



2018
RETIREMENT
CONFERENCE

Taking a Look Under the Hood of your Defined Benefit Plan – Actuarial Mechanics

Leon Hank, CFO, MERS

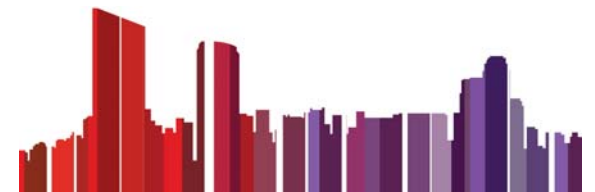
Betsy Waldofsky, Finance Director, MERS

David Kausch, Chief Actuary, GRS



Agenda

- Defined Benefit Plan Fundamentals
 - How Defined Benefit Plans are Funded
 - Annual Actuarial Valuation Reports
- A Deep Dive into Actuarial Assumptions
 - Experience Study Overview
 - Economic Assumptions
 - Demographic Assumptions
 - Funding
- Looking Ahead
 - Plan Costs
 - 2019 Experience Study



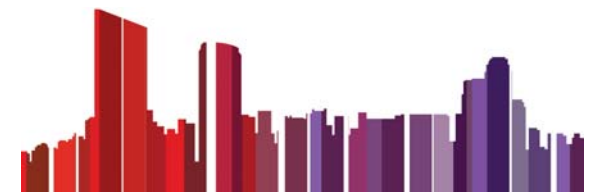


Defined Benefit Plan Fundamentals

Defined Benefit Formula

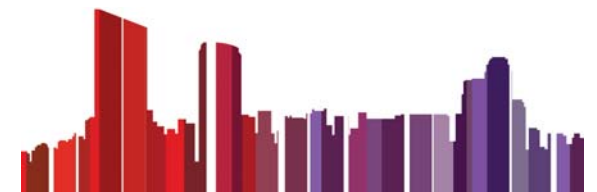
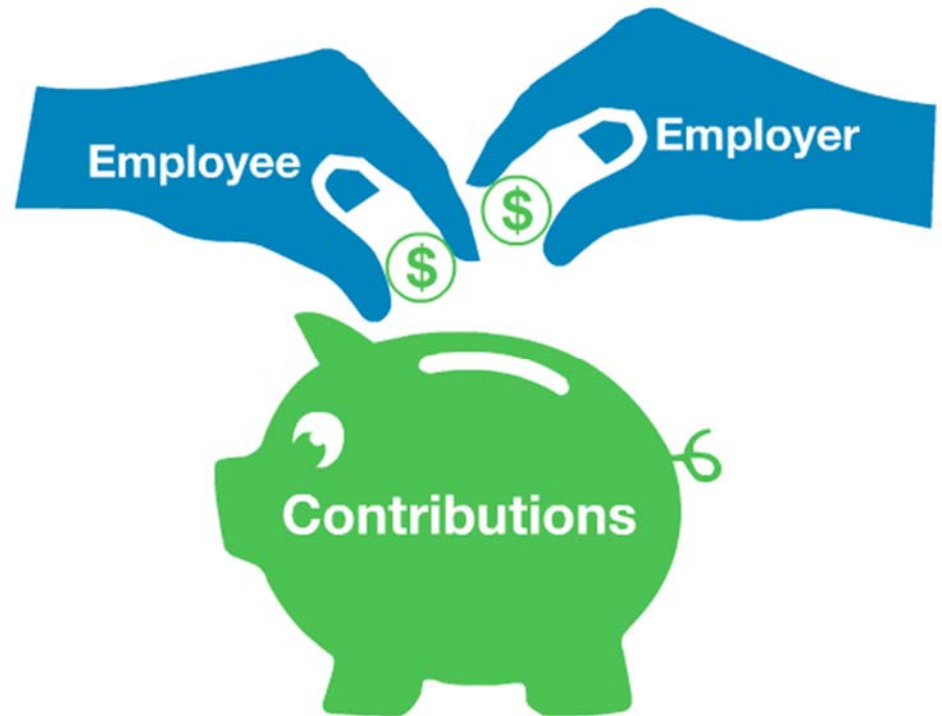


- The benefit formula is comprised of three components:
 - **Final Average Compensation** is an average of the employee's highest consecutive wages over a period of time, usually 3-5 years
 - **Service Credit** is earned for each month of work that meets the employer's requirements
 - The **Benefit Multiplier** is a specific percentage adopted by the employer ranging from 1.0%-2.5%
- To be eligible an employee must meet both age and service requirements (also called vesting)



Prefunding the Benefit

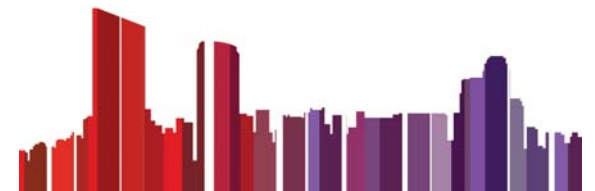
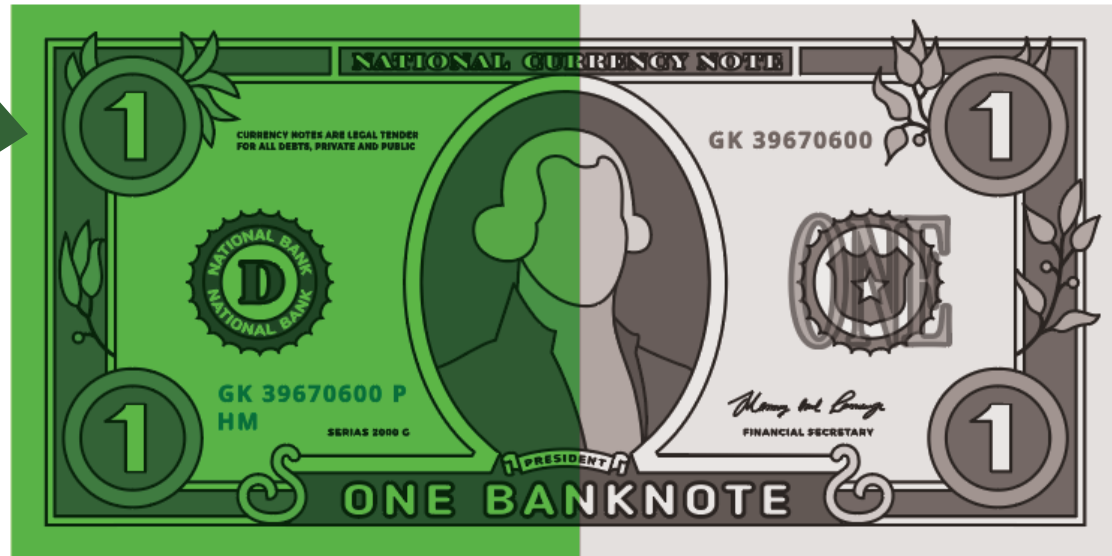
- Defined benefit plans are required by law to be prefunded
- MERS pools assets for investment purposes, providing our members the benefit of investing with an \$11 billion pool of assets



