Understanding the Trends Impacting Defined Benefit Plans

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Agenda

- Defined Benefit Plan Fundamentals
  - How Defined Benefit Plans Are Funded
  - Annual Actuarial Valuation Reports
- Deep Dive Into Actuarial Assumptions
  - Experience Study
  - Economic Assumptions and Trends
  - Demographic Assumptions and Trends
- Managing Unfunded Liabilities
- Looking Ahead

MERS of Michigan

MERS is an independent professional retirement services company that was created to administer the retirement plans for Michigan's local units of government on a not-for-profit basis

84% of local units of government choose MERS

We provide reliable retirement benefits to over 100,000 public employees

MERS creates economies of scale by pooling together $11 billion in total assets

Retirement plans are designed at the local level and we offer a range of customizable plans to fit our customers' budgets, needs and goals

An Independent Elected Board

- MERS is governed by an elected board that operates without compensation
- Our board is committed to accountability and transparency, holding the line on costs, and watching out for the best interest of our members
- The ***MERS Retirement Board takes on the <u>sole fiduciary responsibility</u>***

MERS Retirement Board
is responsible for administration of the system with fiduciary responsibility for the investment of assets and oversight.

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Defined Benefit Plan Fundamentals

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Defined Benefit Formula

Final Average Compensation × Service Credit × Benefit Multiplier = Annual Benefit

- 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)

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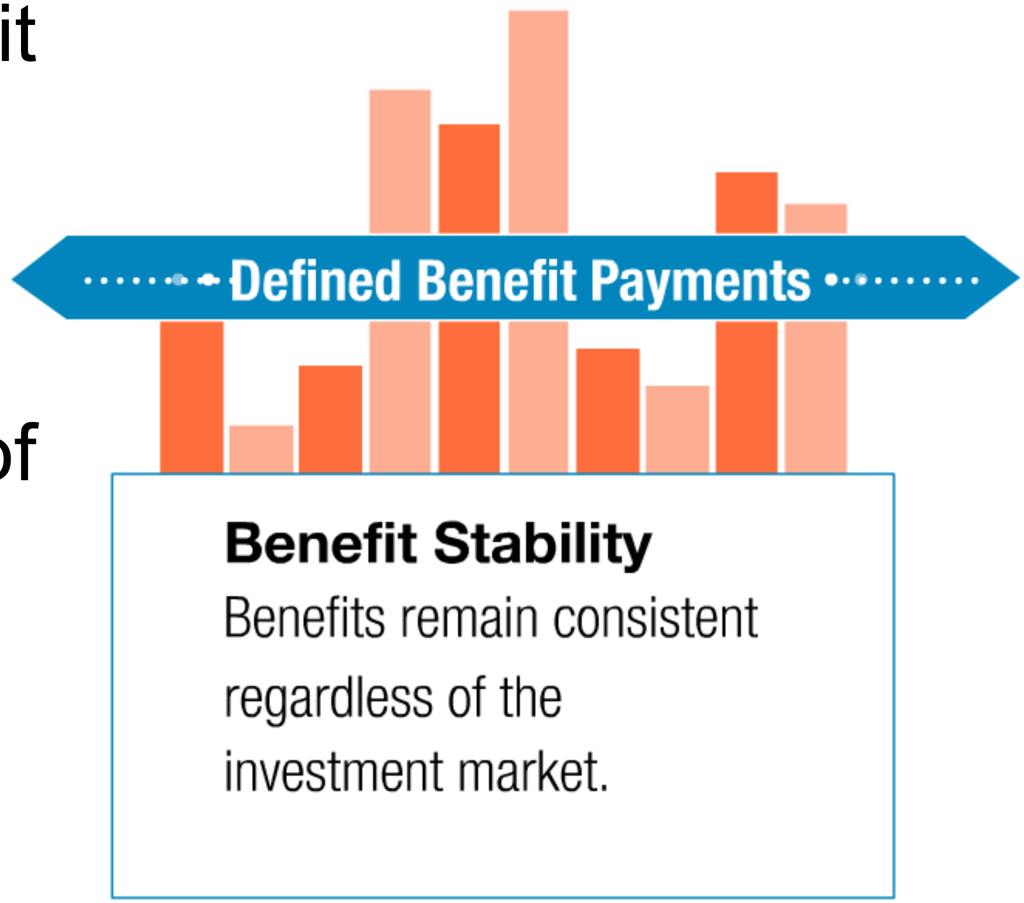
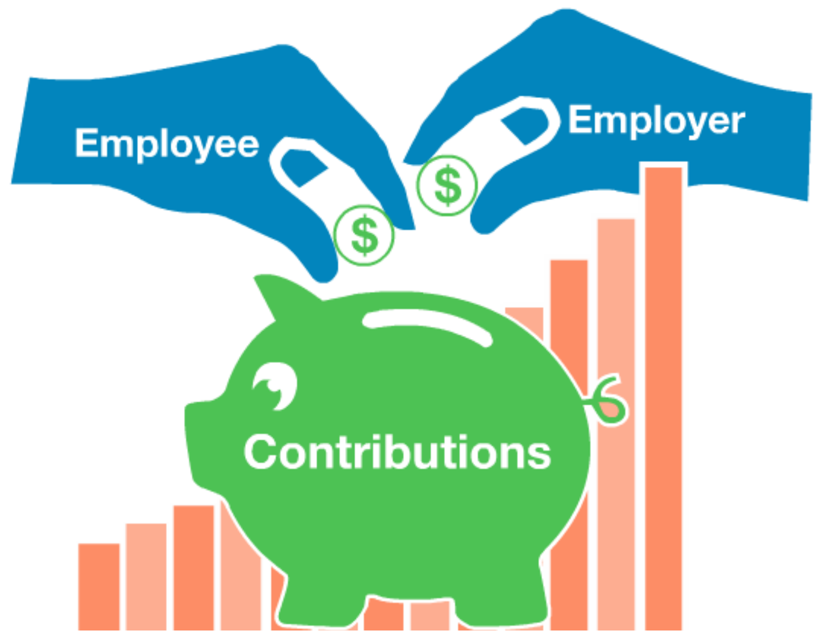
Benefit Stability

- The calculated benefit will not change with investment market fluctuations
- Retirement benefits of municipal employees are constitutionally protected



Prefunding the Benefit

- Defined benefit plans **are required by law** to be prefunded during the employee's career
- Contributions are typically made by both the employee and employer
- MERS strategically invests the contributions with a prudent long-term approach to provide downside protection with upside participation



Contributing to the Plan

- The employer contribution is made up of 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

Employer Normal Cost + Amortization Payment of the UAL = Employer Contribution

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

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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

Employer Normal Cost + **Amortization Payment of the UAL** = **Employer Contribution**

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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

