

# Office of the Vermont State Treasurer

Presentation to the  
**Pension Benefits, Design, and  
Funding Task Force**

**July 22, 2021**



# Agenda

- Pension Funding Status, Method and Trends
- Gains and Losses: What are the Drivers of the Increases in Unfunded Liability?
- Experience Study Data
- Brief Look at Investments
- Prefunding the OPEB
- Summary and Conclusions

## Purpose of the Annual Valuation

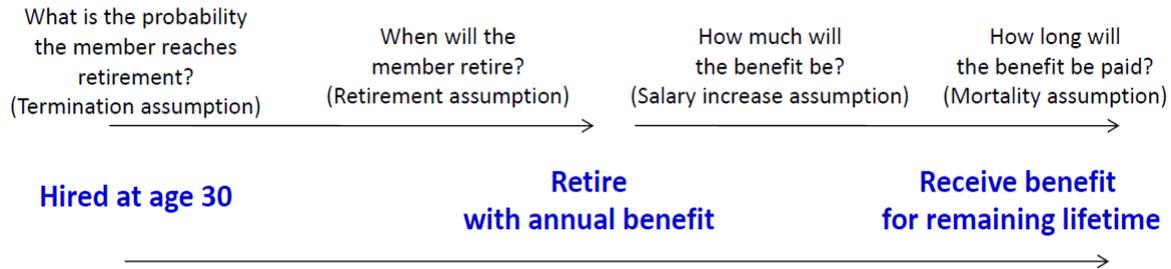
- To set or assess the adequacy of the retirement system to pay current and future retirement benefits
- To assure intergenerational equity in the allocation of costs
- Outputs:
  - Calculate the actuarially accrued liabilities
  - Calculate the actuarial value of assets
  - Calculate the funding status
  - Determine the Actuarially Determined Employer Contribution (ADEC)
  - Identify Gains and Losses: Review annual experience and compare against current actuarial assumptions
  - Review within the context of the statutorily established funding policy (amortization period)
  - Assess risks to the pension system
- Closed System
  - Estimate of a plan's financial position as of the valuation date
  - Snapshot

# Actuarial Process

Gather Data as of Valuation Date:  
Member Census Data  
Benefit Provisions

Actuarial Assumptions-  
Economic and Demographic

Project a benefit for each member, range of possibilities  
Aggregate



Projected Value of Future Benefits

Asset Information

Results:  
Actuarial Value of Assets  
Normal Cost and Accrued Liability  
Unfunded Liability and Funded Ratio  
Required Contribution (ADEC)  
Assessment of Funding Policy  
Risk Assessment

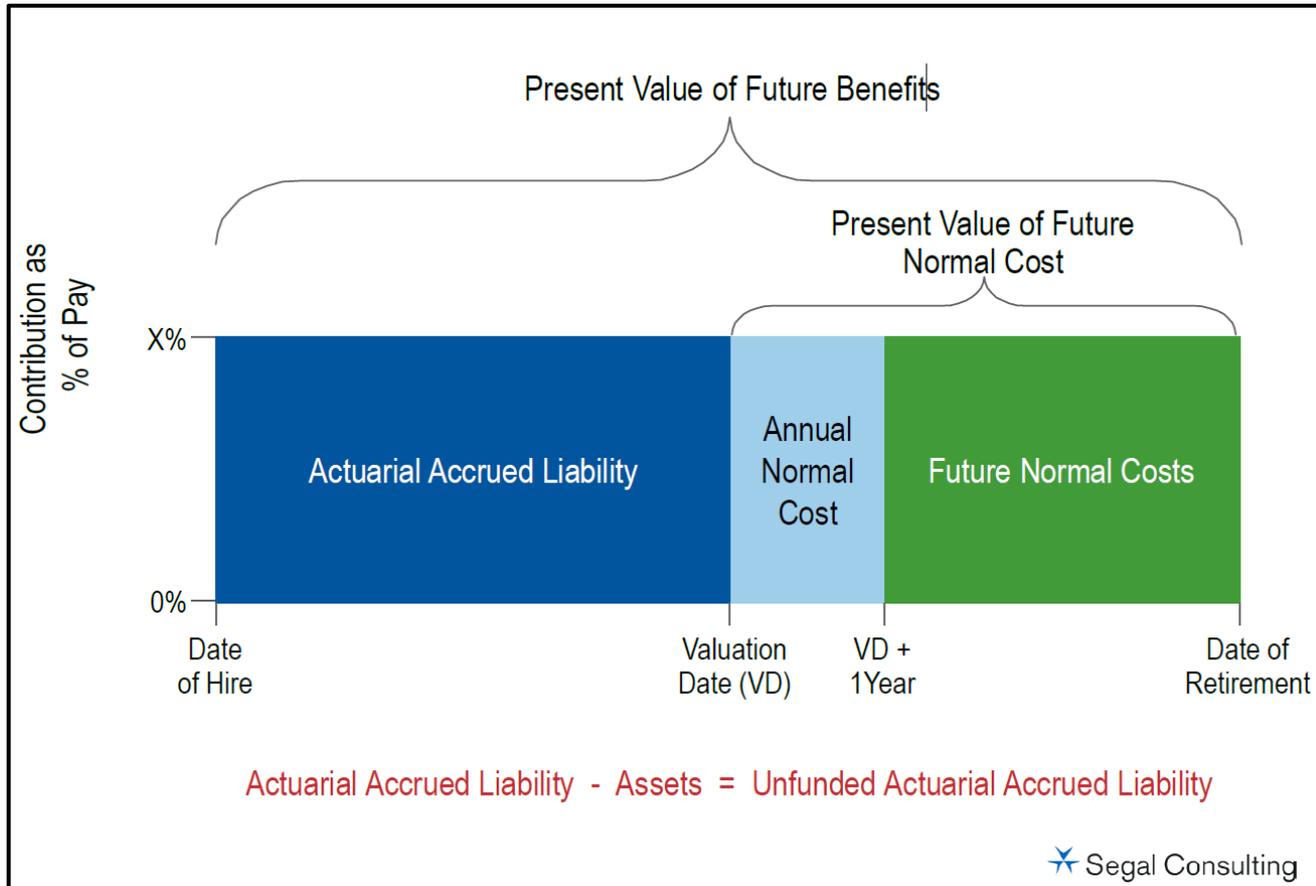
What investment earnings will be available to help pay the benefits?

What overall payroll will be available to provide contributions?

Note: Adapted from Segal Group various client valuation reports, and GRS, ERS of Texas Experience Study, 2020.

# Funding Process

(source: The Segal Group)



Present Value of Future Plan Benefits (PVFB)= amounts expected to be paid at various future times under a particular set of actuarial assumptions, taking into account such items as the effect of advancement in age, anticipated future compensation, and future service credits.

- Includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive members entitled to either a refund or a future retirement benefit.
- It is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would be provide sufficient assets to pay all projected benefits and expenses when due.
- A discount rate is applied to future benefit payments in order to calculate the present value or value in today's dollars.

# Pension Funding Status- VSERS and VSTRS

## Key Points

- Funding Status is Deteriorating/Unfunded Liability is Growing
- Cost of Actuarially Determined Employer Contribution (Largely Funded by the General Assembly) is Growing
- Historical Growth in Liabilities is Accelerating
- Combined Increase of \$604 million in Unfunded Liability in 2020 Valuation
- Combined Increase of \$96.6 million in FY2022 Actuarially Determined Contribution (ADEC)

# Funding Status

- Measured by an Independent Actuary through an annual valuation
- Three Important Factors:
  - Pension Status
    - Pension Liabilities
    - Assets Available to meet these liabilities
  - Is Employer contributing to plan at the recommended rate?
    - Actuarially Determined Employer Contribution (ADC/ADEC)
  - Is plan in place to retire the unfunded liability?
    - Is it doable?

