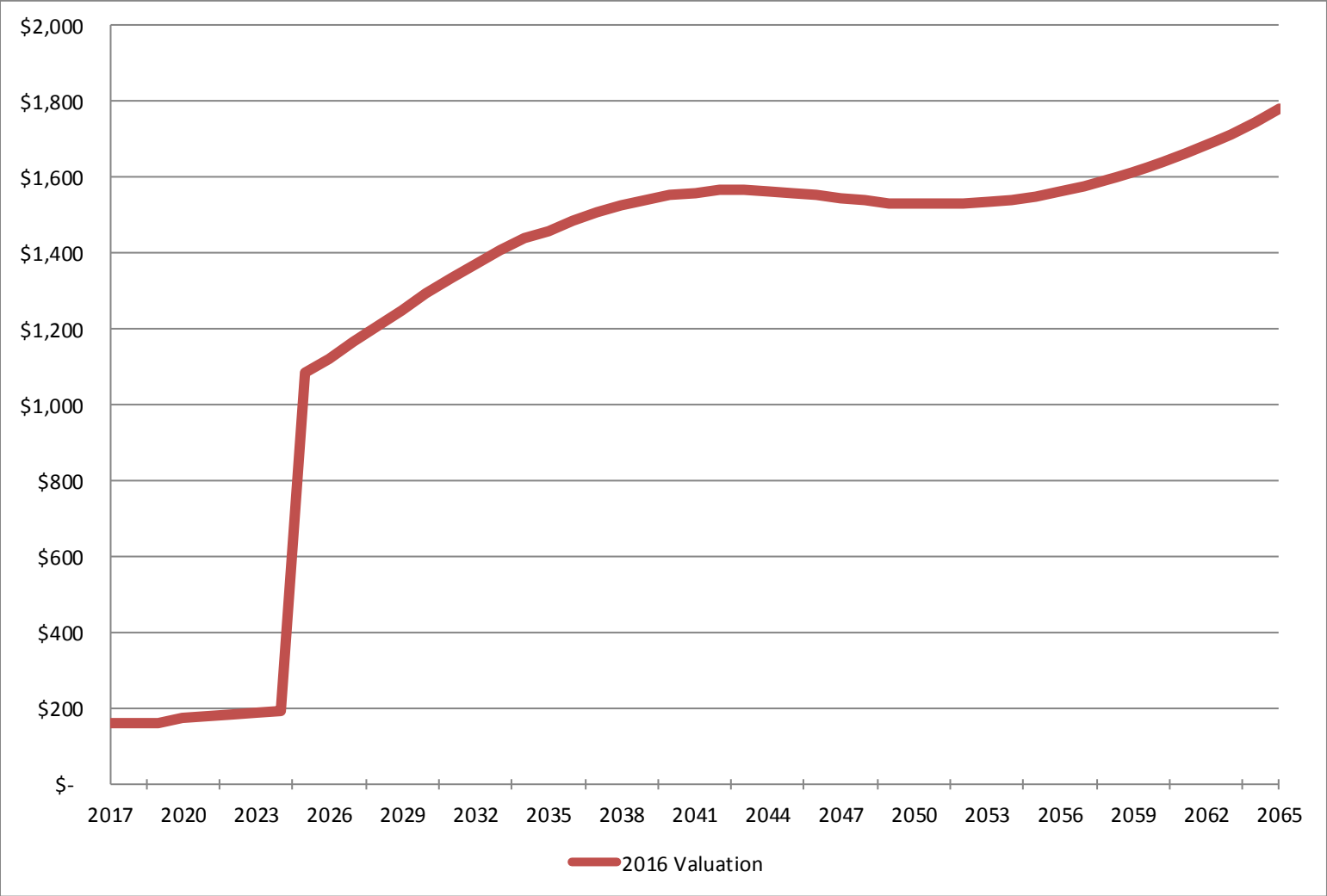
- Based on the results of the December 31, 2016 actuarial valuation
- Future member contributions are equal to 8.5% of salary. Future employer contributions are equal to 1.25 times member contributions two years prior until projected insolvency. Subsequent to projected insolvency, employer contributions are equal to the amounts required to pay benefit payments and expenses in each future year.
- Assets are assumed to earn 7.5% per year.
- The active population is assumed to remain level and future members are assumed to have similar characteristics to new members hired within the past 10 years.