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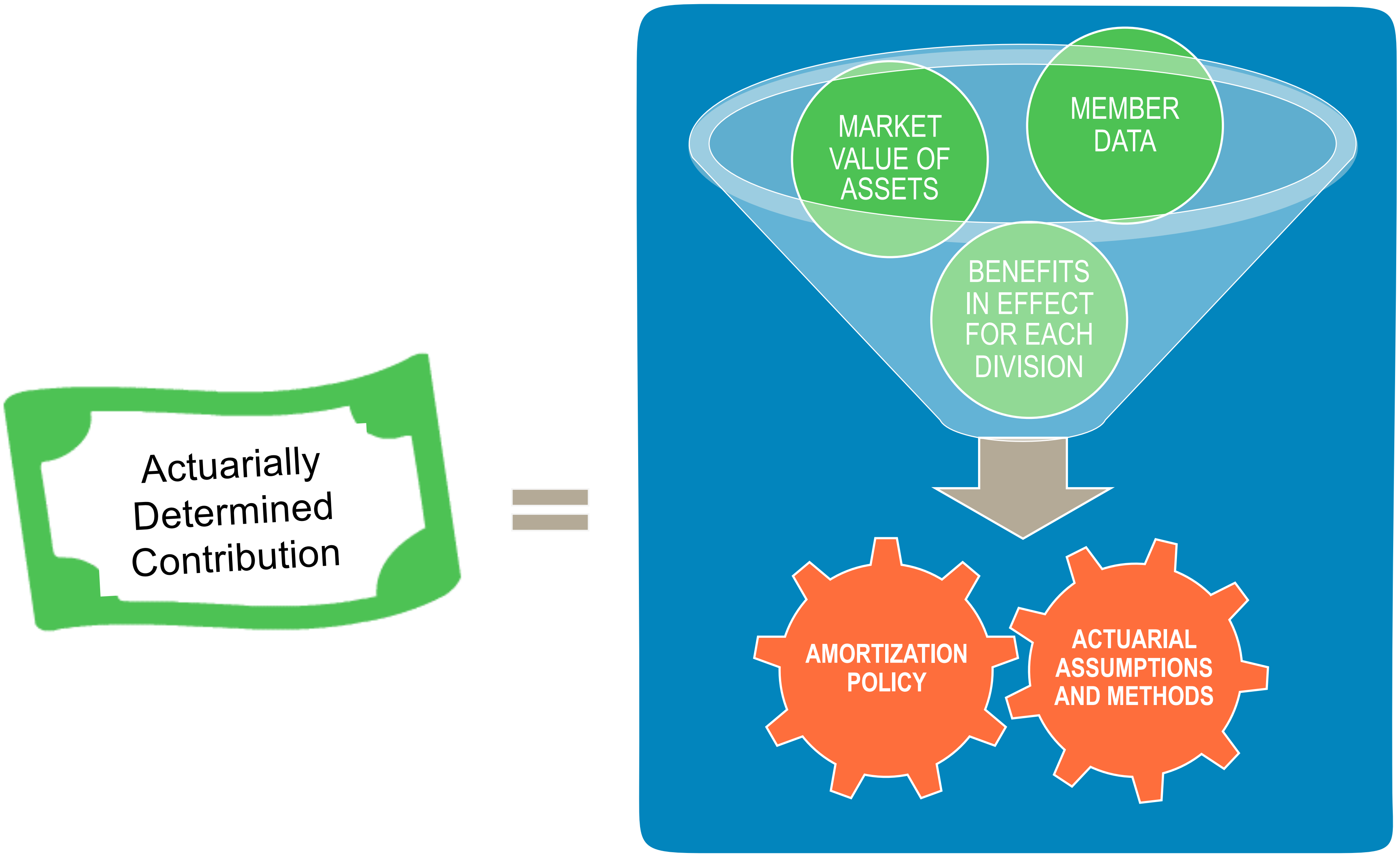
Calculating the Actuarially Determined Contribution



AAV 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
- Provides information for State Reporting as required by PA 202 of 2017
- Delivered each year by June 30th
- **Important in your 2018 AAV Report is information on the impacts of key assumptions changes, effective in FY 2021**

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A Deep Dive Into Actuarial Assumptions

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Experience Study Overview

- As part of our **fiduciary responsibility**, we check assumptions *at least* every five years
- Actuarial assumptions fall into two categories; **economic** and **demographic**
- In today's ever-changing world, there is a need to review economic assumptions more frequently so that plans can make **incremental changes**
- MERS moved up the review of our economic assumptions to help ensure MERS plans are continuing to **adequately fund benefits, which resulted in changes to two key assumptions**

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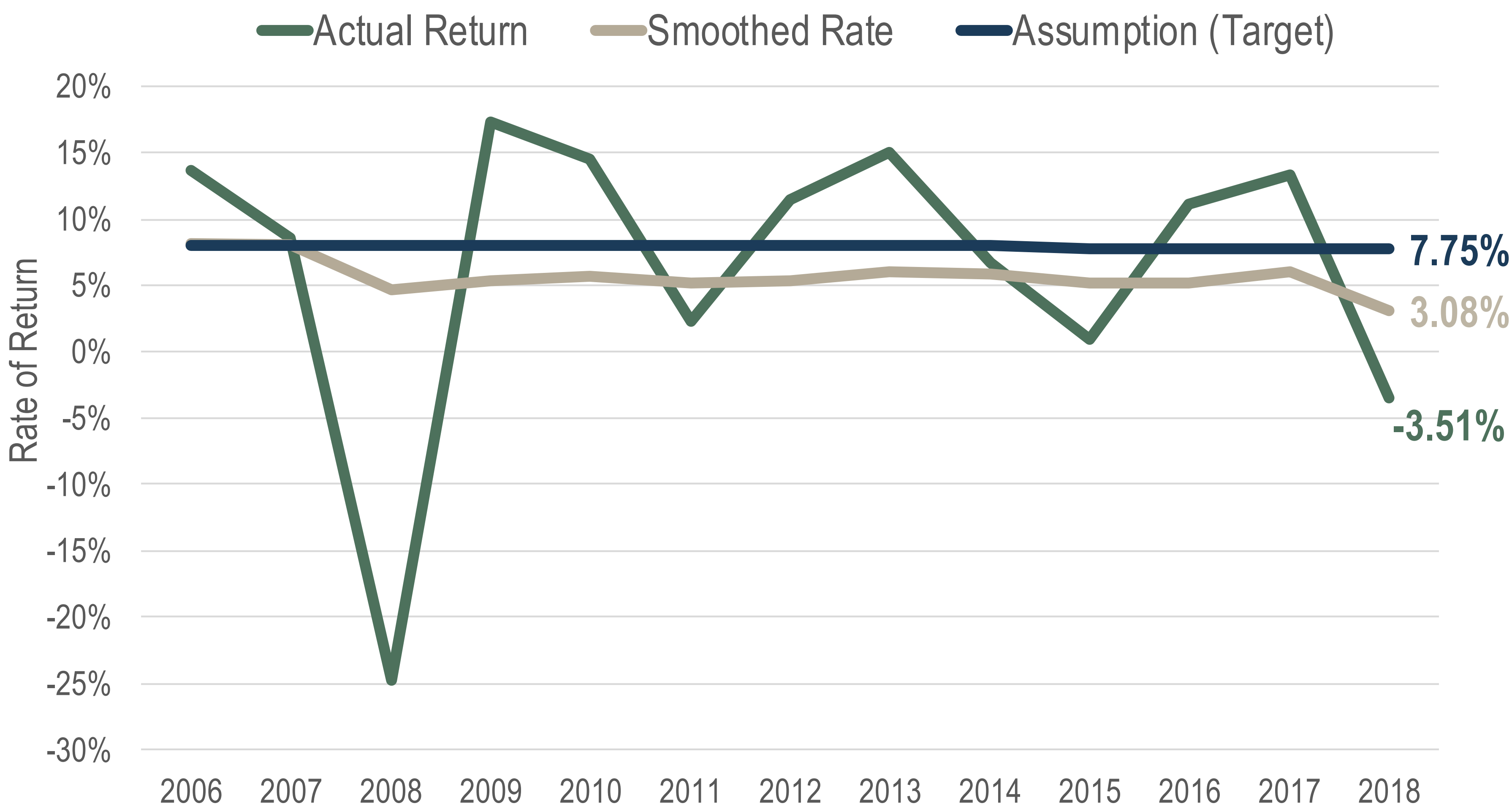
Funding Policy – Asset Smoothing