# How Do You Pay Down the Liability?

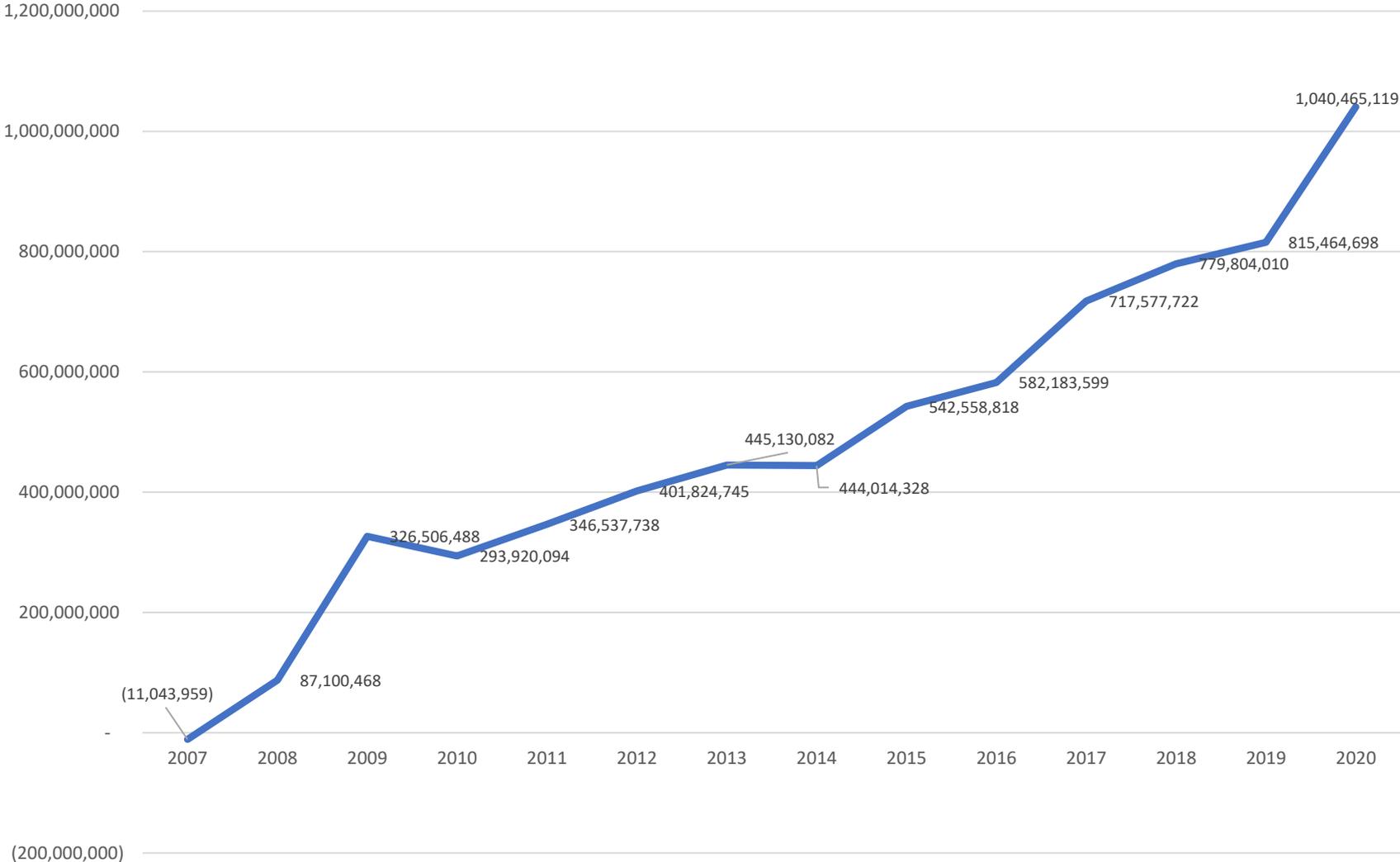
## The ADEC

- Sources of Revenue to the Fund
  - Employee Contributions
  - Employer Contributions
  - Investments
- Actuarially Determined Employer Contribution (ADEC) must be appropriated
  - A measure of needed plan funding
  - The actuarially determined pension fund contribution in a single year
- The ADEC has two parts:
  - The Normal Cost
    - The normal cost generally represents the portion of the cost of projected benefits allocated to the current plan year
    - The employer normal cost equals the total normal cost of the plan reduced by employee contributions
  - Amortization
    - The annual amount needed to eliminate the unfunded liability over the plan's amortization period
- Legislature Appropriates Funds, Sets Funding Policy
  - Amortization of ADEC with plan to retire unfunded liability by 2038
  - But ADEC is increasing, resulting in more strain on budgets

### Funding Progress of the VSERS Retirement System - (Amounts in Thousands)

Year ending June 30	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b-a) (in thousands)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a)/c)
<b>2020</b>	<b>\$ 2,054,826</b>	<b>\$ 3,095,291</b>	<b>\$ 1,040,465</b>	<b>66.4%</b>	<b>\$ 551,981</b>	<b>188.5%</b>
2019	1,964,501	2,779,966	815,465	70.7%	\$ 527,571	154.6%
2018	1,881,805	2,661,609	779,804	70.7%	521,671	149.5%
2017	1,793,795	2,511,373	717,578	71.4%	504,553	142.2%
2016	1,707,268	2,289,452	582,184	74.6%	471,268	123.5%
2015	1,636,268	2,178,827	542,559	75.1%	462,057	117.4%
2014	1,566,076	2,010,090	444,014	77.9%	437,676	101.4%
2013	1,469,170	1,914,300	445,130	76.8%	416,766	106.8%
2012	1,400,779	1,802,604	401,825	77.7%	385,526	104.2%
2011	1,348,763	1,695,301	346,538	79.6%	398,264	87.0%
2010	1,265,404	1,559,324	293,920	81.2%	393,829	74.6%
2009	1,217,638	1,544,144	326,506	78.9%	404,516	80.7%
2008	1,377,101	1,464,202	87,101	94.1%	404,593	21.5%
2007	1,318,687	1,307,643	(11,044)	100.8%	386,917	-2.9%
2006	1,223,323	1,232,367	9,044	99.3%	369,310	2.4%
2005	1,148,908	1,174,796	25,888	97.8%	349,258	7.4%
2004	1,081,359	1,107,634	26,275	97.6%	336,615	7.8%
2003	1,025,469	1,052,004	26,535	97.5%	319,855	8.3%
2002	990,450	1,017,129	26,679	97.4%	300,994	8.9%
2001	954,821	1,026,993	72,172	93.0%	278,507	25.9%
2000	895,151	967,064	71,913	92.6%	266,519	27.0%
1999	804,970	876,412	71,442	91.8%	238,281	30.0%
1998	733,716	804,501	70,785	91.2%	235,956	30.0%
1997	639,128	753,883	114,755	84.8%	227,000	50.6%

# VSERS Ending FY Unfunded Liability by Year



## VSERS - Scope of the Challenge (Dollars in Millions)

	2019 Valuation* 2021 budget	Estimated Results based on Experience Study	2020 Valuation** 2022 budget
Unfunded Liability change	\$815.5	\$1,032.3 \$216.8	\$1,040.5 \$225.0
ADEC change	\$83.9	\$113.6 \$29.7	\$119.9 \$36.0