Projected Funded Ratio (AVA Basis)



Projected Employer Contributions

\$ Millions



* Contributions beyond 2024 represent amounts to continue payment of benefits (i.e., “pay-as-you-go” funding)

GASB 67 Net Pension Liability (\$ in millions)

	December 31, 2016	December 31, 2015
Single Equivalent Discount Rate	3.91%	3.73%
Total Pension Liability	\$23,291	\$23,358
Plan Fiduciary Net Position	4,436	4,741
Net Pension Liability	18,855	18,617
Sensitivity of Net Pension Liability to changes in discount rate		
<ul style="list-style-type: none"> • 1% decrease (2.91% / 2.73%) 	\$22,351	\$22,207
<ul style="list-style-type: none"> • Current discount rate (3.91% / 3.73%) 	18,855	18,617
<ul style="list-style-type: none"> • 1% increase (4.91% / 4.73%) 	15,984	15,676

Membership

	2016	2015	Change
Active:			
• Number	30,296	30,683	-1.3%
• Pensionable Salary	\$1,647 mil	\$1,643 mil	+0.2%
• Average Age	46.6 years	46.5 years	+0.1 years
• Average Service	11.8 years	11.7 years	+0.1 years
Retirees and Beneficiaries			
• Number	25,236	24,964	+1.1%
• Total Annual Benefits	\$839.2 mil	\$806.1 mil	+4.1%
• Average Monthly Benefit	\$2,771	\$2,691	+3.0%

Assets

- The market value of assets decreased from \$4.741 billion (as of December 31, 2015) to \$4.436 billion (as of December 31, 2016)
 - Investment return of 6.3%, net of investment expenses, reported by Investment Consultant
- The actuarial value of assets – which smoothes investment gains and losses over five years – decreased from \$4.815 billion to \$4.590 billion
 - Effective return of 8.0%, net of investment expenses
 - Actuarial value is 103.5% of market
 - There is a total of \$154 million of deferred net investment losses that will be recognized in future years
- The average annual return on assets:

	Market	Actuarial
5-year	8.2%	6.9%
10-year	4.5%	4.7%

Questions?

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Appendix

- Overview of valuation process
- Calculation of the actuarial value of assets
- Historical asset values and returns

How is an Actuarial Valuation Performed?

- Gather data as of the valuation date
 - Participant data
 - Financial data
- Project a benefit for each member, for each possible benefit
- Apply assumptions:
 - Economic (investment return, inflation, salary raises)
 - Demographic (death, disability, retirement, turnover)
- Apply assumptions to benefits to determine a total liability and assign liabilities to service
- Apply the funding policy to determine the Actuarially Determined Contribution
 - Based on actuarial cost method and asset valuation method

Actuarial Methods

➤ Asset valuation method (actuarial value of assets)

- Smoothing of investment gains or losses
- MEABF uses a five-year smoothing method
 - Investment returns above or below the expected return are recognized over five years