Smoothing is a buffer against extreme fluctuations in the market



**Investment rate of return is gross of fees*

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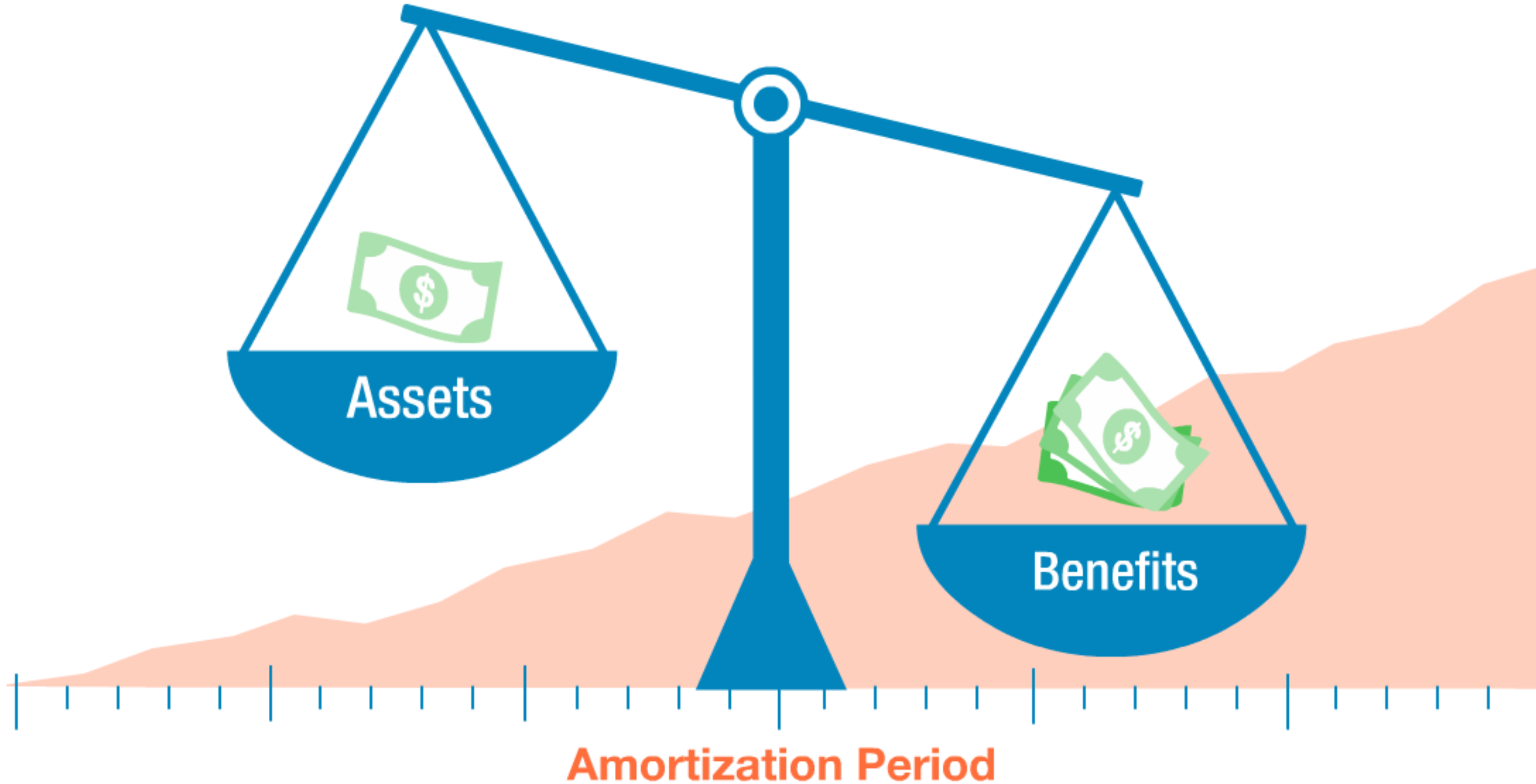
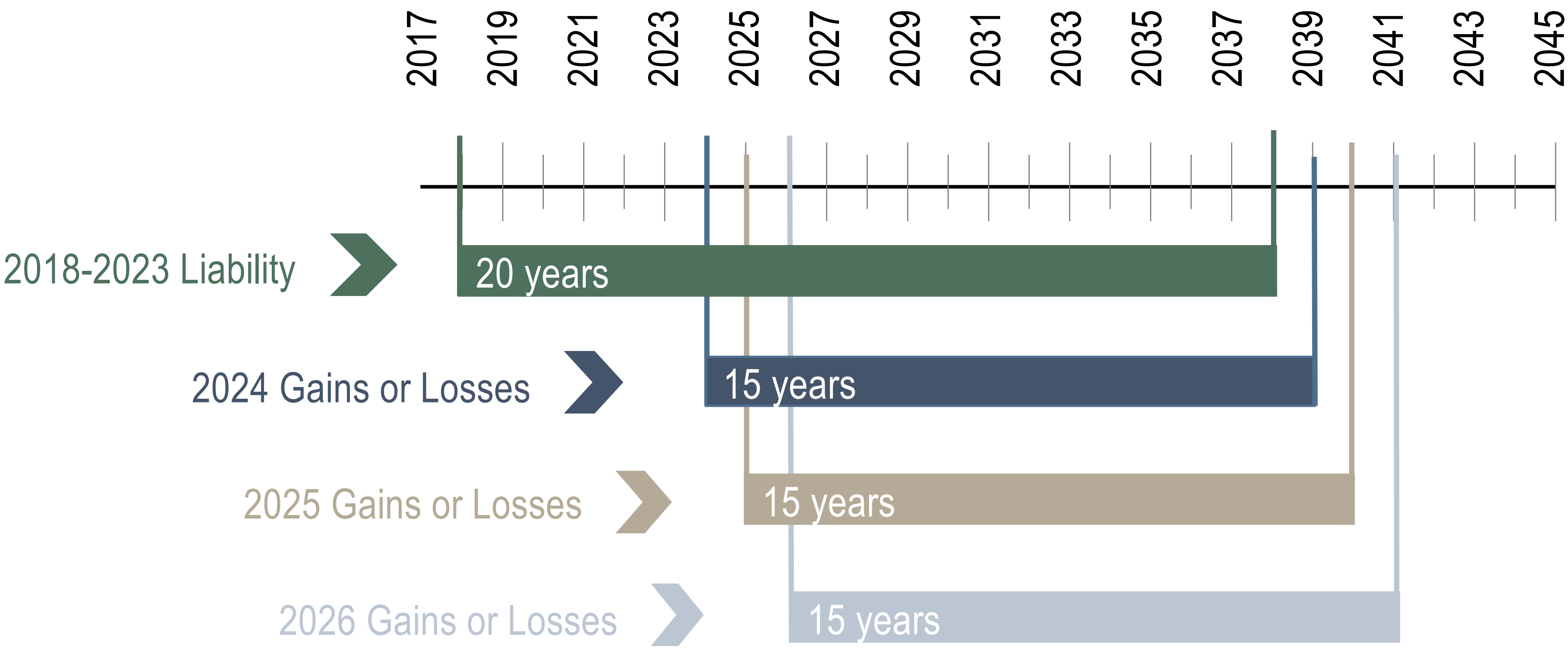
Amortization Policy



Unfunded liability is paid off over a fixed period of time known as the amortization period.