\* Used to develop FY2021 budget

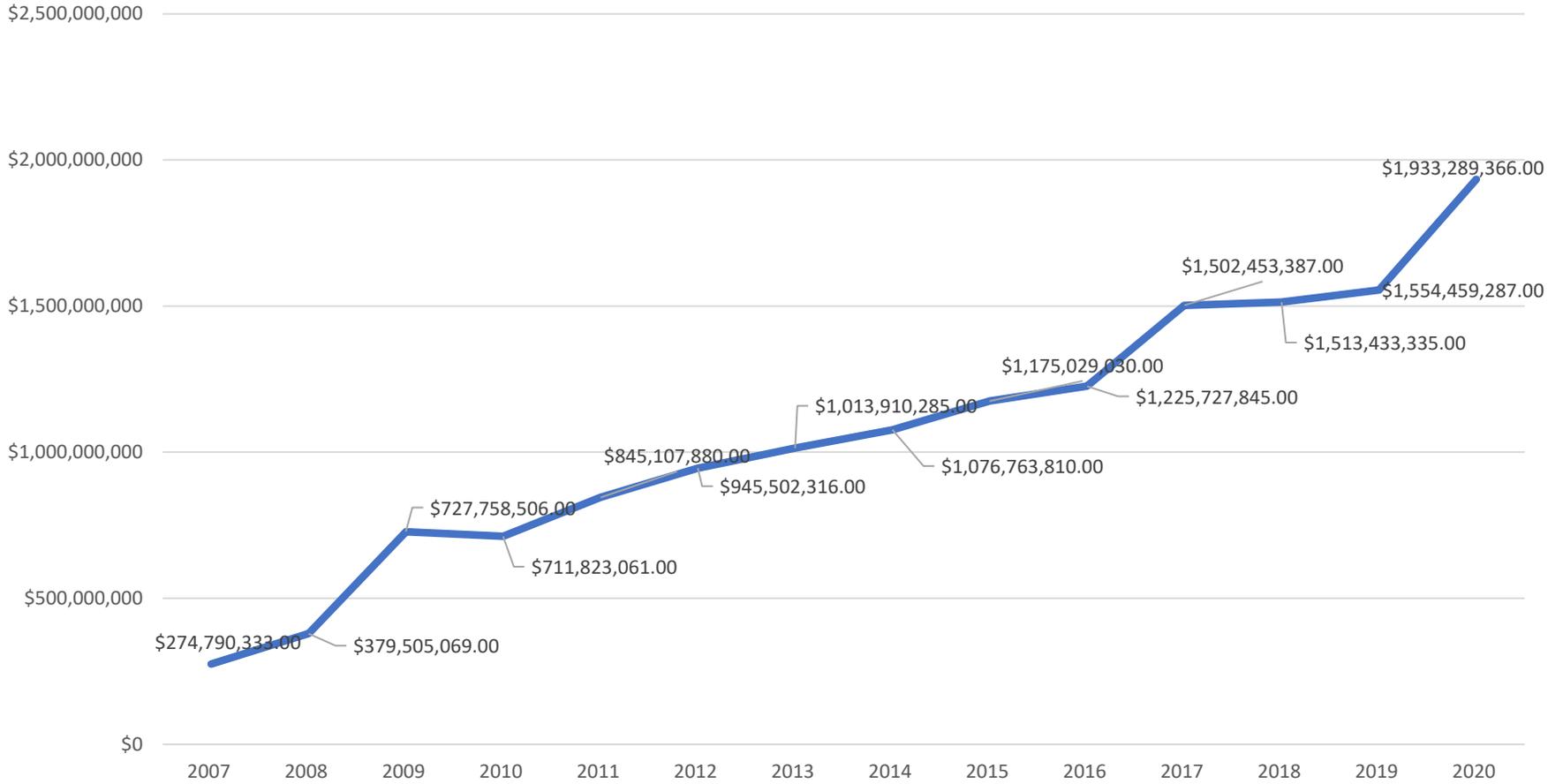
\*\* Impacts the FY2022 budget

## Funding Progress of the VSTRS Retirement System - (Amounts in Thousands)

Year ending June 30	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b-a)  (in thousands)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a)/c)
<b>2020</b>	<b>\$ 2,035,714</b>	<b>3,969,003</b>	<b>1,933,289</b>	<b>51.3%</b>	<b>\$ 645,903</b>	<b>299.3%</b>
2019	1,950,860	3,505,319	1,554,459	55.7%	\$ 624,908	248.8%
2018	1,866,121	3,379,554	1,513,433	55.2%	612,899	246.9%
2017	1,779,592	3,282,045	1,502,453	54.2%	607,355	247.4%
2016	1,716,296	2,942,024	1,225,728	58.3%	586,397	209.0%
2015	1,662,346	2,837,375	1,175,029	58.6%	557,708	210.7%
2014	1,610,286	2,687,049	1,076,764	59.9%	567,074	189.9%
2013	1,552,924	2,566,834	1,013,910	60.5%	563,623	179.9%
2012	1,517,410	2,462,913	945,503	61.6%	561,179	168.5%
2011	1,486,698	2,331,806	845,108	63.8%	547,748	154.3%
2010	1,410,368	2,122,191	711,823	66.5%	562,150	126.6%
2009	1,374,079	2,101,838	727,759	65.4%	561,588	129.6%
2008	1,605,462	1,984,967	379,505	80.9%	535,807	70.8%
2007	1,541,860	1,816,650	274,790	84.9%	515,573	53.3%
2006	1,427,393	1,686,502	259,109	84.6%	499,044	51.9%
2005	1,354,006	1,492,150	138,144	90.7%	468,858	29.5%
2004	1,284,833	1,424,661	139,828	90.2%	453,517	30.8%
2003	1,218,001	1,358,822	140,821	89.6%	437,239	32.2%
2002	1,169,294	1,307,202	137,908	89.5%	418,904	32.9%
2001	1,116,846	1,254,341	137,495	89.0%	403,258	34.1%
2000	1,037,466	1,174,087	136,621	88.4%	387,999	35.2%
1999	931,056	1,065,754	134,698	87.4%	372,299	36.2%
1998	821,977	955,694	133,717	86.0%	357,899	37.4%
1997	717,396	849,179	131,783	84.5%	364,695	36.1%

← Reflects different actuarial method that overstated funded ratio

# VSTRS Ending FY Unfunded Liability



## VSTRS- Scope of the Challenge (Dollars in Millions)

	2019 Valuation* 2021 budget	Estimated Results based on Experience Study	2020 Valuation** 2022 budget
Unfunded Liability change	\$1,554.0	\$1,880.0 \$326.0	\$1,933.0 \$379.0
ADEC change	\$135.6	\$186.4 \$50.8	\$196.2 \$60.6

\* Used to develop FY2021 budget

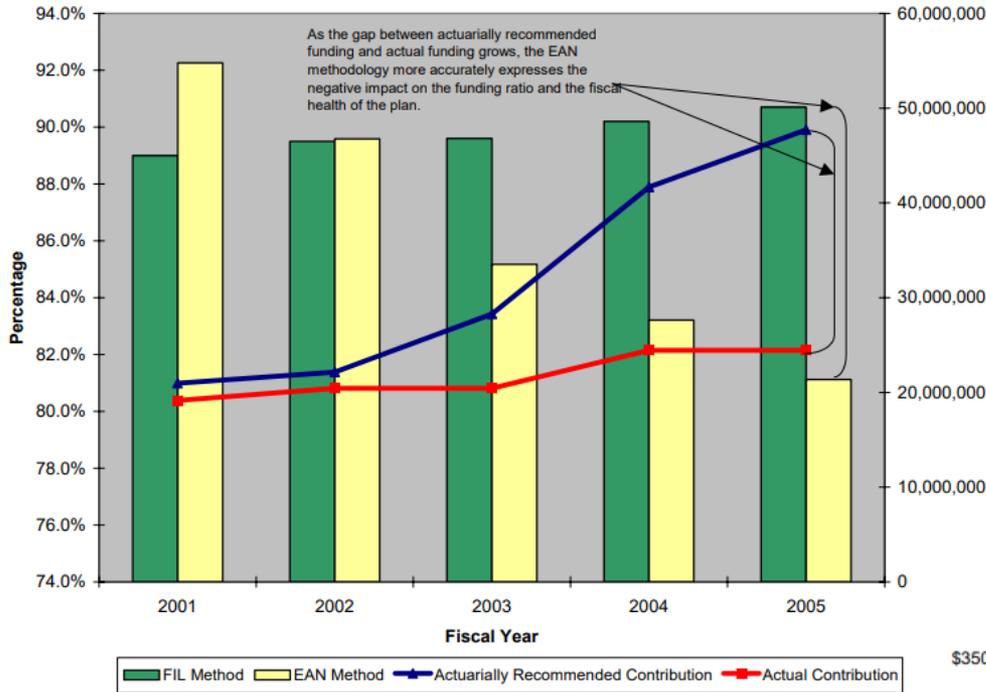
\*\* Impacts the FY2022 budget

# A Note to Clarify the Historical Funding of VSTRS

## Pre 2006 VSTRS Funding Status Reflects an “Outlier” Method that Overstates the Funded Position

- The actuarial method used in annual valuations prior to 2006 distorted the growth in the unfunded liability.
  - Based on statutory requirements
- The actuarial method used by VSTRS, as required by statute at that time, was “Frozen Initial Liability” or FIL
- FIL froze the liability and pushed increases to the “normal cost” therefore overstating the funded ratio and understating the unfunded liability.
- Vermont had actually lost considerable ground in the status of pension funding at that time.