Contributions are Invested Long-Term

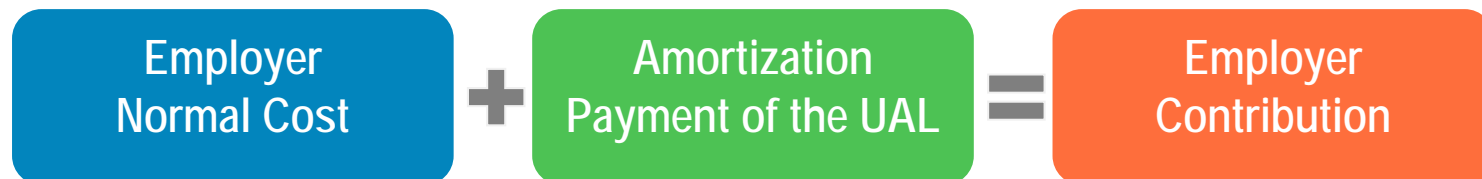
- MERS strategically invests the contributions with a prudent long-term approach to provide downside protection with upside participation

MERS' investment earnings fund **more than half** of the benefits

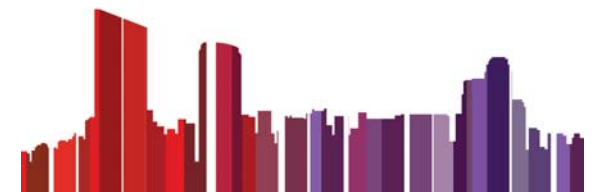


Contributing to the Plan

- The employer contribution is made of up two parts:
 - **Employer Normal Cost** – Present value of benefits allocated to the current plan year less any employee contribution
 - **Amortization Payment of Unfunded Accrued Liability** – Payment to reduce any shortfall between liability for past service and assets



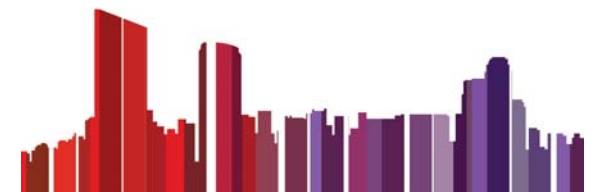
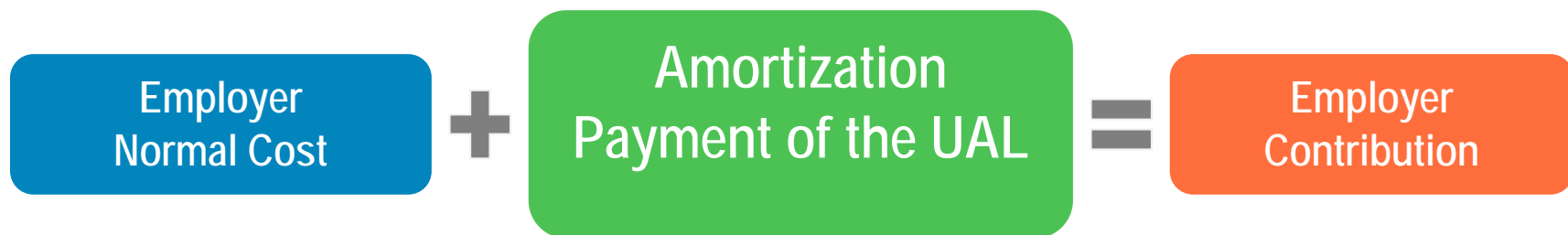
- The employee contribution rate is set by each local unit of government or division



What is Unfunded Liability?

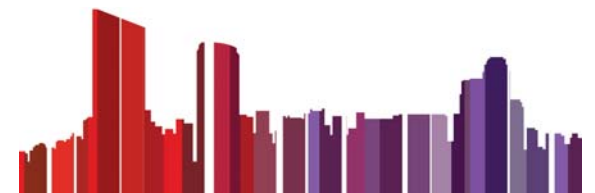
Unfunded liability is the difference between a plan's estimated pension benefits and assets that have been set aside to pay for them

- The dollar value of the benefits is actuarially determined each year
- Unfunded liability is paid off over a period of years