Layered Amortization Example



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Economic Assumptions

- Economic assumptions are **forward** looking
- The actuary looks at estimates of future economic conditions inherent in current market data, expert opinions, investment consultant expectations, etc.
- Public retirement systems follow a process for establishing the investment return assumption that considers various financial, economic and market factors, and is based on a long-term view

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Key Economic Assumptions

	Current Assumption	New Assumption Effective 12/31/2019
Price	2.50%	2.50%
Wage	3.75%	**3.00%**
Merit & Longevity	Based on an age scale	Based on an age scale
Investment Return	7.75%	**7.35%**

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Investment Return Assumption

- Expected investment returns are likely to be materially **lower than the past** due to historically low interest rates and high equity market valuations
- Plans around the county have made reductions to their investment return assumption
- MERS will be **reducing our investment assumption** from 7.75% to 7.35% effective 12/31/19
- Economic assumption changes are being announced now, but **won't impact contributions until FY 2021**

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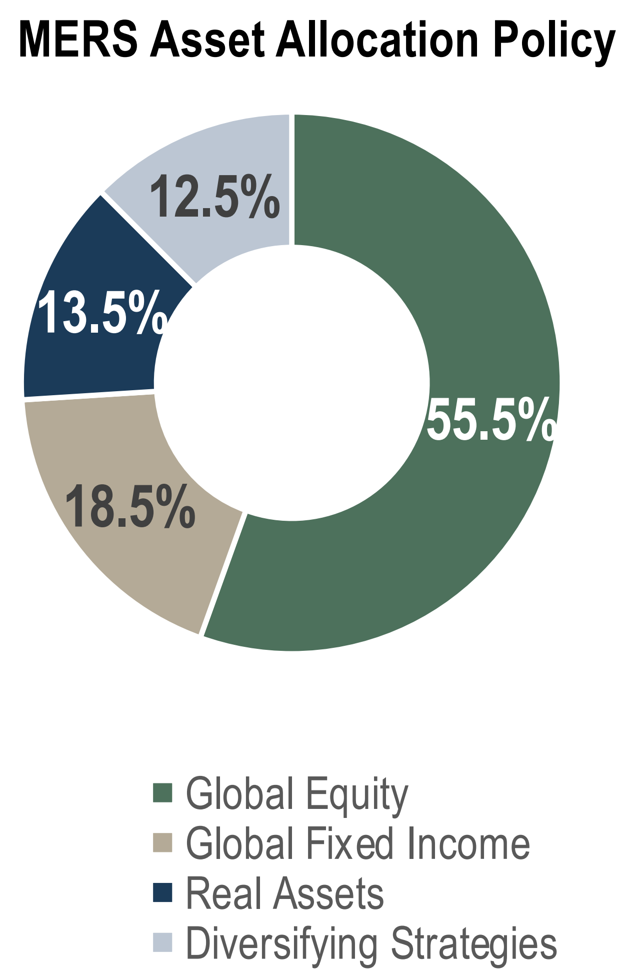
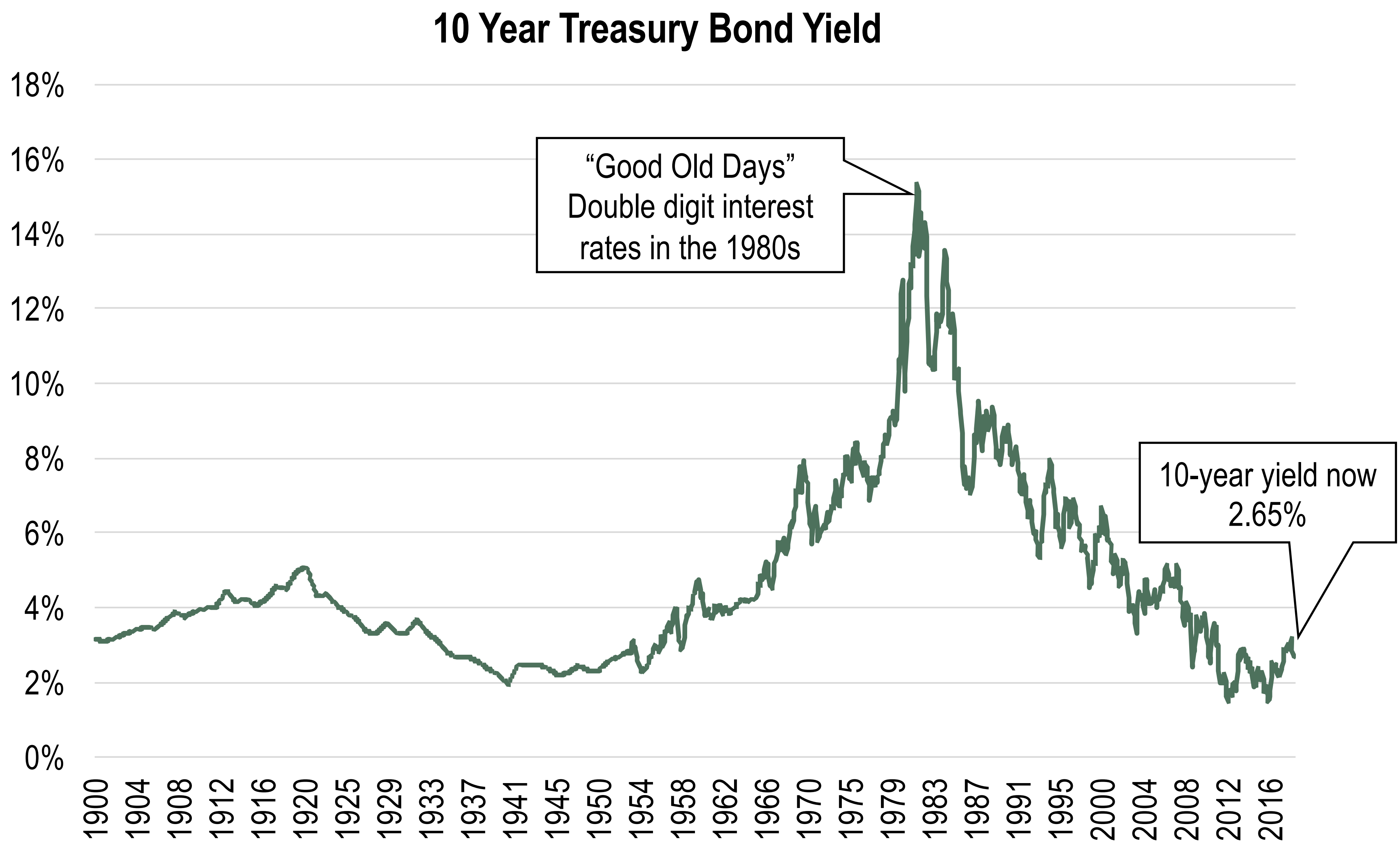
Pension Plan Portfolio

- Mature pension plans must balance the need to pay pension benefits with ongoing growth
- Diversification reduces exposure to volatility through a variety of investments that are unlikely to all move in the same direction