### GASB Funding Ratio and Contribution Levels for VSTRS

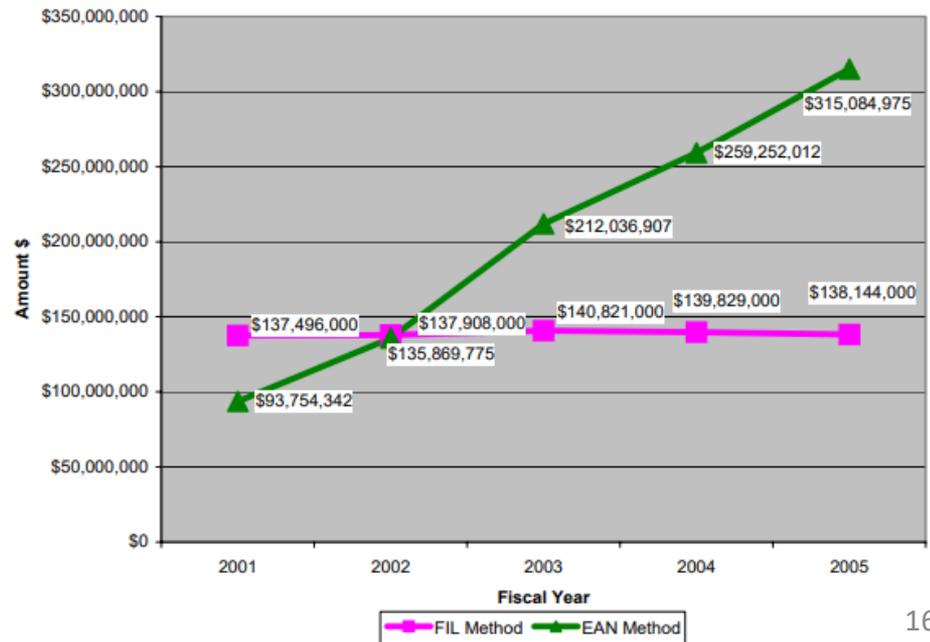


Using the EAN method, the VSTRS unfunded liability increased from \$93.8 million in 2001 to \$315.1 million in 2005

### VSTRS

Using the accepted Entry Age Normal (EAN) actuarial method, the VSTRS funded ratio declined from 92.3% in 2001 to 81.1% in 2005.

### VSTRS Unfunded Liability Using EAN and FIL Methods



## The impact of underfunding the VSTRS System

- Underfunding of the State Teachers' ADEC (Actuarially Determined Employer Contribution) was not a factor in the increase in the unfunded liability from FY 2020 to FY 2021 and the ADEC for FY 2022.
- Underfunding did, however, result in lower funding levels coming into the Great Recession and continues to be a factor in the ADEC contribution.
- While the pension ADEC underfunding was resolved in 2007, underfunding continued due to health care expenditures paid from the pension fund without sufficient appropriation. That underfunding resulted in realized losses, adding \$175,907,621 to the unfunded liability.

# VSTRS Contribution History

Year	Recommended Contribution For Budget Based on Actuarial Projection	Actual Contribution	\$ Difference: Act vs. Rec.*	Percentage of Request
1979	7,806,825	4,825,155	2,981,670	61.81%
1980	8,944,090	8,471,960	472,130	94.72%
1981	9,862,861	8,830,900	1,031,961	89.54%
1982	10,200,209	7,822,760	2,377,449	76.69%
1983	10,721,814	10,929,355	(207,541)	101.94%
1984	12,341,069	11,592,100	748,969	93.93%
1985	13,475,181	12,567,866	907,315	93.27%
1986	14,668,095	14,461,148	206,947	98.59%
1987	15,925,452	16,239,416	(313,964)	101.97%
1988	16,294,346	17,186,259	(891,913)	105.47%
1989	18,072,172	19,000,000	(927,828)	105.13%
1990	21,320,155	19,561,000	1,759,155	91.75%
1991	25,013,437	15,000,000	10,013,437	59.97%
1992	28,595,220	14,618,992	13,976,228	51.12%
1993	28,819,875	19,890,048	8,929,827	69.02%
1994	25,805,408	20,580,000	5,225,408	79.75%
1995	27,451,926	18,080,000	9,371,926	65.86%
1996	29,884,559	11,480,000	18,404,559	38.41%
1997	30,954,237	18,080,000	12,874,237	58.41%

Year	Recommended Contribution For Budget Based on Actuarial Projection	Actual Contribution	\$ Difference: Act vs. Rec.*	Percentage of Request
1998	33,519,949	18,106,581	15,413,368	54.02%
1999	27,232,542	18,080,000	9,152,542	66.39%
2000	23,573,184	18,586,240	4,986,944	78.84%
2001	20,882,521	19,143,827	1,738,694	91.67%
2002	21,965,322	20,446,282	1,519,040	93.08%
2003	23,197,088	20,446,282	2,750,806	88.14%
2004	29,608,892	24,446,282	5,162,610	82.56%
2005	43,592,332	24,446,282	19,146,050	56.08%
2006	49,923,599	24,985,506	24,938,093	50.05%
2007	38,200,000	38,496,410	(296,410)	100.78%
2008	40,749,097	40,955,566	(206,469)	100.51%
2009	37,077,050	37,349,818	(272,768)	100.74%
2010	41,503,002	41,920,603	(417,601)	101.01%
2011	48,233,006	50,268,131	(2,035,125)	104.22%
2012	51,241,932	56,152,011	(4,910,079)	109.58%
2013	60,182,755	65,086,320	(4,903,565)	108.15%
2014	68,352,825	72,668,412	(4,315,587)	106.31%
2015	72,857,863	72,908,805	(50,942)	100.07%
2016	76,102,909	76,947,869	(844,960)	101.11%
2017	82,659,576	82,887,174	(227,598)	100.28%
2018	88,409,437	114,598,921	(26,189,484)	129.62%
2019	105,640,777	119,174,913	(13,534,136)	112.81%
2020	126,197,389	126,941,582	(744,193)	100.59%

\*Beginning 1996, budget contribution amount per prior valuation report

# Actuarial Gains and Losses

## Key Points

- A Pension Plan Has Actuarial Gains Or Losses Each Year
  - Actual events during the year (“experience”) do not exactly match the long-term assumptions previously made
- Economic Gains/Losses:
  - The actual investment returns, cost of living or inflation were higher or lower than anticipated
- Experience And Demographic Gains or Losses:
  - Mortality, Salary Increases, Termination, Staff Turnover, Retirement
- An Experience Study Is Completed To Reset Assumptions
  - Revised from 5 years to 3 years
- Patterns of gains/losses exist in both VSERS and VSTRS (see next slides)
- While gains and losses are measured against assumptions it is actual performance (economic and demographic) that drive the liabilities
- Per Segal: “Assumptions are used to estimate a plan’s future benefit payments and their present value and do not determine outcomes. “