➤ Cost method

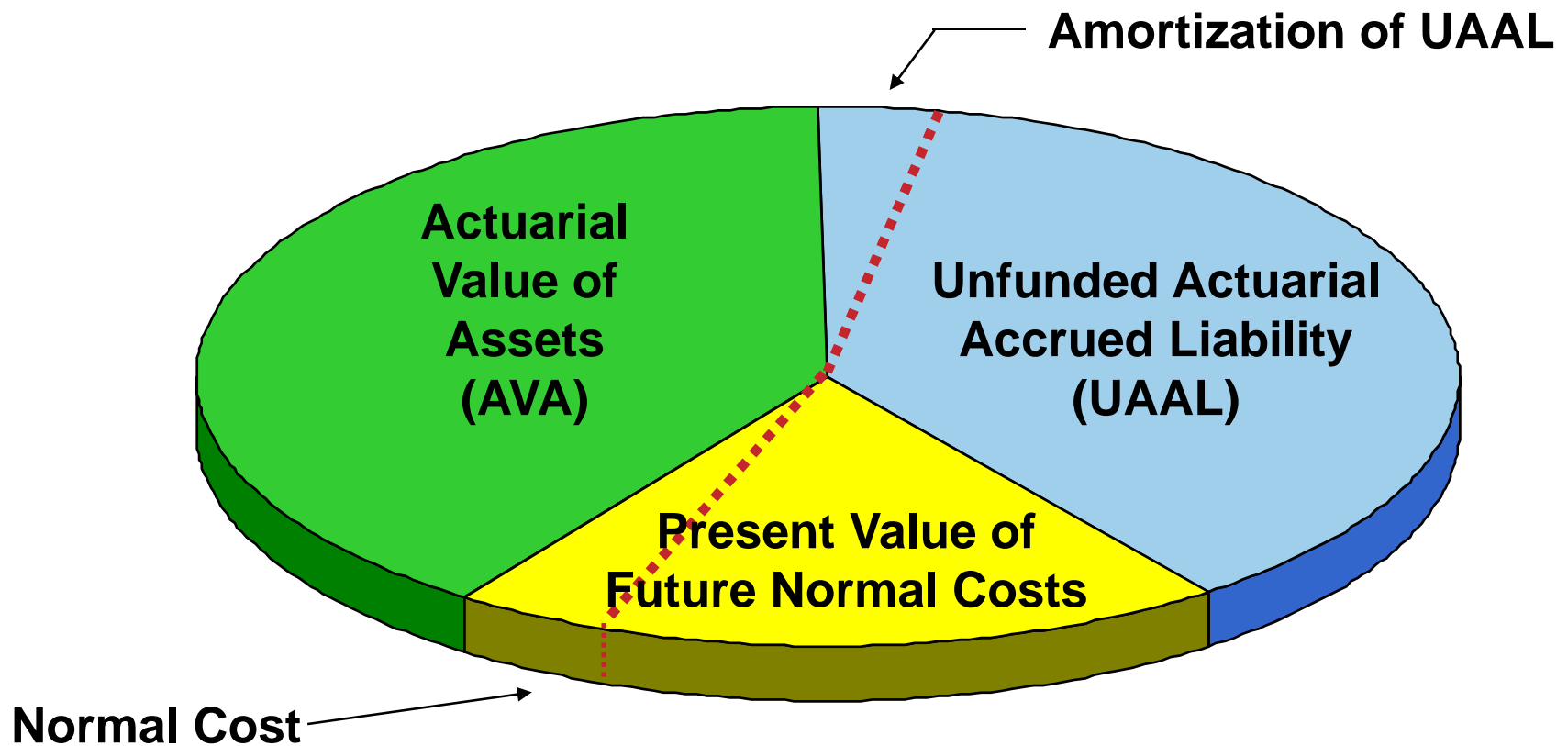
- Allocation of liability between past service and future service
 - MEABF uses the entry age normal cost method
 - Same method used by most public sector retirement systems and is the cost method required by GASB for accounting purposes

➤ Amortization method

- 30-year “open” period to pay off unfunded actuarial accrued liability
- Based on level dollar amortization