Interest Rates

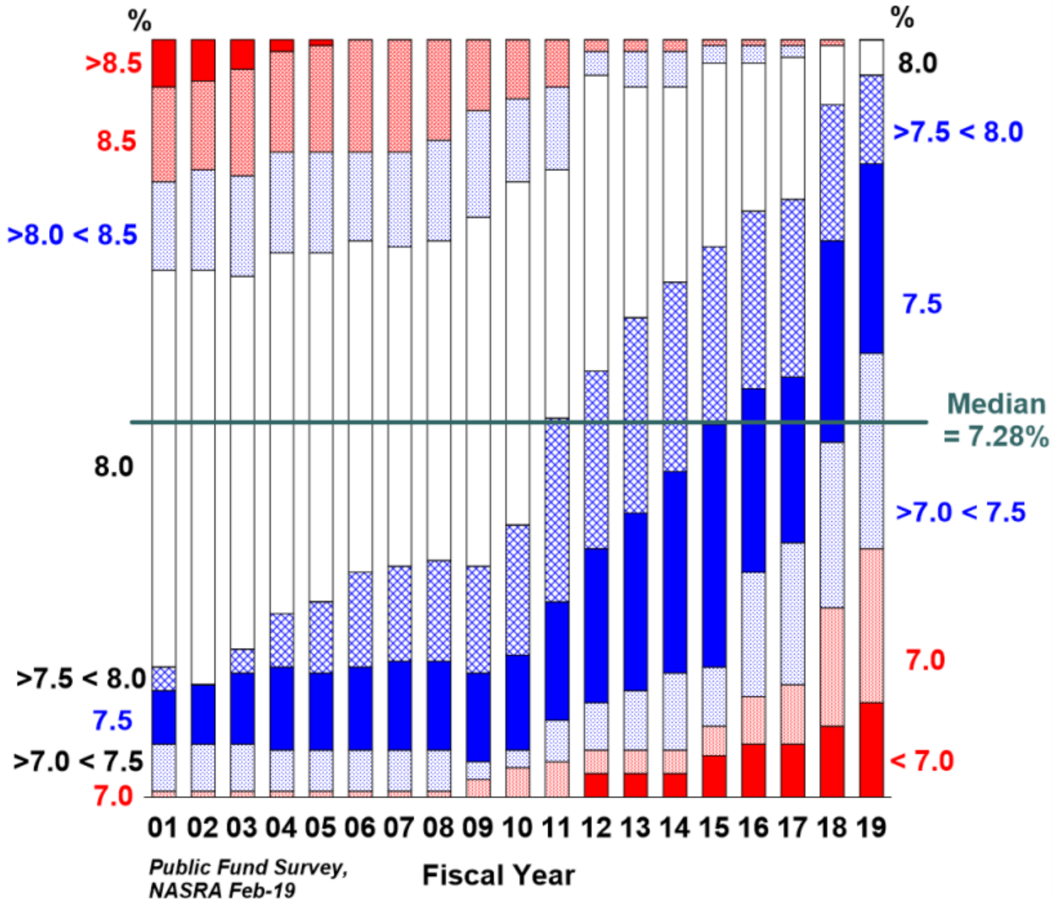


Long-Term Returns

- Short-term view (5-10 years)
  - Equity valuations (particularly in the U.S.) are currently at a level that implies much lower future equity returns
  - We are late in the business cycle and recession risks are rising
  - Interest rates have risen slightly but are still at historically low levels
  - Inflation remains at or below the 2% target
  - **Expected portfolio returns are likely to be materially lower than we have seen over the last decade**
- Long-term view (30+ years)
  - Interest rates and inflation are likely to rise over the next two decades due to demographics and secular trends
  - Equity valuations are likely going to decline, providing a more attractive entry point leading to higher long-term returns
  - Expected portfolio returns will be higher over a 20-30 year time horizon
  - However, if interest rates remain low, then MERS portfolio returns will likely be in the mid-single digits

National Trends in Public Pension Plans

Change in Distribution of Public Pension Investment Return Assumptions, FY 01 to FY 19



- NASRA study of public pension plan investment return assumptions
- Median rate: 7.28%
- Lowest rate: 5.25%
- Highest rate: 8.0%

Source: NASRA Issue Brief: Public Pension Plan Investment Return Assumptions – updated February 2019

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Wage Inflation

- Wage inflation is an assumption that considers large-scale or general economic factors which is used to project long-term increases of total payroll
- Two key factors of this assumption are:
  1) Price inflation
  2) Real wage growth
- **MERS will be reducing our wage inflation assumption from 3.75% to 3.00%, effective 12/31/19**

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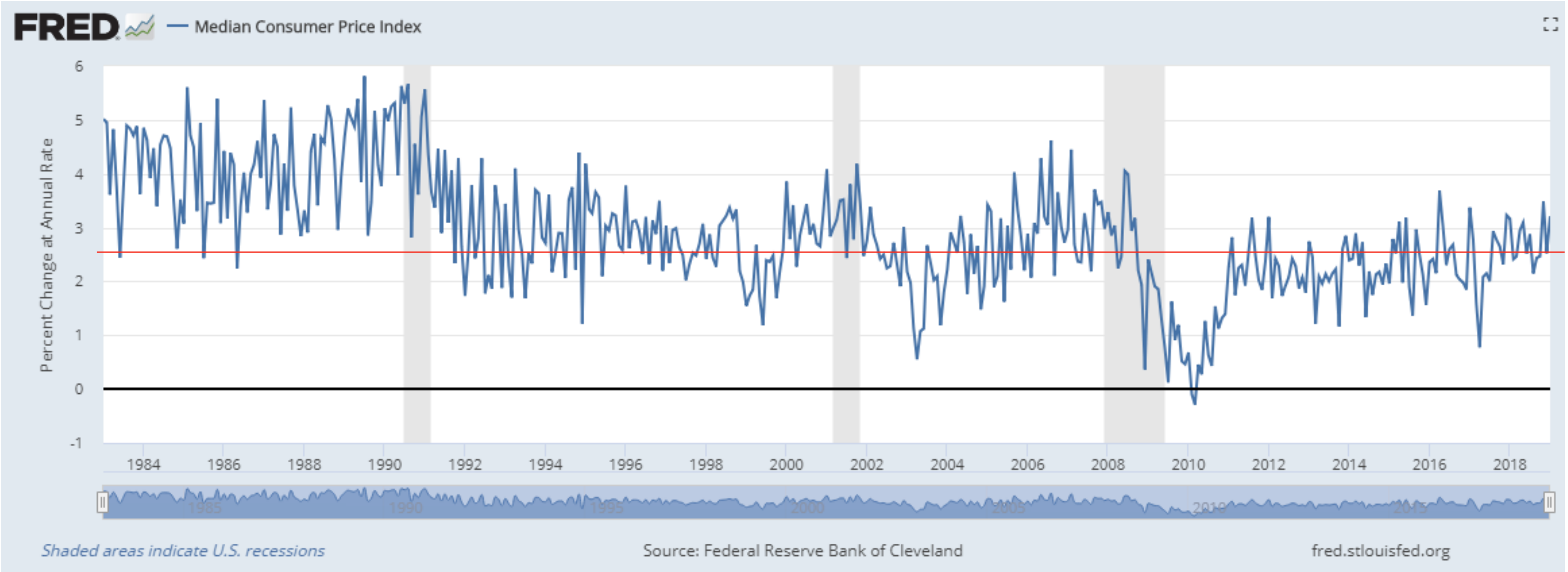
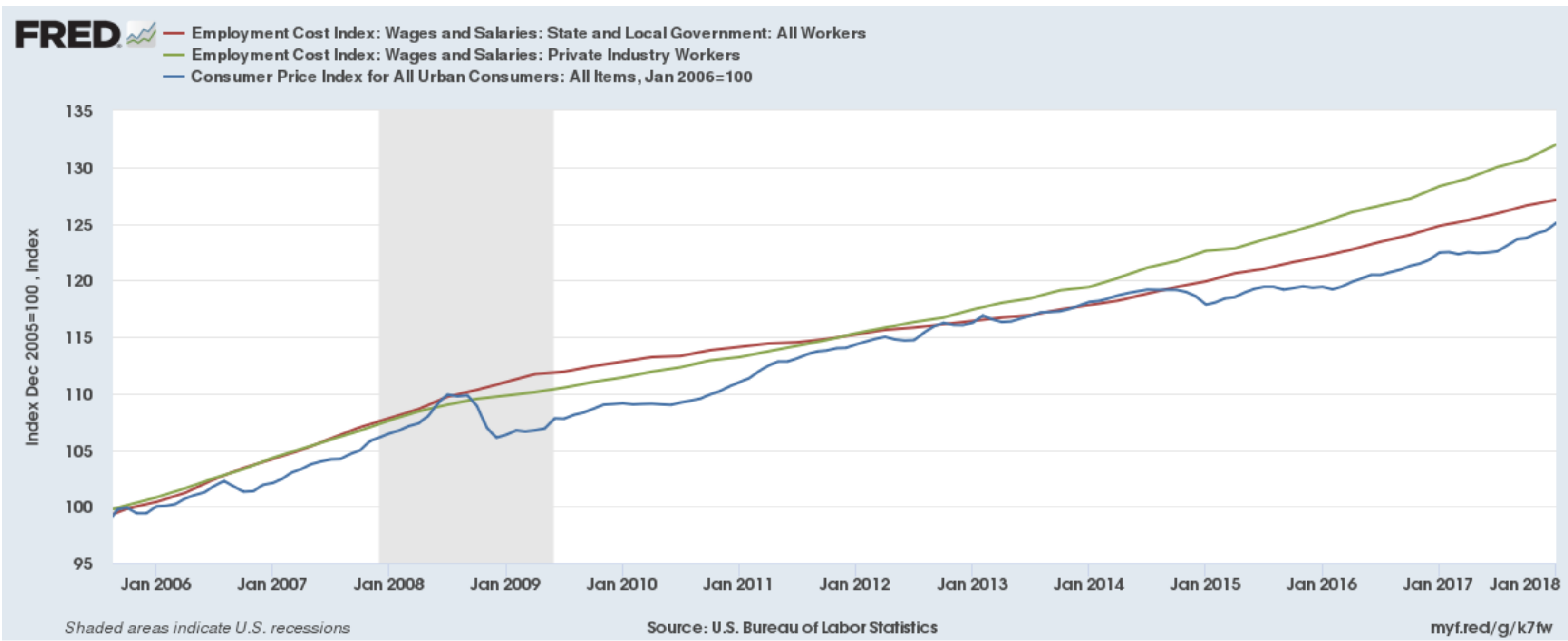
Price Inflation