## Cumulative Gains and Losses -VSERS

<b>Components of Change in the Unfunded Actuarial Liability - VSERS</b>		
Category	Cumulative 2007-2020	Cumulative 2011-2020
Beginning FY Unfunded liability	\$9,044,004	\$293,920,094
Changes in Actuarial Assumptions	480,841,346	489,354,525
Changes in System Provisions	47,465,002	22,252
Incorporation of Temp Salary Decreases	(69,913,212)	-
Change in employee contribution rate	(2,610,261)	(2,610,261)
Expected adj. not incl. assumption/benefit changes	(57,597,843)	(79,843,570)
Other expense gain/loss	8,798,318	9,482,240
Salary experience gain/loss	88,151,220	95,627,506
COLA experience gain/loss	(123,583,917)	(110,469,758)
Net Turnover (new members, terminations)	77,509,729	61,630,140
Investment gain/Loss	317,484,349	56,205,931
Mortality gain/loss	40,982,471	40,657,045
Retirements gain/loss	128,594,128	97,520,027
Disability experience gain/loss	2,590,399	2,357,312
Other gain/loss	92,709,386	86,611,636
Ending FY Unfunded Liability	\$1,040,465,119	\$1,040,465,119

Note: Investment losses from Great Recession period (2008,2009,2010) total \$284.7 million. Due to smoothing, some of those losses (also balanced with gains during those years) are also reflected through FY2013.

## Cumulative Gains and Losses -VSTRS

<b>Components of Change in the Unfunded Actuarial Liability - VSTRS</b>		
Category	Cumulative 2007-2020	Cumulative 2011-2020
Beginning FY Unfunded liability	\$259,108,435	\$711,823,061
Changes in Actuarial Assumptions	828,540,973	783,238,313
Changes in System Provisions	(46,409,122)	-
Expected adj. not incl. assumption/benefit changes	37,199,874	(5,786,660)
Salary experience/gain loss	(129,391,882)	(125,779,835)
COLA experience gain/loss	(102,730,234)	(88,185,397)
Net Turnover (new members/terminations)	320,448,149	319,901,420
Investment gain/loss	384,996,680	52,038,767
Mortality gain/loss	18,350,215	20,000,804
Retirements gain/loss	184,010,383	162,532,393
Disability experience gain/loss	3,761,046	2,670,773
Contribution Shortfall incl. Health Care Approp.	175,907,621	101,499,179
Other Gains/Losses	(502,768)	(663,448)
Ending FY Unfunded Liability	\$1,933,289,370	\$1,933,289,370

Note: Investment losses from Great Recession period (2008,2009,2010) total \$ 365.0 million. Due to smoothing, some of those losses (also balanced with gains during those years) are also reflected through FY2013.

## Significant Gains and Losses

- Workforce related losses are a primary driver of actuarial losses excluding the impact of the Great Recession and assumption changes.
- VSERS:
  - Salaries vs. Assumptions
  - Workforce Turnover and Retirement Experience
  - Retirement Incentive Program 2010 and 2016
- VSTRS:
  - Significant increase in teacher retirement and turnover from 2011 and through 2020  
Total of \$482.4 million or 39.50% of the total increase in unfunded liabilities.
  - Underfunding of Health Care (paid out of pension fund):  
From 2011 to 2020: \$101,499,179 or 8.3%
  - Combined: Almost half (47.8%) of the increase in liabilities

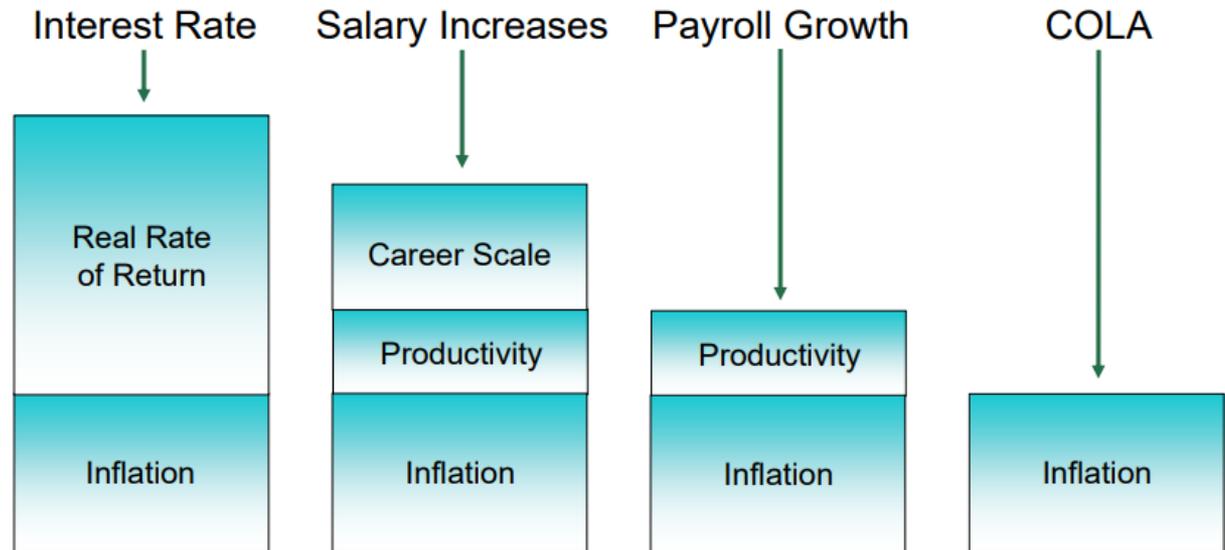
# VSTRS Turnover and Retirements- Retirement Incentive

- In 2017, a VTNEA communication to Treasurer's Office identified schools with some kind of retirement incentive:
  - Provided very rough estimate likely slightly less than 50% of schools and may fluctuate
  - No data on current levels
  - Data on actual take-up of provisions is anecdotal
    - some ad hoc
    - others contractual
- Some include requirement that the teacher apply for retirement
- Factors:
  - Needs of the schools
  - Longevity
- Most schools limit the number of incentives offered and/or require advance notice
- Need to reconcile with turnover/retirement gains and losses. Are these decisions impacting the funded position of the plan?

# Inflation is a Big Component of Risk and Volatility

## Basis for Setting Economic Assumptions

**Each economic assumption has 2 or 3 components**



# June 2021 Inflation Level Will Likely Impact Gains/Losses for 2021 Valuation

**Table A. Northeast region CPI-U 1-month and 12-month percent changes, all items index, not seasonally adjusted**

Month	2017		2018		2019		2020		2021	
	1-month	12-month								
January.....	0.6	2.5	0.5	1.6	0.3	1.5	0.7	2.3	0.4	1.1
February.....	0.3	2.6	0.4	1.7	0.2	1.3	0.3	2.4	0.4	1.2
March.....	-0.1	2.2	0.1	2.0	0.5	1.7	-0.2	1.7	0.6	2.1
April.....	0.3	1.9	0.4	2.1	0.4	1.7	-0.4	0.8	0.7	3.3
May.....	0.1	1.7	0.4	2.5	0.3	1.5	0.0	0.6	0.6	3.9
June.....	0.0	1.5	0.0	2.6	0.1	1.6	0.3	0.8	1.0	4.6
July.....	-0.2	1.3	0.0	2.7	0.1	1.7	0.4	1.1		
August.....	0.3	1.6	0.2	2.7	0.1	1.5	0.1	1.1		
September.....	0.5	1.9	0.1	2.2	0.0	1.4	0.1	1.2		
October.....	-0.1	1.5	-0.1	2.3	-0.1	1.5	-0.2	1.1		
November.....	0.0	1.6	-0.4	1.9	0.1	1.9	0.1	1.1		
December.....	0.1	1.7	-0.1	1.7	-0.1	1.9	0.2	1.4		

Source: DOL



**VSERS 2020 Valuation Assumption:** Assumed to occur at the rate of 2.40% per annum for Groups A, C and D members and 1.35% per annum for Group E and F members (beginning at age 62 for deferred retirements) who retired before July 1, 2008. For Group F members retiring after July 1, 2008, assumed to occur at the rate of 2.4% per annum. The January 1,2021 COLA is assumed to be 1.00% for groups E and F who retired before July 1, 2008 and 0.00% for all other groups

**VSTRS 2020 Valuation Assumption:** Assumed to occur on January 1 following one year of retirement at the rate of 2.40% per annum for Group A members and 1.35% per annum for Group C members (beginning at age 62 for Group C members who elect reduced early retirement). The January 1,2021 COLA is assumed to be 0.00% for group A and 1.00% for groups B and C

# Experience Studies

- “Assumptions are used to estimate a plan’s future benefit payments and their present value and do not determine outcomes.”
  - Segal Group
- Outcomes are determined by actual member behavior, benefit provisions, actual contributions and investment income.
- Actuarial assumptions do, however, provide a way to project future liabilities and assets for decision-making purposes
- The reliability of an actuarial valuation depends on the use of reasonable methods and assumptions.
- Experience studies are used to “true up” these assumptions to keep them reasonable in a changing environment.
- Best practices recommend that experience studies be conducted no less frequently than every five years
- Vermont statute now requires experience studies to be completed every three years.