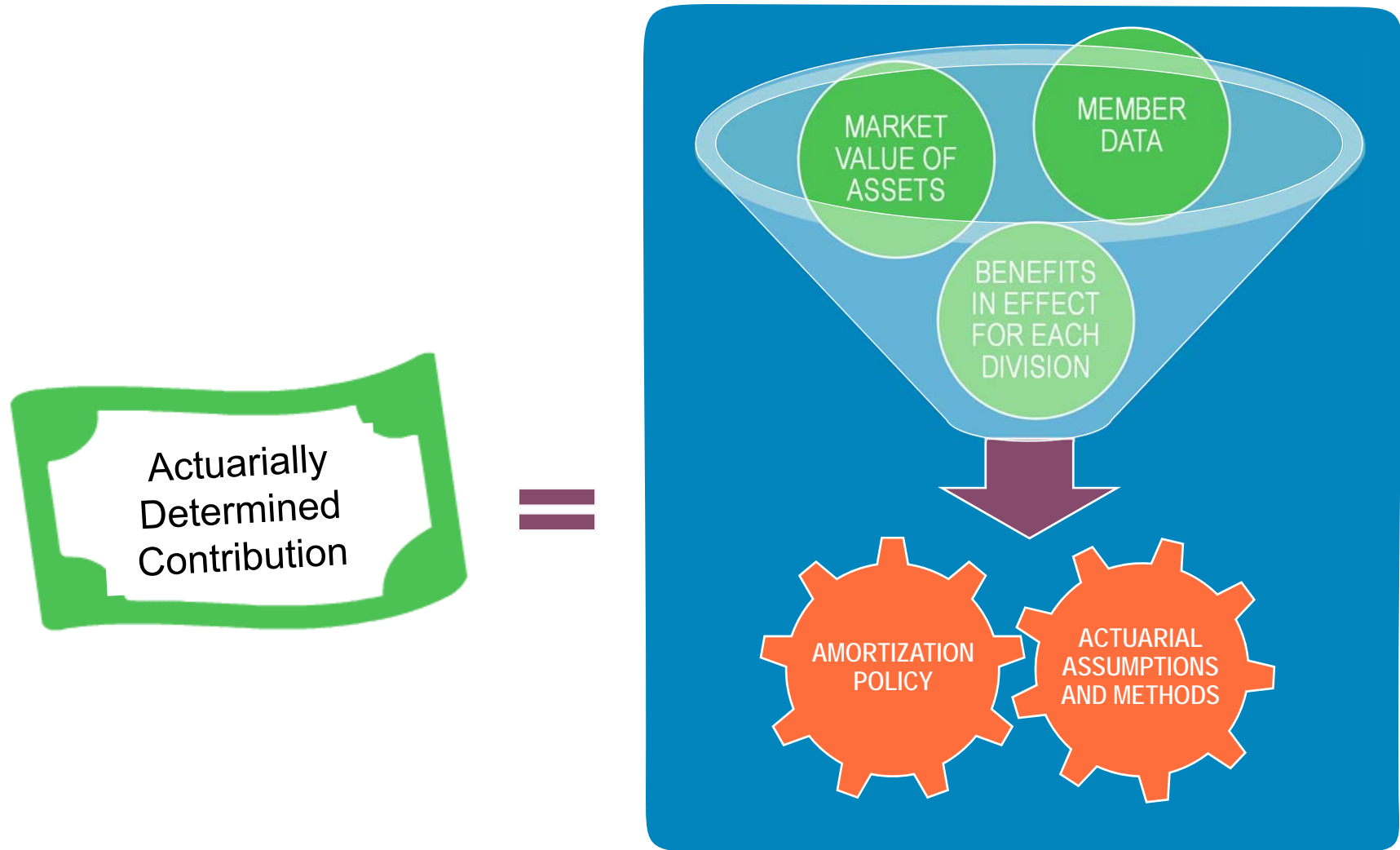


Why Unfunded Liabilities Develop

- Actual experience is different than assumed (liabilities and assets)
 - Market performance
 - Demographic experience
 - Rates of retirement
- Benefit enhancements adopted and not entirely funded
 - Early retirement windows
 - Increased benefit multiplier
 - Cost of Living Adjustment (COLA)
- Higher than projected Final Average Compensation
- Granting prior service for benefits without funding

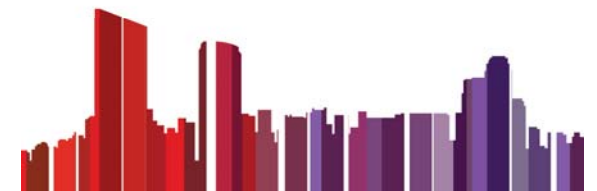


Calculating the Actuarially Determined Contribution



Annual Actuarial Valuation Report

- An important tool to help budget for your municipality's retirement benefits
- Measures funding progress
- Establishes contribution requirements for the following fiscal year
- Provides Governmental Accounting Standards Board (GASB) information
- Delivered each year by June 30th



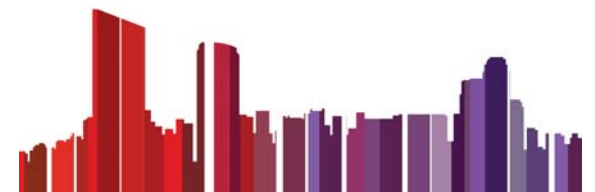
Provides Answers to Two Key Questions

What is the value of the promised benefits?

Actuarial
Accrued Liability

How do we pay for it?

Actuarially Determined
Employer Contribution



MERS Resources

The screenshot shows the MERS website interface. At the top left is the MERS logo with the text 'Municipal Employees' Retirement System'. To the right are social media icons for Facebook, Twitter, LinkedIn, and YouTube, along with links for Home, Forms, Contact Us, and Login. A dark green navigation bar contains buttons for EMPLOYEE, RETIREE, EMPLOYER (highlighted with a red arrow), MEDIA, and MERS. Below this is a search bar. The main content area is titled 'Annual Actuarial Valuations' and includes a left-hand navigation menu with categories like 'Work Scenarios' and 'Resources'. The main text explains the purpose of the AAV report and provides a link to a video overview.

- MERS has created a resource page on www.mersofmich.com
- AAV Overview video walks through your AAV to help you understand the report
- Guide outlining each section of the report
- Frequently asked questions

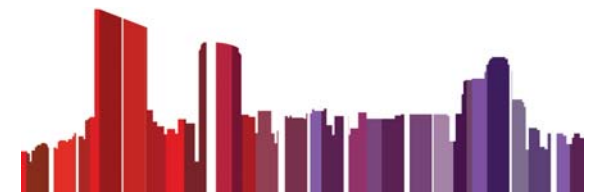




A Deep Dive into Actuarial Assumptions

Experience Study Overview

- Part of MERS' fiduciary responsibility
- Conducted with our actuarial firm every five years, with the last study covering 2009-2013
- Compares actual experience of the plan with the current assumptions to determine if changes are necessary
- Next study started; working on economic assumptions



Experience Study Goals & Priorities

Adequacy

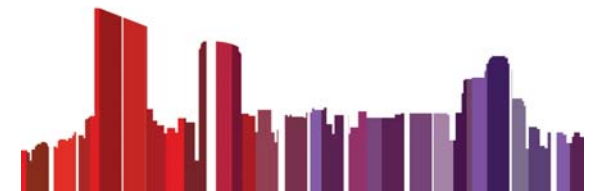
- Ensuring each plan's assets are sufficient to provide for the benefits that are expected to be paid and that each plan is making reasonable progress to achieve full funding

Intergenerational Equity & Transparency

- Each generation should incur the cost of benefits for the employees who provide service in that generation, rather than deferring those costs to future employees
- The funding policy should be easily understood

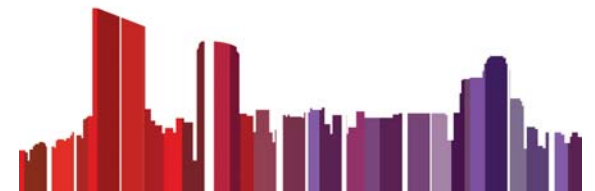
Contribution Stability & Governance

- Contribution volatility should be balanced with the commitment to ensure plans are properly funded



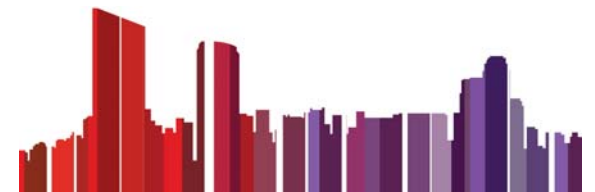
Overview of Assumptions

- Funding Policy
 - Amortization Policy
 - Asset Valuation Method
- Economic Assumptions
 - Price and Wage Inflation
 - Investment Return
 - Discount Rate
- Demographic Assumption
 - Mortality
 - Withdrawal Rates
 - Normal Retirement



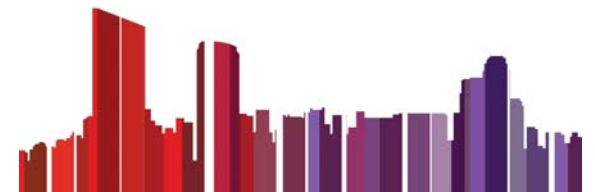
Funding Policy

- The MERS Funding Policy is part of the actuarial valuation process
- Actuarial methods include
 - The Actuarial Cost Method for determining
 - The Actuarial Accrued Liability
 - The Normal Cost
 - Asset Smoothing – MERS smooths over a five-year period
 - Amortization Policy for funding any Unfunded Accrued Liability (UAL)