Federal Reserve Bank of Cleveland, Median Consumer Price Index [MEDCPIM158SFRBCLE], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/MEDCPIM158SFRBCLE, February 14, 2019.

Real Wage Growth

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



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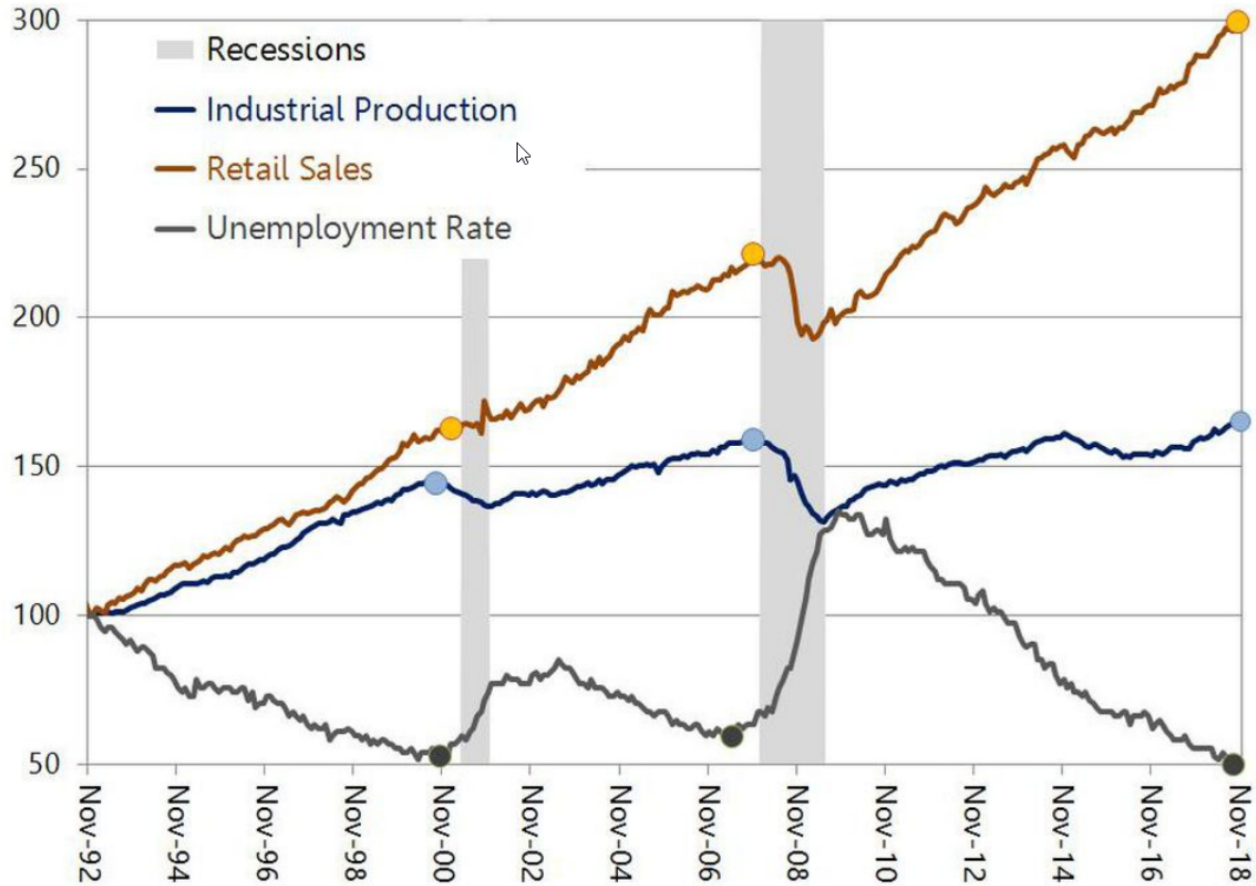
When is the Next Recession Coming?

Economic Indicators



Source: Forbes “Another Warning that a 2019 Recession is Coming” published 12/17/2018

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The “New Norm”

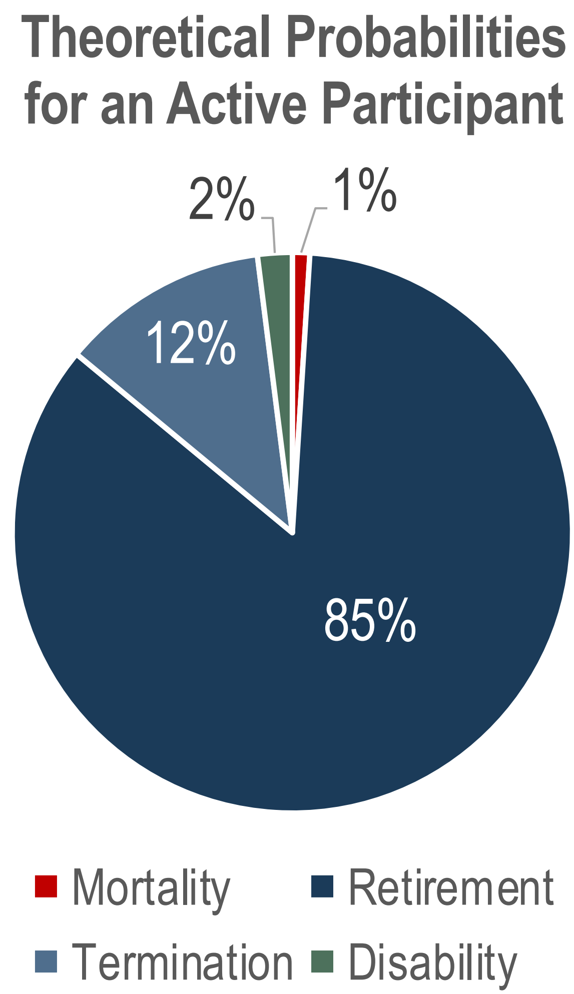
- Adjustments reflect **changes in trends**, rather than anomalies that would cause an overcorrection to plans
- In today’s ever-changing world, we expect **incremental changes** to ensure MERS plans are continuing to be adequately funded
- While adjustments typically means higher contributions, it also means we are **adequately funding** the benefits promised