## Changes to Liabilities and ADEC Based on Experience Study and the 2020 Valuation

### VSERS Experience Study

# Cost Impact (Based on the June 30, 2019 Actuarial Valuation)

Description	Current Assumptions	All Proposed Demographic Assumptions	All Proposed Demographic and Economic Assumptions Including 7.00%
Actuarial Accrued Liability	\$2,780.0M	\$2,846.1M	\$2,996.8M
<i>Change from prior column</i>		<i>+66.1M</i>	<i>+150.7M</i>
<i>Cumulative change</i>		<i>+66.1M</i>	<i>+216.8M</i>
Actuarial Value of Assets	\$1,964.5M	\$1,964.5M	\$1,964.5M
Unfunded Actuarial Accrued Liability	\$815.5M	\$881.6M	\$1,032.3M
Funded Percentage	70.7%	69.0%	65.6%
<i>Change from prior column</i>		<i>-1.7%</i>	<i>-3.4%</i>
<i>Cumulative change</i>		<i>-1.7%</i>	<i>-5.1%</i>
Normal Cost	\$53.2M	\$59.3M	\$67.7M
<i>Change from prior column</i>		<i>+6.1M</i>	<i>+8.4M</i>
<i>Cumulative change</i>		<i>+6.1M</i>	<i>+14.5M</i>
Actuarially Determined Contribution for FY 2021	\$83.9M	\$95.8M	\$113.6M
<i>Change from prior column</i>		<i>+11.9M</i>	<i>+17.8M</i>
<i>Cumulative change</i>		<i>+11.9M</i>	<i>+29.7M</i>

## VSERS - Additional Breakout of Assumptions by Type

Description (\$ in millions)	Current Assumptions	Proposed <b>Mortality</b> Assumptions	Proposed <b>Mortality and Turnover</b> Assumptions	Proposed <b>Mortality, Turnover and All Other Demographic</b> Assumptions	All Demographic Assumptions and <b>Non- Investment Return Economic</b> Assumptions	All Demographic Assumptions and All Economic Assumptions Including decreasing to <b>7.00% Investment Return</b>
<b>Actuarial Accrued Liability</b>						
<b>Actives</b>	\$984.79	\$1,005.64	\$1,014.24	\$1,039.89	\$1,041.18	\$1,126.66
<b>Inactives</b>	\$92.53	\$93.44	\$74.09	\$76.23	\$75.29	\$80.08
<b>In Pay Status</b>	<u>\$1,702.65</u>	<u>\$1,730.34</u>	<u>\$1,729.93</u>	<u>\$1,729.93</u>	<u>\$1,710.15</u>	<u>\$1,790.03</u>
<b>Total</b>	\$2,779.97	\$2,829.42	\$2,818.26	\$2,846.05	\$2,826.62	\$2,996.77
	<b>Change from prior column:</b>	\$49.46	-\$11.16	\$27.79	-\$19.43	\$170.15
	<b>Cumulative change:</b>	\$49.46	\$38.30	\$66.09	\$46.65	\$216.80
<b>Normal Cost</b>	\$53.15	\$54.31	\$58.33	\$59.30	\$60.33	\$67.67
	<b>Change from prior column:</b>	\$1.16	\$4.01	\$0.97	\$1.03	\$7.35
	<b>Cumulative change:</b>	\$1.16	\$5.18	\$6.15	\$7.17	\$14.52
<b>Actuarially Determined Contribution for Fiscal 2021</b>	\$83.88	\$89.10	\$92.50	\$95.77	\$95.18	\$113.59
	<b>Change from prior column:</b>	\$5.22	\$3.40	\$3.27	-\$0.60	\$18.41
	<b>Cumulative change:</b>	\$5.22	\$8.62	\$11.90	\$11.30	\$29.71

- Investment assumption change accounts for \$170 million of increase in liabilities
- All economic assumptions, including investments, account for just under 70% of the increase in liabilities
- Based on the 2020 valuation, the actuarial accrued liability increased to \$3,095.3 million, an increase of \$98.5 million over the experience study estimate. That increase was offset, in part, by an increase in actuarial value of assets of \$90.3 million.
- The net result is an increase of \$8.2 million, bringing the unfunded liability to \$1,040.5 million

## Changes to Liabilities and ADEC Based on Experience Study and the 2020 Valuation

### VSTRS Experience Study

# Cost Impact (Based on the June 30, 2019 Actuarial Valuation)

Description	Current Assumptions	All Proposed Demographic Assumptions	All Proposed Demographic and Economic Assumptions Including 7.00%
Actuarial Accrued Liability	\$3,505.3M	\$3,641.6M	\$3,831.5M
<i>Change from prior column</i>		<i>+136.3M</i>	<i>+189.9M</i>
<i>Cumulative change</i>		<i>+136.3M</i>	<i>+326.2M</i>
Actuarial Value of Assets	\$1,950.9M	\$1,950.9M	\$1,950.9M
Unfunded Actuarial Accrued Liability	\$1,554.5M	\$1,690.7M	\$1,880.6M
Funded Percentage	55.7%	53.6%	50.9%
<i>Change from prior column</i>		<i>-2.1%</i>	<i>-2.7%</i>
<i>Cumulative change</i>		<i>-2.1%</i>	<i>-4.8%</i>
Normal Cost	\$40.8M	\$60.9M	\$69.2M
<i>Change from prior column</i>		<i>+20.1M</i>	<i>+8.3M</i>
<i>Cumulative change</i>		<i>+20.1M</i>	<i>+28.4M</i>
Actuarially Determined Contribution for FY 2021	\$135.6M	\$168.1M	\$186.4M
<i>Change from prior column</i>		<i>+32.5M</i>	<i>+18.3M</i>
<i>Cumulative change</i>		<i>+32.5M</i>	<i>+50.8M</i>