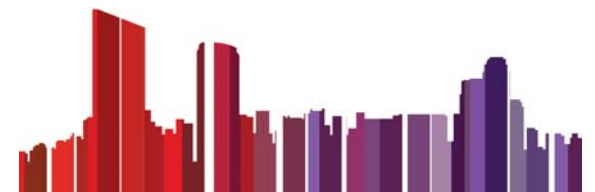
Establishing Economic Assumptions

- The Actuary's role
 - Identify the assumptions and their components
 - Evaluate relevant data
 - Look at historical and current data
 - Consider future expectations
 - Economic assumptions must be forward-looking
 - Assess the reasonableness of a given assumption
- The Board's role
 - Consider the advice from the Actuary
 - Consider the advice from Investment Staff
 - Adopt the assumptions to be used in the valuation
- **All assumptions must follow the Actuarial Standards of Practice (ASOPs)**



MERS' Current Economic Assumptions

- **Price inflation** (currently: 2.50% per year)
- **Wage inflation** (currently: 3.75% per year)
 - A macroeconomic assumption
 - Used to project total payroll growth for open divisions
 - Generally higher than price inflation
- **Merit, longevity and other salary increases**
 - Apply to individuals throughout their careers
- **Rate of investment return** (currently: 7.75% per year)
 - Net of all administrative and investment expenses
 - Generally has the largest impact on determining costs

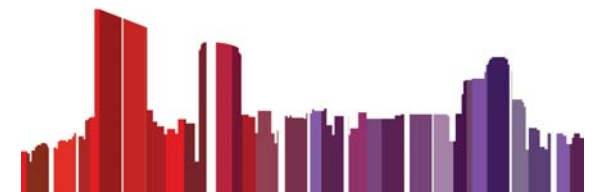


National Economic Trends

- Expectations are trending down
- Forward looking price inflation expectations earlier this year

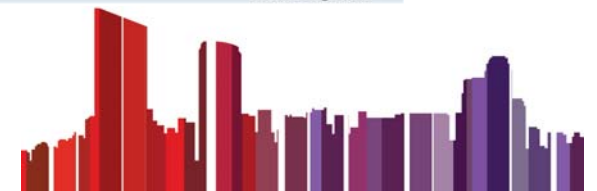
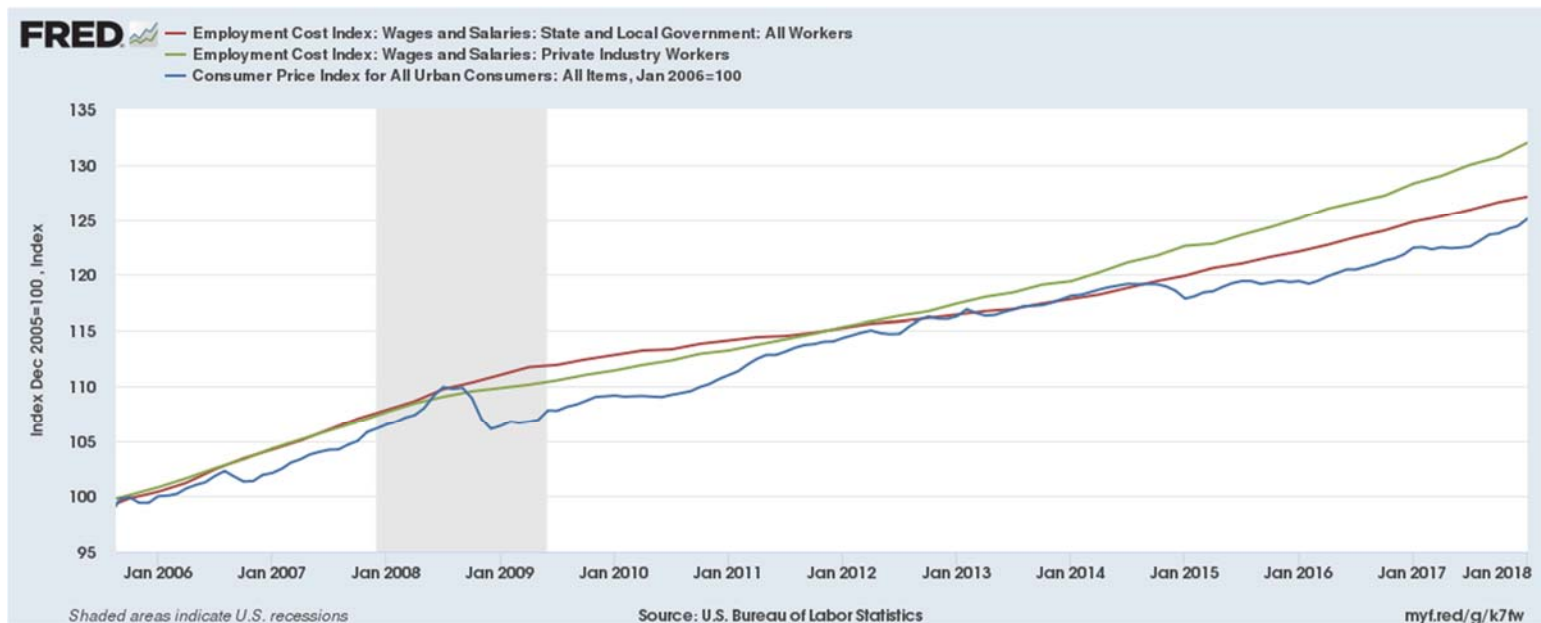
Source	10-Year	20-Year	30-Year
Federal Reserve Bank of Cleveland	1.97%	2.14%	2.26%
Federal Reserve Bank of St. Louis	2.10%	2.08%	2.10%
U.S. Dept. of Treasury	2.10%	2.12%	2.17%

- Recent short-term inflation has ticked up to 2.90% as recently as July
- Short-term fluctuations do not necessarily have a big impact on long-term expectations