Demographic Assumptions

- Demographic assumptions not only **look back at the plan's actual experience**, but also look forward to future expectations
- Our external actuaries will begin to analyze plan data later this year as part of our Experience Study
- Based on industry trends, we are **forecasting continued increases** in participant longevity
- Any changes to **demographic assumptions will impact FY 2022 contributions**

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



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

Strategies to Manage UAL

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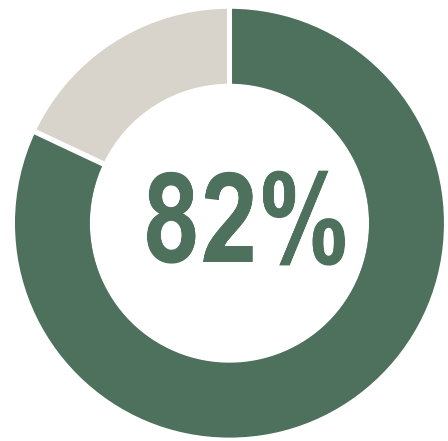
Reducing Pension UAL

There are two ways a municipality can close its unfunded liability gap

Increase assets to close the funding gap
- Funding strategies

Reduce or eliminate liability moving forward
- Plan design strategies

Members taking steps to reduce UAL in the past 5 years*



** As of 12/31/2018*

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Plan Design Strategies to Manage UAL

Strategy	Description	Trend					Impact
		2015	2016	2017	2018	2019	
Lower Benefit to New Hires	New hires receive a lower tier of Defined Benefit provisions	52	34	47	24	12	Existing employees not affected Reduces the liability for new hires
Bridged Benefits for Existing Employees	Benefits are offered in parts to existing employees Multiplier is lower going forward	16	45	27	40	14	Leaves earned benefits unchanged Reduces the liability for new hires and existing employees
Hybrid for New Hires	New hires receive a Hybrid Plan	21	15	12	13	0	Existing employees are not affected Reduces liability for new hires
Defined Contribution for New Hires	New hires receive a Defined Contribution Plan	37	39	73	56	14	Existing employees are not affected Eliminates liability for new hires
Bridged Cost of Living Adjustment (COLA)	Eliminates the COLA on future service credit	n/a	n/a	n/a	8	6	Leaves earned benefits unchanged Reduces the liability for new hires and existing employees
Defined Benefit Plan Freeze	Plan is frozen and all employees move to a new plan	n/a	7	3	2	0	Existing employees do not accrue additional service credit and FAC is frozen

Divisions that have adopted these strategies as of 4/30/2019.

Funding Strategies to Manage UAL

Strategy	Description	Trend 2015	2016	2017	2018	2019	Impact
Cost Sharing for Existing Employees[1]	Employees contribute to help fund the overall cost of the plan	97	136	169	130	53	Reduces the employer cost, but does not affect total cost or the plan's unfunded liability
Voluntary Contributions[2]	Additional payments made into plan toward unfunded liability	277	320	421	442	344	Reduces existing liability Extra dollars are invested and recognize market returns
Bonding[3]	Municipalities may bond for all or a portion of their unfunded accrued liabilities — pension or OPEB	1	3	2	6	0	Proceeds of the bond are deposited and potentially will fully fund the UAL No guarantee that future unfunded liabilities may not occur

[1]Divisions that have adopted this strategy as of 4/30/2019.

[2]Municipalities that have adopted this strategy as of 3/31/2019.

[3]Municipalities that have adopted this strategy as of 4/30/2019.

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Looking Ahead

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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

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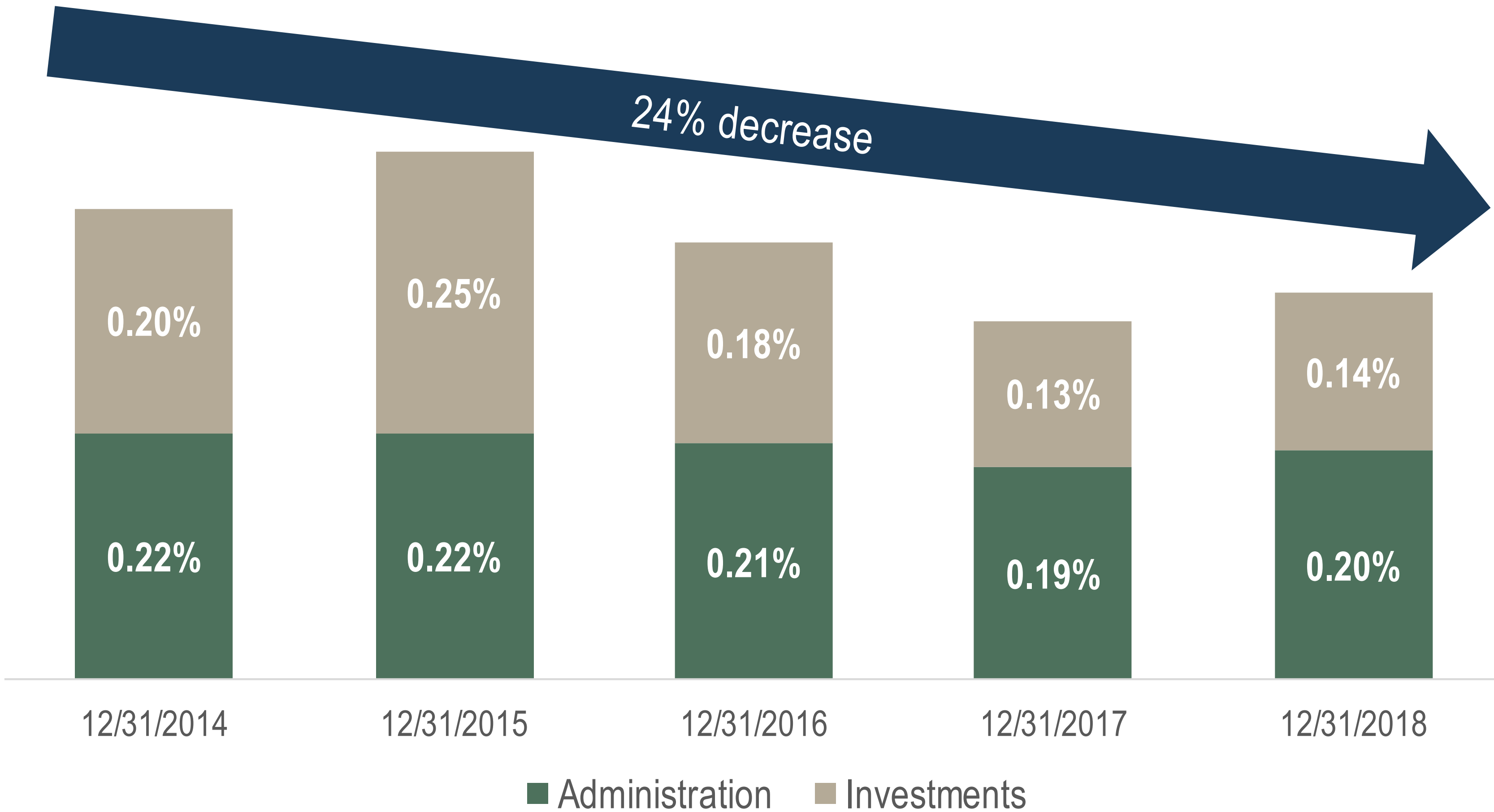
Defined Benefit Plan Cost History