## VSTRS - Additional Breakout of Assumptions by Type

Description (\$ in millions)	Current Assumptions	Proposed <b>Mortality</b> Assumptions	Proposed <b>Mortality and Turnover</b> Assumptions	Proposed <b>Mortality, Turnover and All Other Demographic</b> Assumptions	All Demographic Assumptions and <b>Non- Investment Return</b> <b>Economic Assumptions</b>	All Demographic Assumptions and All Economic Assumptions Including decreasing to <b>7.00% Investment Return</b>
<b>Actuarial Accrued Liability</b>						
<b>Actives</b>	\$1,190.84	\$1,224.58	\$1,272.12	\$1,331.54	\$1,321.93	\$1,431.65
<b>Inactives</b>	\$163.48	\$164.53	\$118.45	\$120.01	\$119.61	\$126.63
<b>In Pay Status</b>	<u>\$2,151.00</u>	<u>\$2,189.45</u>	<u>\$2,189.45</u>	<u>\$2,189.45</u>	<u>\$2,180.55</u>	<u>\$2,272.53</u>
<b>Total</b>	\$3,505.32	\$3,578.56	\$3,580.02	\$3,641.00	\$3,622.10	\$3,830.82
	<b>Change from prior column:</b>	\$73.24	\$1.46	\$60.98	-\$18.90	\$208.72
	<b>Cumulative change:</b>	\$73.24	\$74.70	\$135.68	\$116.78	\$325.50
<b>Normal Cost</b>	\$40.75	\$41.68	\$58.80	\$60.85	\$61.10	\$69.19
	<b>Change from prior column:</b>	\$0.93	\$17.11	\$2.06	\$0.24	\$8.10
	<b>Cumulative change:</b>	\$0.93	\$18.05	\$20.10	\$20.34	\$28.44
<b>Actuarially Determined Contribution for Fiscal 2021</b>	\$135.65	\$142.53	\$160.92	\$168.02	\$166.70	\$186.31
	<b>Change from prior column:</b>	\$6.88	\$18.39	\$7.10	-\$1.32	\$19.60
	<b>Cumulative change:</b>	\$6.88	\$25.28	\$32.37	\$31.06	\$50.66

- Investment assumption change accounts for \$209 million of increase in liabilities
- All economic assumptions, including investments, account for just over 58% of the increase in liabilities
- VSTRS changes more heavily driven by demographic vs. VSERS
- Based on the 2020 valuation, the actuarial accrued liability increased to \$3,969.0 million, an increase of \$137.5 million over the experience study estimate. That increase was offset, in part, by an increase in actuarial value of assets of \$85 million.
- The net result is an increase of \$52.5 million, bringing the unfunded liability to \$1,933 million (rounded)

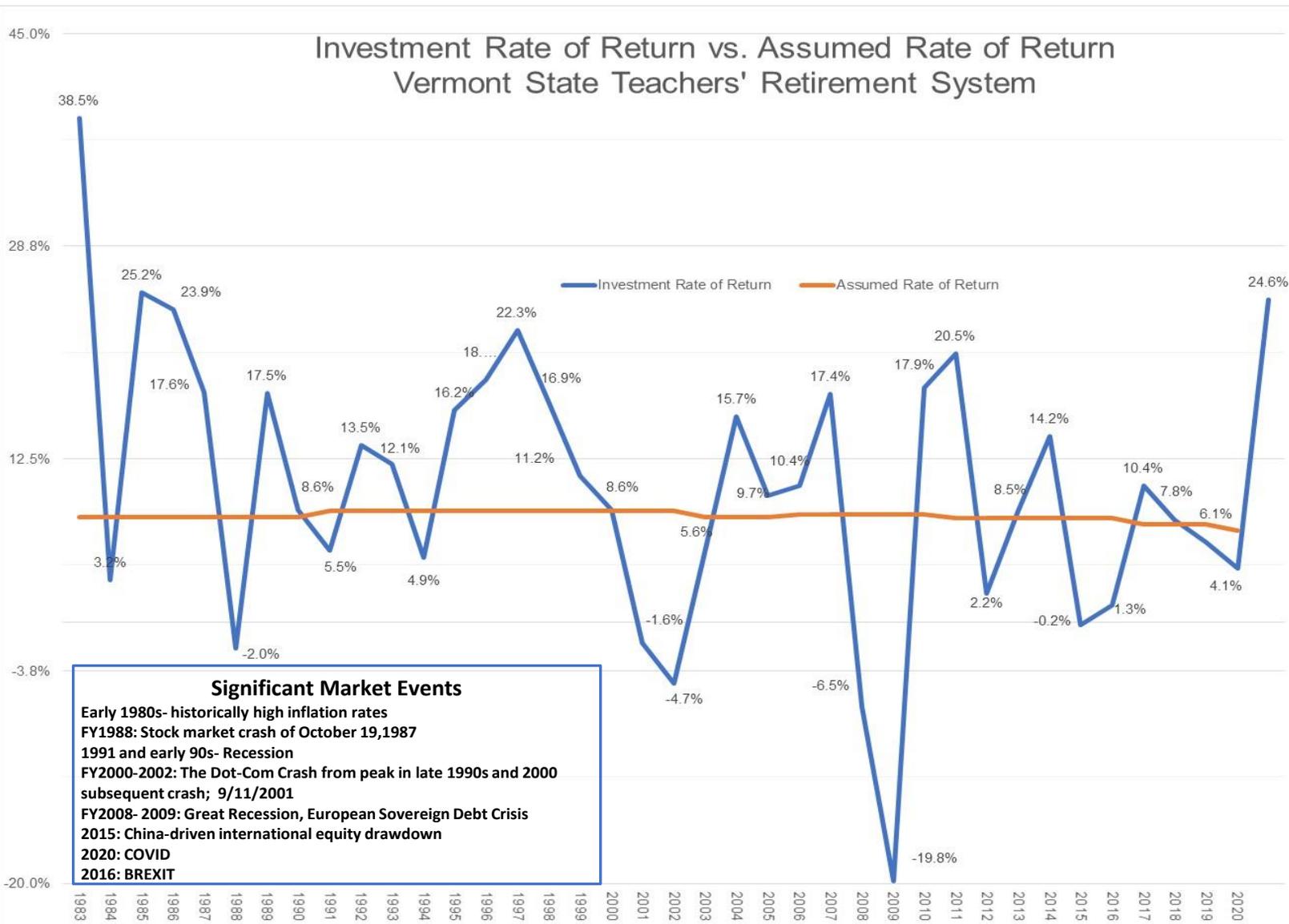
# Investments

## Managed by The Vermont Pension Investment Commission (VPIC)

### Key Points

- Investments are a Significant Contribution to the Pension Fund
  - Roughly 60 to 62% of each dollar paid to Retirees is From Investment Income
- Investments are Volatile- Subject to market Conditions
  - Long-Term View
- Investment Performance has met the assumed rate of return
  - FY2021 return: 24.62% (Highest return percentage since the 1980s)
  - VPIC investments earned (state, teachers and municipal plan) of over \$1.14 billion, net of benefit payments and administrative expense.
- Good News, But...
  - Investments alone can not solve the unfunded liability!
  - Expect some actuarial losses for post-retirement COLA given recent inflation data
  - Too early to estimate for other economic and demographic categories
- Investment results are “smoothed”, theoretically so as to avoid peaks and valleys in appropriations (ADEC). stabilizes contribution levels
- VPIC’s assumed rate of return is in line with other public pension funds
- VPIC sets the smoothing period--5 years is in line with other states