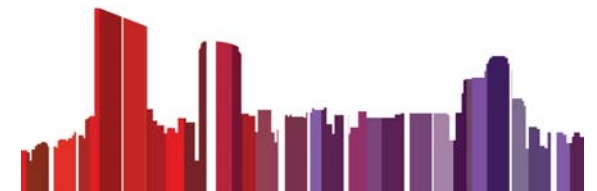
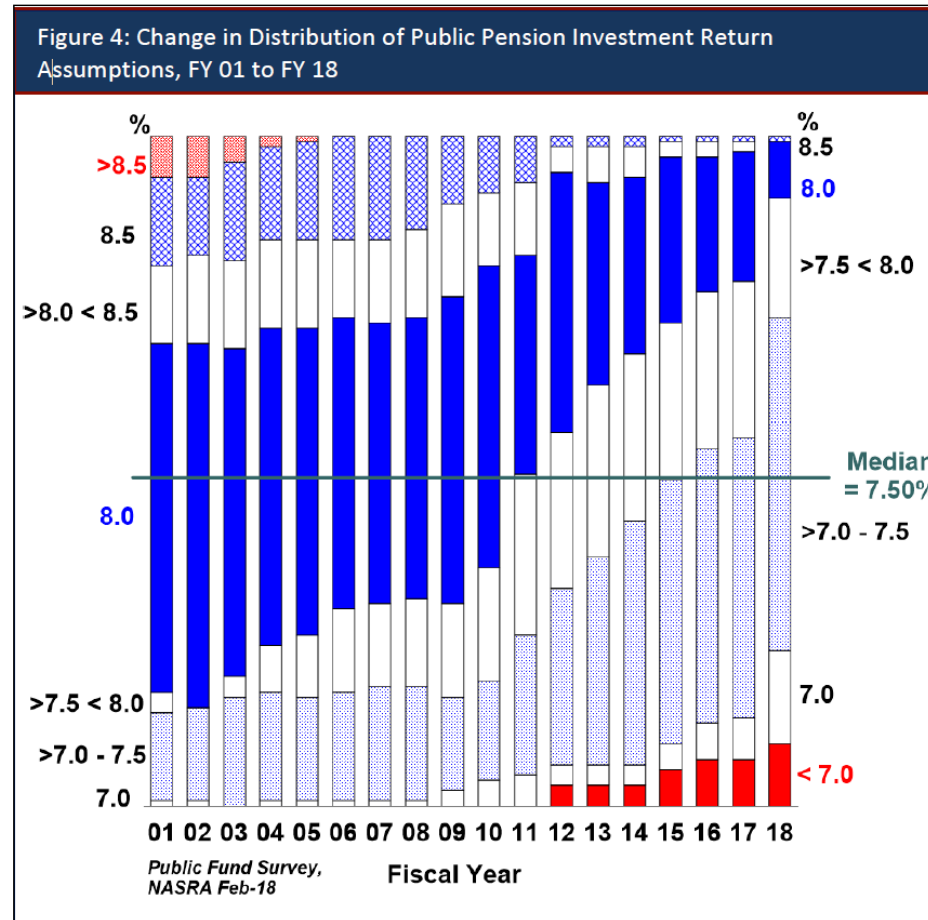
National Economic Trends

- The gap between wages and prices has narrowed in recent years
- Public sector wages in particular have only slightly exceeded price inflation



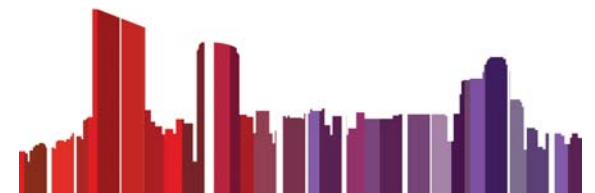
National Economic Trends

Assumed rates of return are being reduced across the country



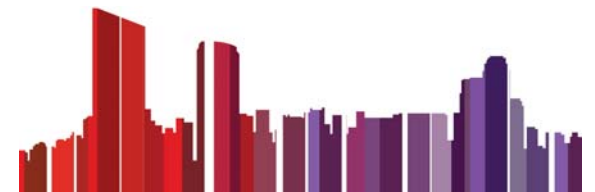
Trends in Economic Assumptions

- Plans are beginning to review economic assumptions in alignment with asset allocation reviews, which may become more frequent
- 2018 market performance has experienced more volatility than we have seen in the past two years, due to a variety of macroeconomic factors
 - Bond yields are at record lows (although starting to tick up)



Establishing Demographic Assumptions

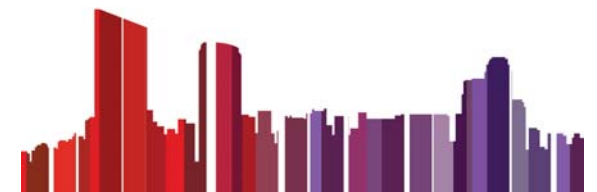
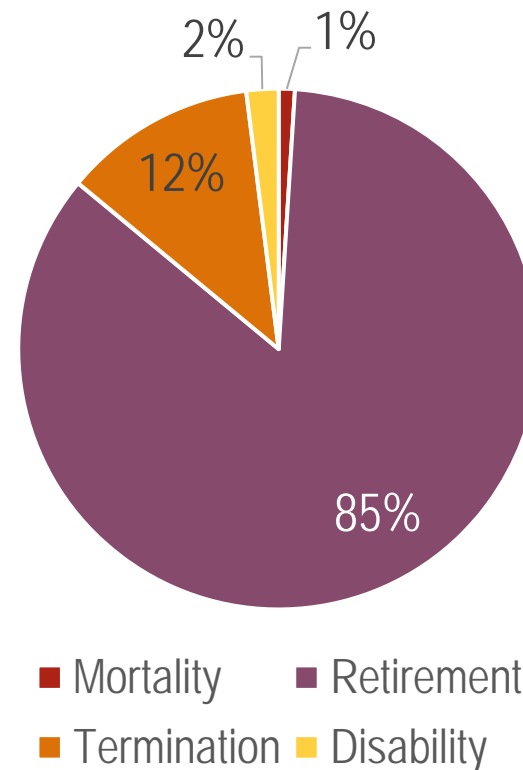
- Demographic assumptions are a look back at actual plan experience, systematically comparing experience to expectations
- Typically need at least 5-year time frame to have a good data set to identify trends
- The roles of the Actuary and Board are the same as with economic assumptions
- **All assumptions must follow the Actuarial Standards of Practice (ASOPs)**



Key Demographic Assumptions

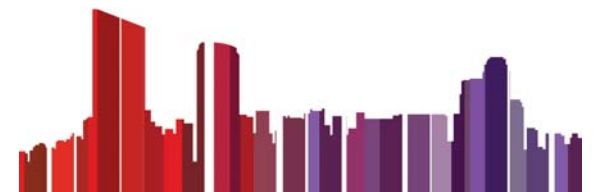
- Mortality rates
 - How long people live determines how long pensions will be paid
 - Includes an assumption for future mortality improvement
- Retirement rates
 - When people retire affects when pensions will be paid
- Termination rates
- Disability rates