Actuarially Determined Contribution

Present Value of Future Benefits

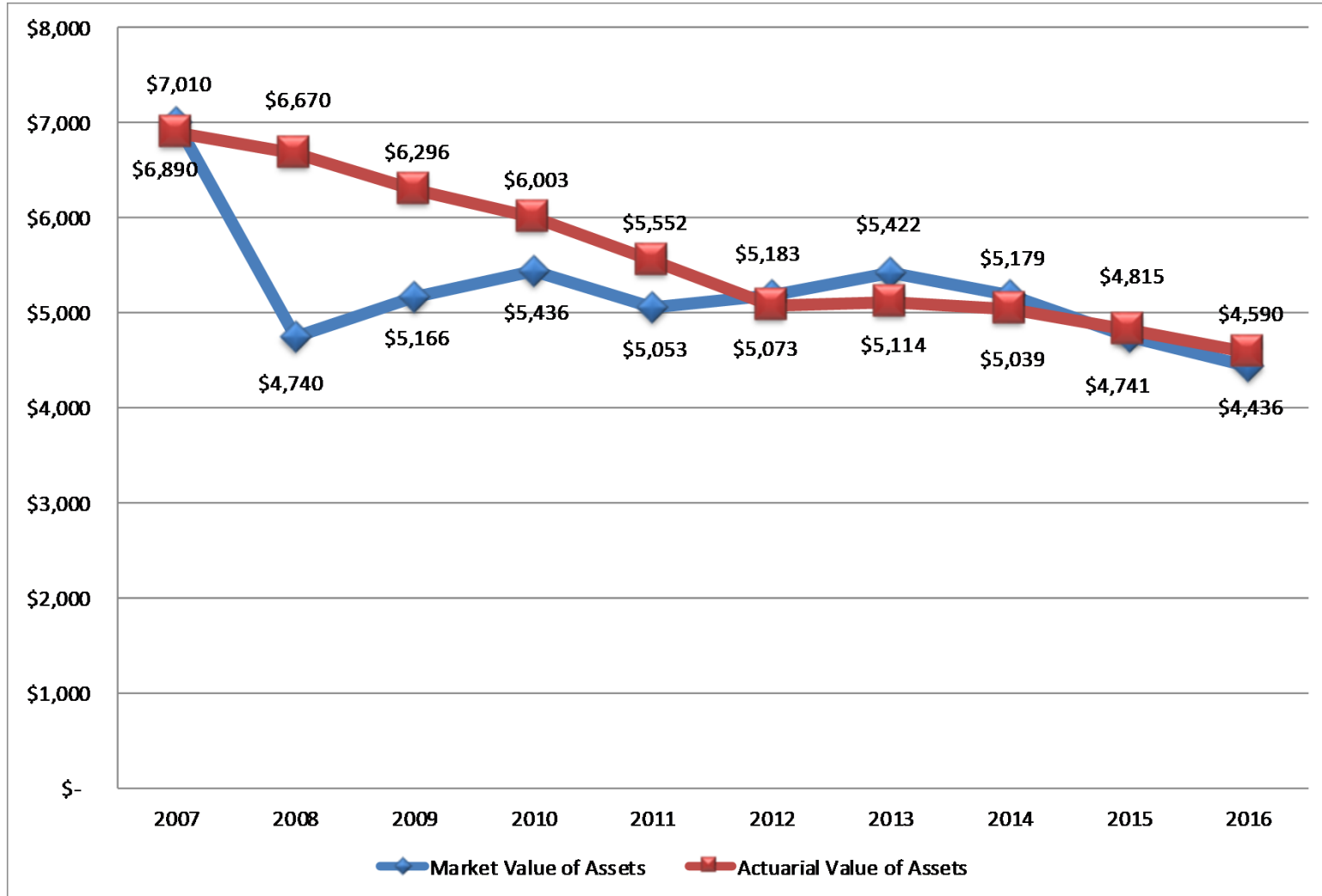


Actuarial Value of Assets (\$ in millions)

1. Market Value of Assets as of December 31, 2015				\$4,741
2. Contributions and Benefits for FYE December 31, 2016				(587)
3. Expected Return				<u>328</u>
4. Expected Market Value of Assets (1) + (2) + (3)				\$4,482
5. Actual Market Value of Assets on December 31, 2016				4,436
6. Excess/(Shortfall) for FYE December 31, 2016 (5) – (4)				-46
Excess/(Shortfall) Returns:				
Year	Initial Amount	Deferral %	Unrecognized Amount	
2016	-\$46	80%		-\$37
2015	-248	60%		-149
2014	-104	40%		-41
2013	365	20%		73
2012	203	0%		<u>0</u>
7. Total				-\$154
8. Actuarial Value of Assets as of December 31, 2016 (5) - (7)				\$4,590
9. Actuarial Value of Assets as a % of Market Value of Assets				103.5%

Market and Actuarial Values of Assets

\$ Millions



Asset Returns