Five-year History



Forecasting the Assumption Changes

Reduced Investment Return Assumption

- Reduced to **7.35%** beginning with **FY 2021** contributions
- Continuing to monitor closely
- Assuming less from investment returns results in increased contributions

Reduced Wage Inflation Assumption

- Reduced to **3.00%** beginning with **FY 2021** contributions

We listened to your feedback and are proactively communicating the impact of these change now with the delivery of your 2018 AAV Reports

Scenarios in AAV

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]/3.75%					
NO 5-YEAR PHASE-IN					
2018	2020	$ 15,478,372	$ 10,380,846	67%	$ 775,680
2019	2021	$ 15,900,000	$ 10,500,000	66%	$ 804,000
2020	2022	$ 16,300,000	$ 10,900,000	67%	$ 837,000
2021	2023	$ 16,600,000	$ 11,200,000	67%	$ 877,000
2022	2024	$ 17,000,000	$ 11,500,000	68%	$ 718,000
2023	2025	$ 17,300,000	$ 12,000,000	69%	$ 745,000
7.35%[1]/3.00%					
NO 5-YEAR PHASE-IN					
2018	2020	$ 15,978,582	$ 10,380,846	65%	$ 828,600
2019	2021	$ 16,400,000	$ 10,400,000	63%	$ 854,00[illegible]
2020	2022	$ 16,700,000	$ 10,800,000	65%	$ 883,000
2021	2023	$ 17,100,000	$ 11,200,000	65%	$ 919,000
2022	2024	$ 17,400,000	$ 11,500,000	66%	$ 762,000
2023	2025	$ 17,600,000	$ 12,000,000	68%	$ 786,000
5.75%[1]/3.75%					
NO 5-YEAR PHASE-IN					
2018	2020	$ 19,081,517	$ 10,380,846	54%	$ 1,124,028
2019	2021	$ 19,500,000	$ 10,300,000	53%	$ 1,170,000
2020	2022	$ 20,000,000	$ 10,800,000	54%	$ 1,210,000
2021	2023	$ 20,300,000	$ 11,400,000	56%	$ 1,260,000
2022	2024	$ 20,700,000	$ 11,800,000	57%	$ 1,120,000
2023	2025	$ 21,000,000	$ 12,500,000	60%	$ 1,150,000

12/31/2018 Valuation Results	Assumed Future Annual [illegible]moothed Rate o[illegible] [illegible]vestment Return		
	Lower Future Annual Returns	Adopted 2019 Assumption	Valuation [illegible]ssumptions
Investment Return Assumption	**5.75%**	**7.35%**	**[illegible]7.75%**
Wage Increase Assumption	**3.75%**	**3.00%**	**[illegible].75%**
Accrued Liability	$ 19,081,5[illegible]7	$ 15,978,582	$ 15,478,372
Valuation Assets[1]	$ 10,380,[illegible]6	$ 10,380,846	$ 10,380,846
Unfunded Accrued Liability	$ 8,700,[illegible]1	$ 5,597,736	$ 5,097,526
Funded Ratio	5[illegible]%	65%	67%
Monthly Normal Cost	$ 28,38[illegible]	$ 17,741	$ 17,857
Monthly Amortization Payment	$ 65,280	$ 51,309	$ 46,783
Total Employer Contribution[2]	$ 93,669	[illegible] 69,050	$ 64,640

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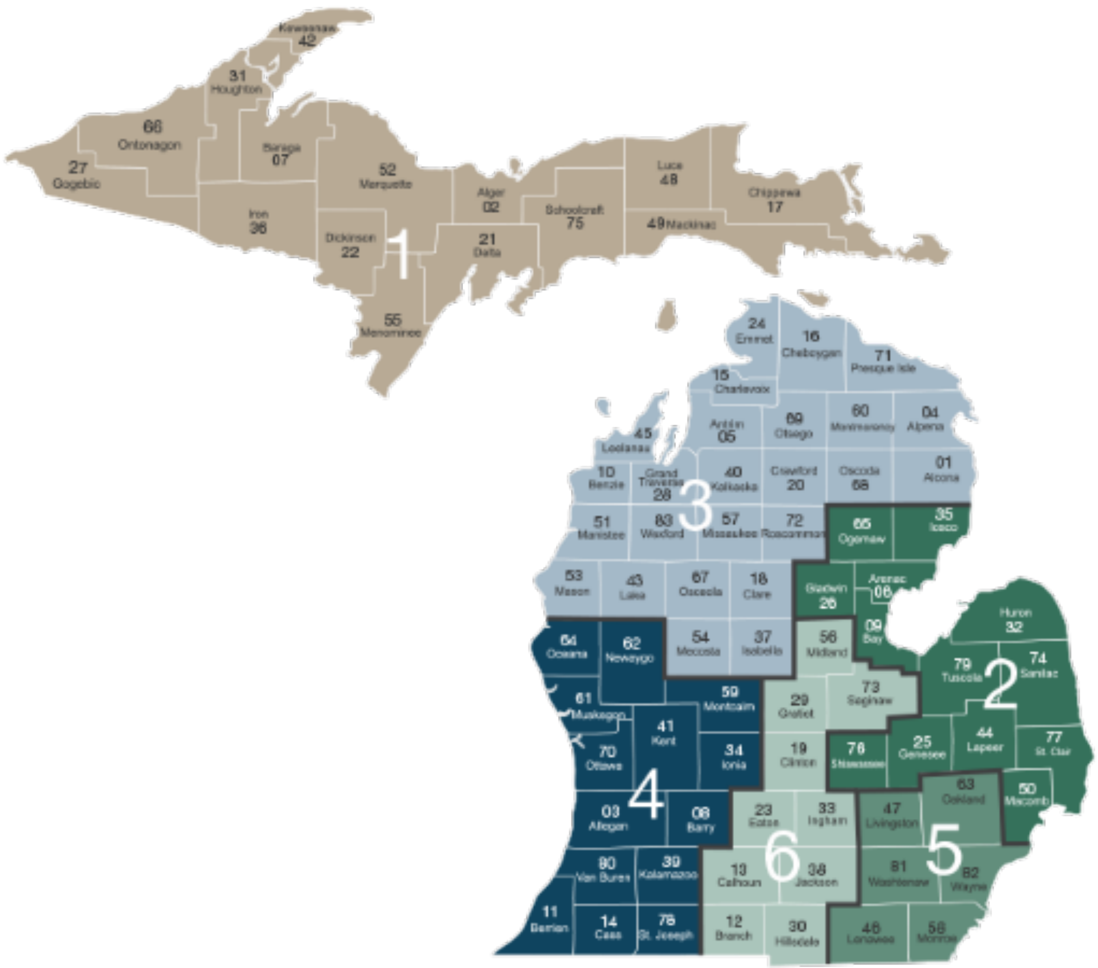
MERS Regional Teams



- Our Regional Teams provide local service throughout the state
- Your team consists of four members:
  - Regional Manager
  - Benefit Plan Advisor
  - Benefit Plan Coordinator
  - Benefit Education Specialist

Contacting MERS of Michigan

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