Theoretical Probabilities for an Active Participant



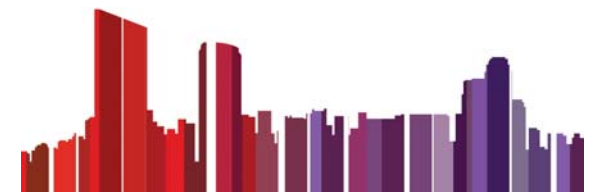
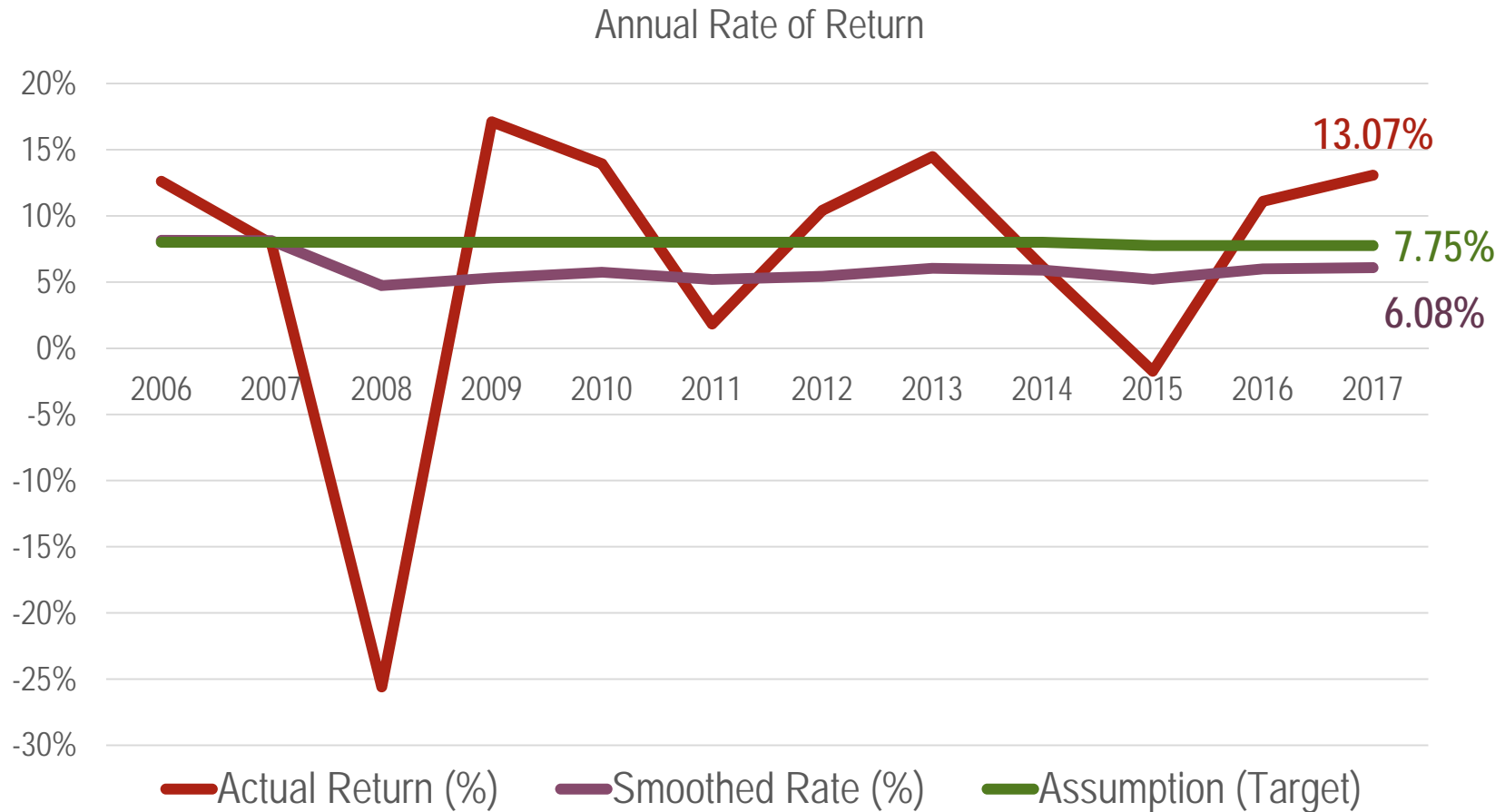
Trends in Demographic Assumptions

- Mortality trends
 - People are living longer, but mortality improvement has slowed down in recent years
 - The Society of Actuaries recently published new mortality tables based on public plan experience
 - Generally lower mortality rates
 - Translates into longer life expectancy
 - May result in increased cost for pensions
- The economy may affect demographic experience
 - Turnover may be higher/lower if the job market is good/bad
 - Retirements may be delayed in a bad economy

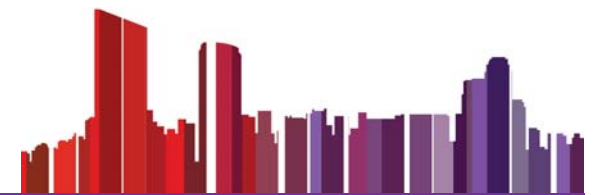
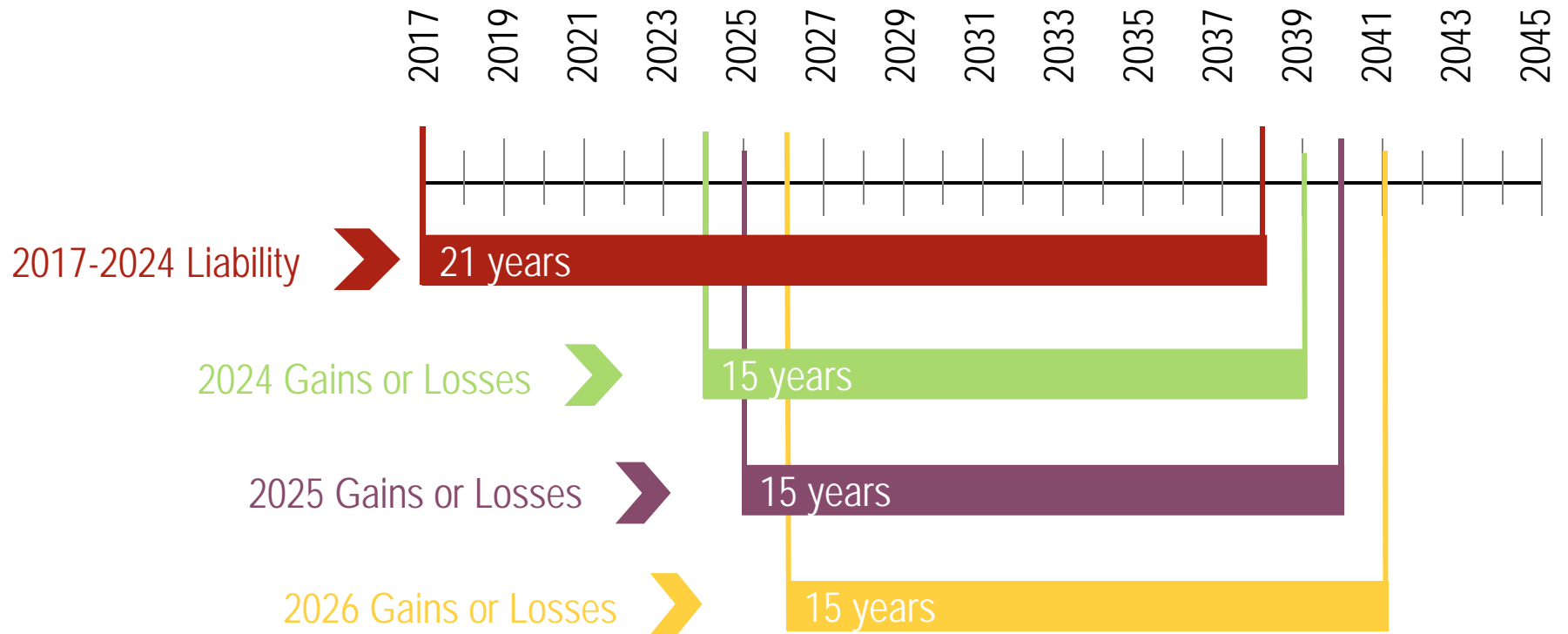


Funding Policy – Asset Smoothing

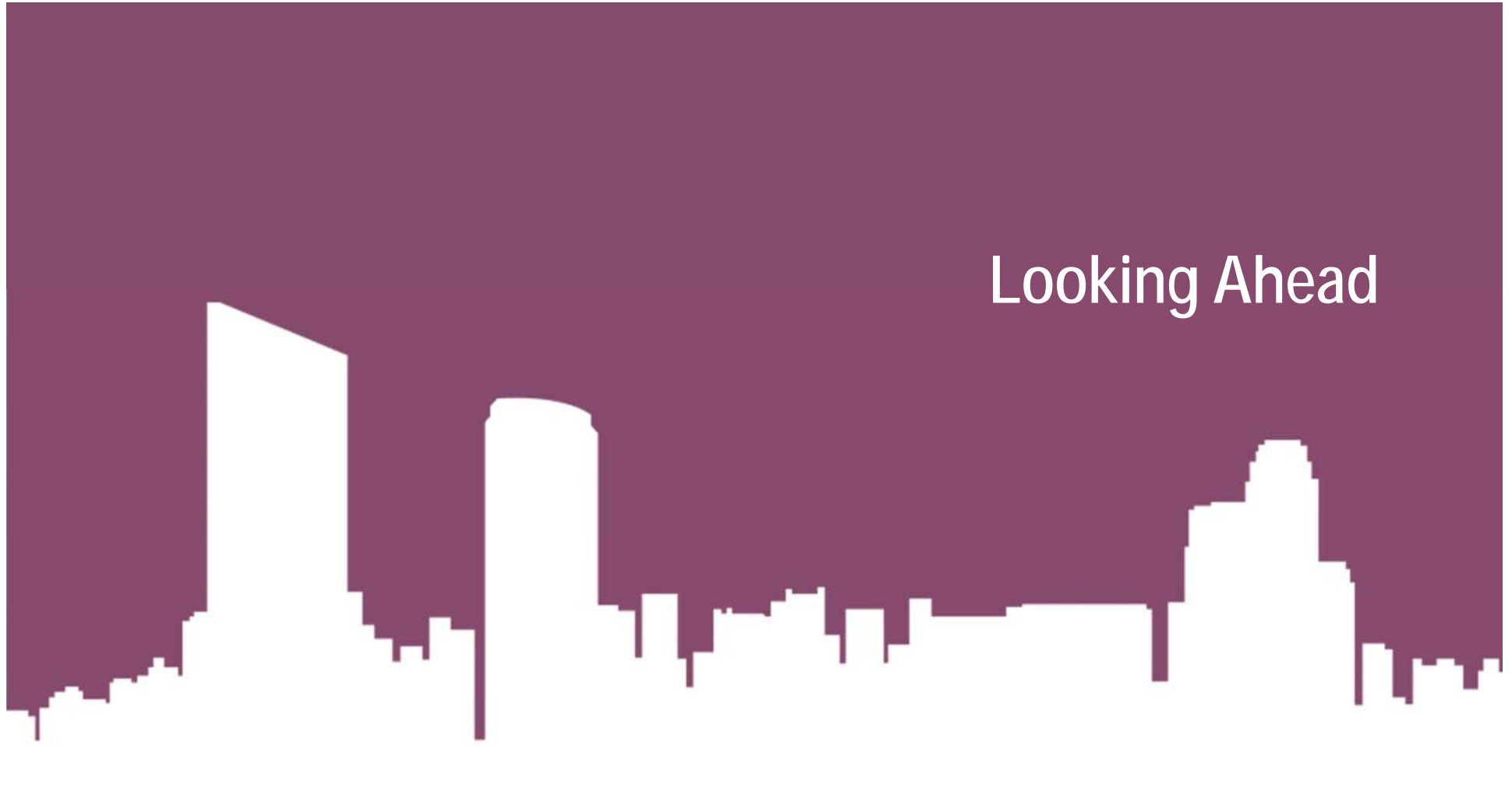
Smoothing is a buffer against extreme fluctuations in the market



Funding Policy – Amortization Schedule



Looking Ahead

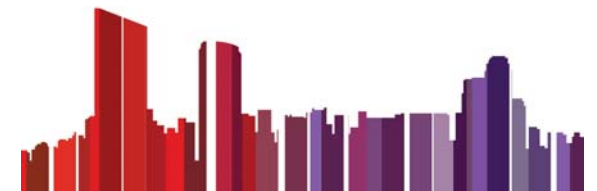


Plan Costs

- Plan costs vary by municipality and depend on the benefit plan design selected by each municipality
- The AAV does not affect the ultimate cost of the plan
- The ultimate cost of the plan will not be known until the last retiree/beneficiary stops drawing a benefit

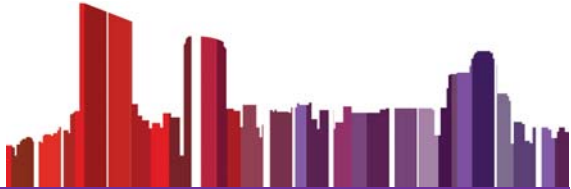
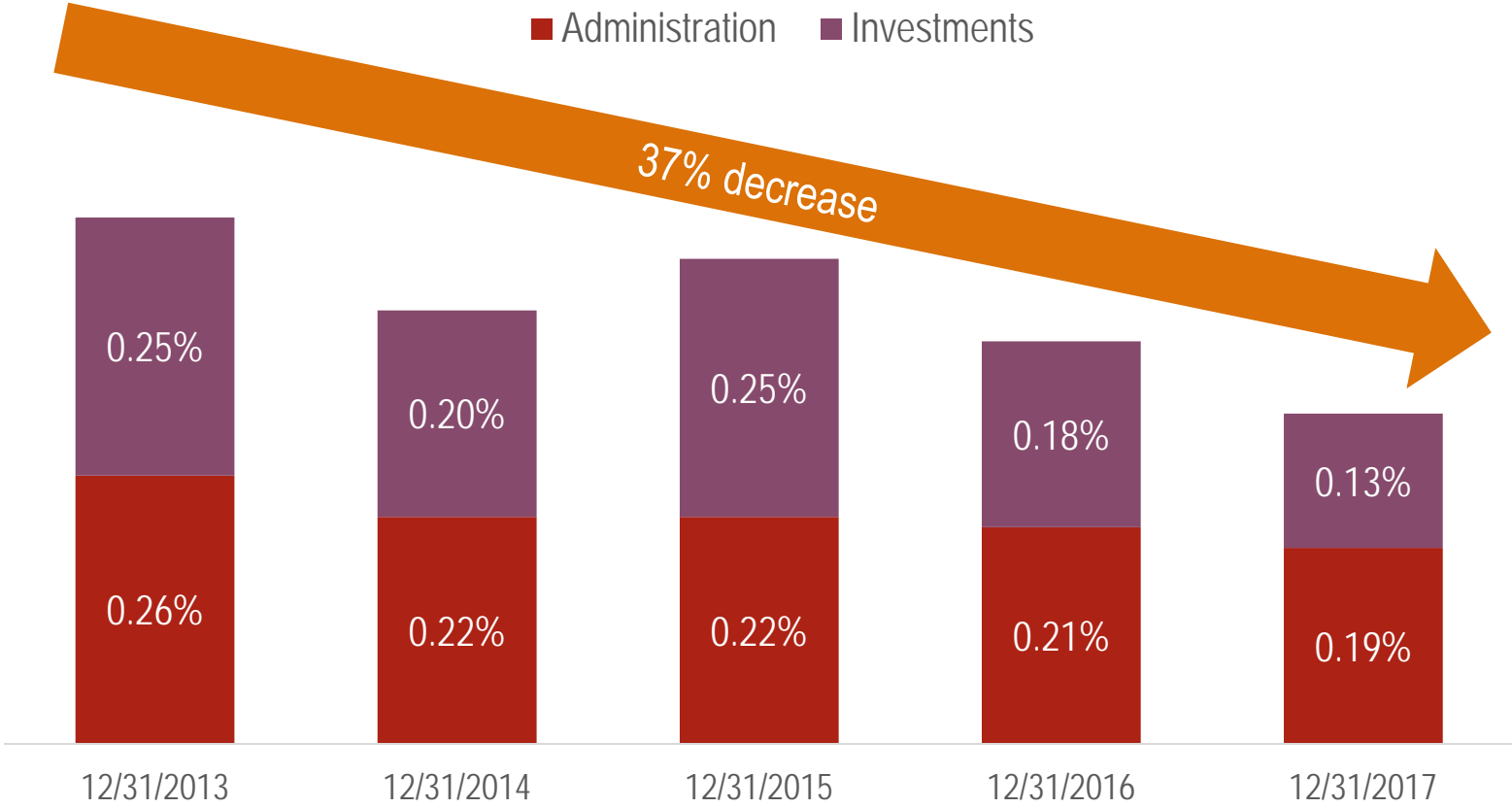
Administrative Costs

- Plan governance
- Audit
- Legal counsel
- State and Federal legislative advocacy
- Financial reporting
- Administration of benefits
- Actuarial services
- Participant education and resources



Defined Benefit Plan Cost History

Five-year history



Forecasting the Next Experience Study



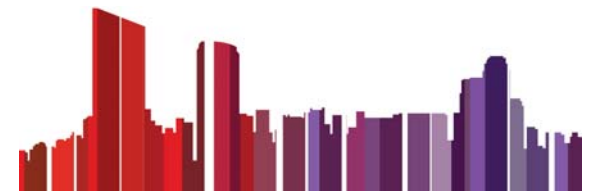
Reduced Investment Return Assumption

- Was reduced to 7.75% following last study
- Likely to be reduced again
- Assuming less to come from investment returns results in increased contributions
- We listened to your feedback from the last Experience Study and will proactively communicate any changes



Reduced Wage Inflation

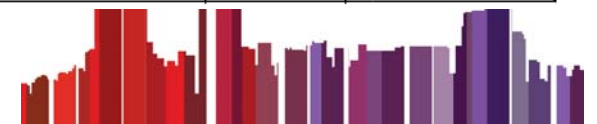
- Was reduced to 3.75% following last study
- Likely to be reduced again



Volatility Scenarios

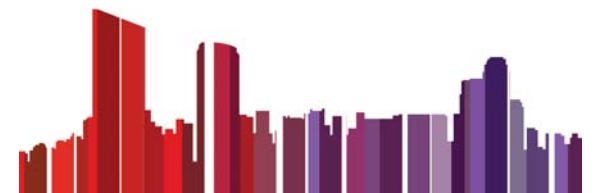
- Your AAV provides analysis of potential volatility of the results and projected contributions based on that volatility
- This provides options for determining contributions above and beyond the minimum required amounts
- MERS highly encourages you to review these scenarios and make additional contributions, if possible

Valuation Year Ending 12/31	Fiscal Year Beginning 1/1	Actuarial Accrued Liability	Valuation Assets ²	Funded Percentage	Computed Annual Employer Contribution
7.75%¹					
WITH 5-YEAR PHASE-IN					
2017	2019	\$ 8,280,885	\$ 4,844,868	59%	\$ 343,380
2018	2020	8,610,000	5,070,000	59%	370,000
2019	2021	8,930,000	5,250,000	59%	399,000
2020	2022	9,230,000	5,590,000	61%	408,000
2021	2023	9,510,000	5,930,000	62%	419,000
2022	2024	9,770,000	6,210,000	64%	434,000
NO 5-YEAR PHASE-IN					
2017	2019	\$ 8,280,885	\$ 4,844,868	59%	\$ 356,292
2018	2020	8,610,000	5,070,000	59%	375,000
2019	2021	8,930,000	5,270,000	59%	397,000
2020	2022	9,230,000	5,610,000	61%	407,000
2021	2023	9,510,000	5,950,000	63%	417,000
2022	2024	9,770,000	6,230,000	64%	432,000
6.75%¹					
NO 5-YEAR PHASE-IN					
2017	2019	\$ 9,208,987	\$ 4,844,868	53%	\$ 427,080
2018	2020	9,560,000	5,030,000	53%	455,000
2019	2021	9,880,000	5,240,000	53%	479,000
2020	2022	10,200,000	5,610,000	55%	492,000
2021	2023	10,500,000	5,980,000	57%	506,000
2022	2024	10,800,000	6,290,000	58%	525,000
5.75%¹					
NO 5-YEAR PHASE-IN					
2017	2019	\$ 10,309,594	\$ 4,844,868	47%	\$ 509,820
2018	2020	10,700,000	4,980,000	47%	543,000
2019	2021	11,000,000	5,220,000	47%	570,000
2020	2022	11,300,000	5,630,000	50%	587,000
2021	2023	11,600,000	6,040,000	52%	605,000
2022	2024	11,900,000	6,400,000	54%	628,000



Summary of Upcoming Changes

- The next Experience Study is for 2014-2018
- Review of the economic assumptions between MERS and GRS has already begun, which pulls ahead the economic assumption review before the demographic assumption review
- Based on Board review and approval, impacts of economic assumption changes *may be communicated* as early as the 12/31/18 AAVs
- Your current AAV contains projected contributions based on various rates of return so that you can plan now for changes
- Based on Board review and approval, there may be demographic assumption changes in the future that will impact costs



Q&A



Contacting MERS of Michigan

MUNICIPAL EMPLOYEES' RETIREMENT SYSTEM

1134 Municipal Way
Lansing, MI 48917

800.767.MERS (6377)

www.mersofmich.com



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