## Investment Rate of Return vs. Assumed Rate of Return Vermont State Teachers' Retirement System



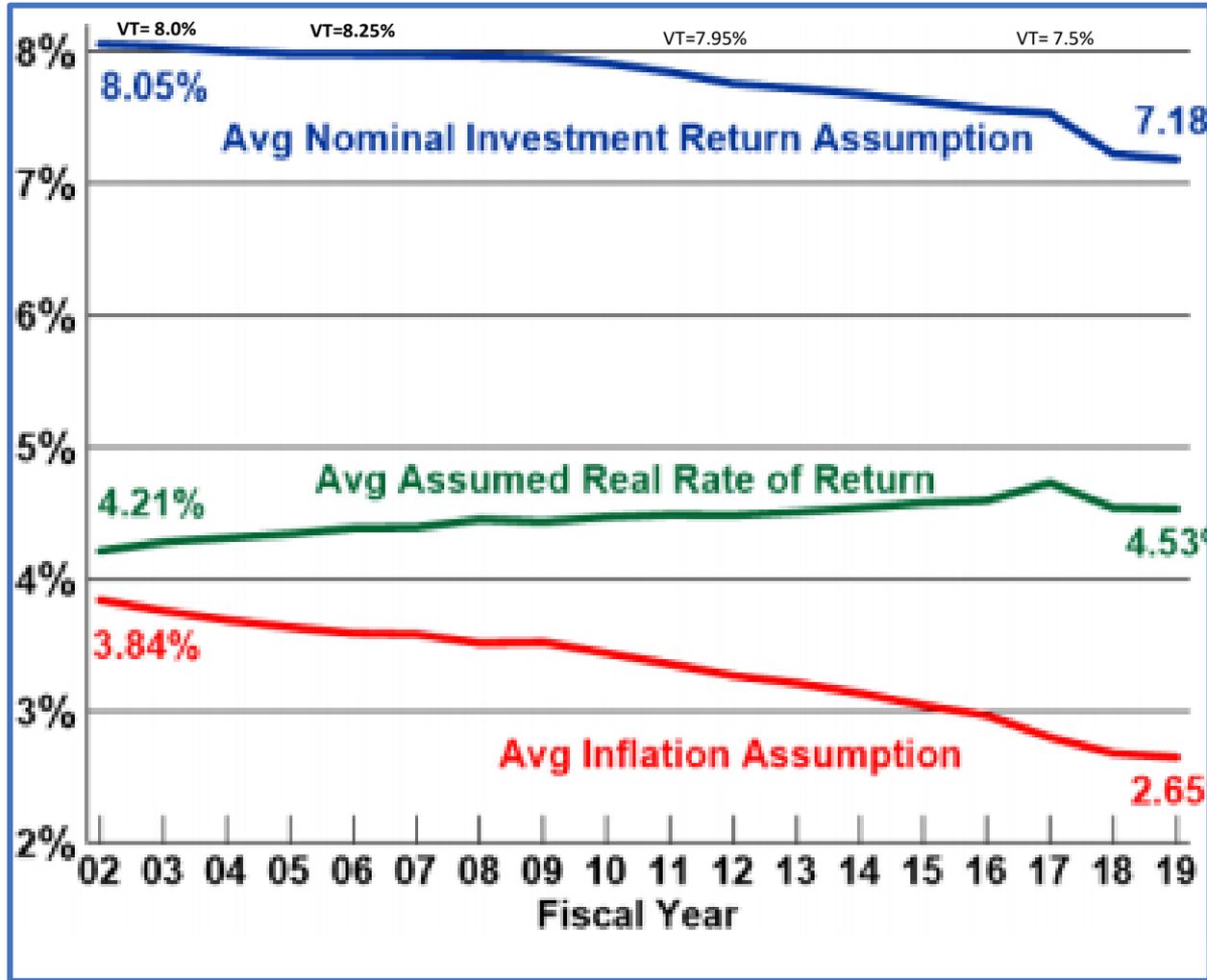
**Significant Market Events**  
 Early 1980s- historically high inflation rates  
 FY1988: Stock market crash of October 19,1987  
 1991 and early 90s- Recession  
 FY2000-2002: The Dot-Com Crash from peak in late 1990s and 2000 subsequent crash; 9/11/2001  
 FY2008- 2009: Great Recession, European Sovereign Debt Crisis  
 2015: China-driven international equity drawdown  
 2020: COVID  
 2016: BREXIT

Year	Assumed Rate of Return
1983	8.00%
1984	8.00%
1985	8.00%
1986	8.00%
1987	8.00%
1988	8.00%
1989	8.00%
1990	8.00%
1991	8.50%
1992	8.50%
1993	8.50%
1994	8.50%
1995	8.50%
1996	8.50%
1997	8.50%
1998	8.50%
1999	8.50%
2000	8.50%
2001	8.50%
2002	8.50%
2003	8.00%
2004	8.00%
2005	8.00%
2006	8.25%
2007	8.25%
2008	8.25%
2009	8.25%
2010	8.25%
2011	7.95%
2012	7.95%
2013	7.95%
2014	7.95%
2015	7.95%
2016	7.95%
2017	7.50%
2018	7.50%
2019	7.50%
2020	7.00%
2021	7.00%

Source: VPIC, historical valuation reports

# Return on Investments Assumptions are Going Down Across All U.S. Public Pensions

## Inflation Rates a Significant Factor

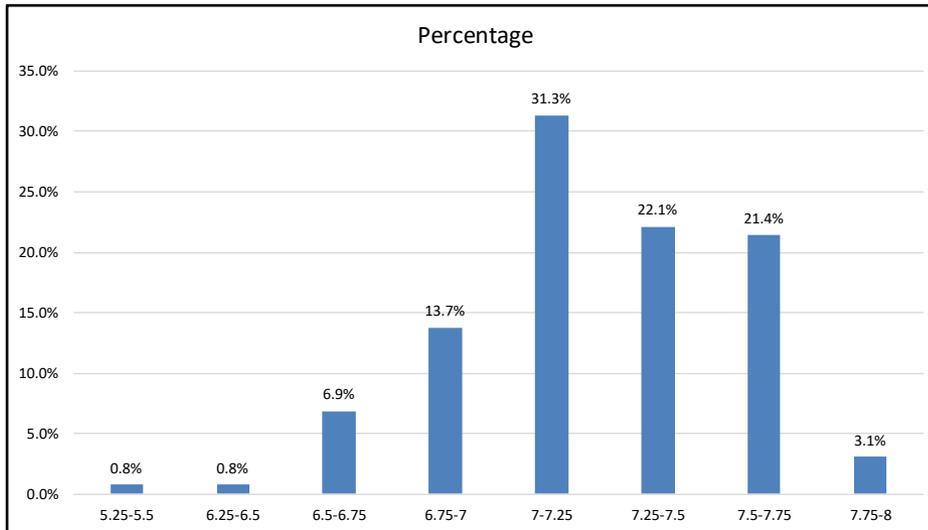
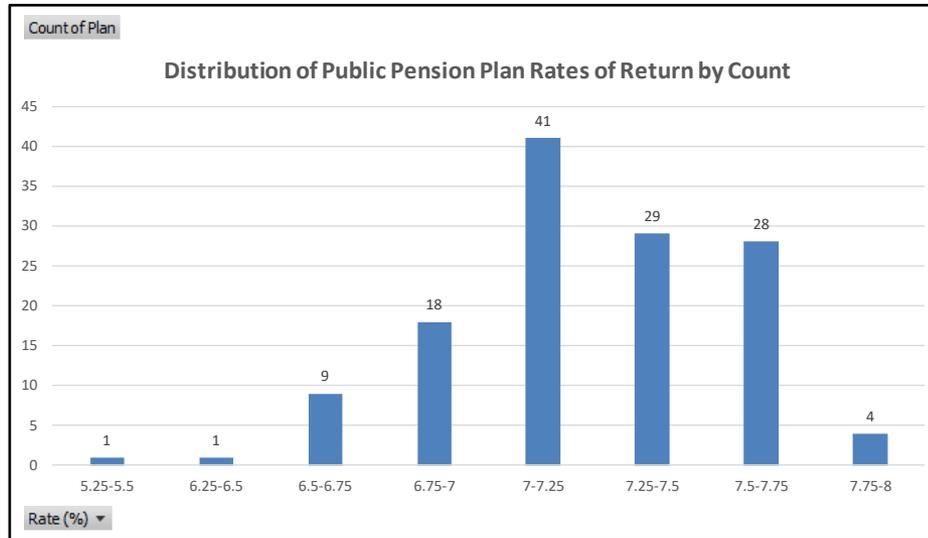


2020- VT=7%

Source: NASRA Issue Brief: Public Pension Plan Investment Return Assumptions, February 2021

# Vermont's Return Assumption In Line With National Average

Rate of Return as Reported to NASRA May 2021



Rate (%)	Percentage	Count
5.25-5.5	0.8%	1
6.25-6.5	0.8%	1
6.5-6.75	6.9%	9
6.75-7	13.7%	18
7-7.25	31.3%	41
7.25-7.5	22.1%	29
7.5-7.75	21.4%	28
7.75-8	3.1%	4
<b>Total</b>	<b>100.0%</b>	<b>131</b>
<b>Average</b>	<b>7.13</b>	
<b>Median</b>	<b>7.00</b>	

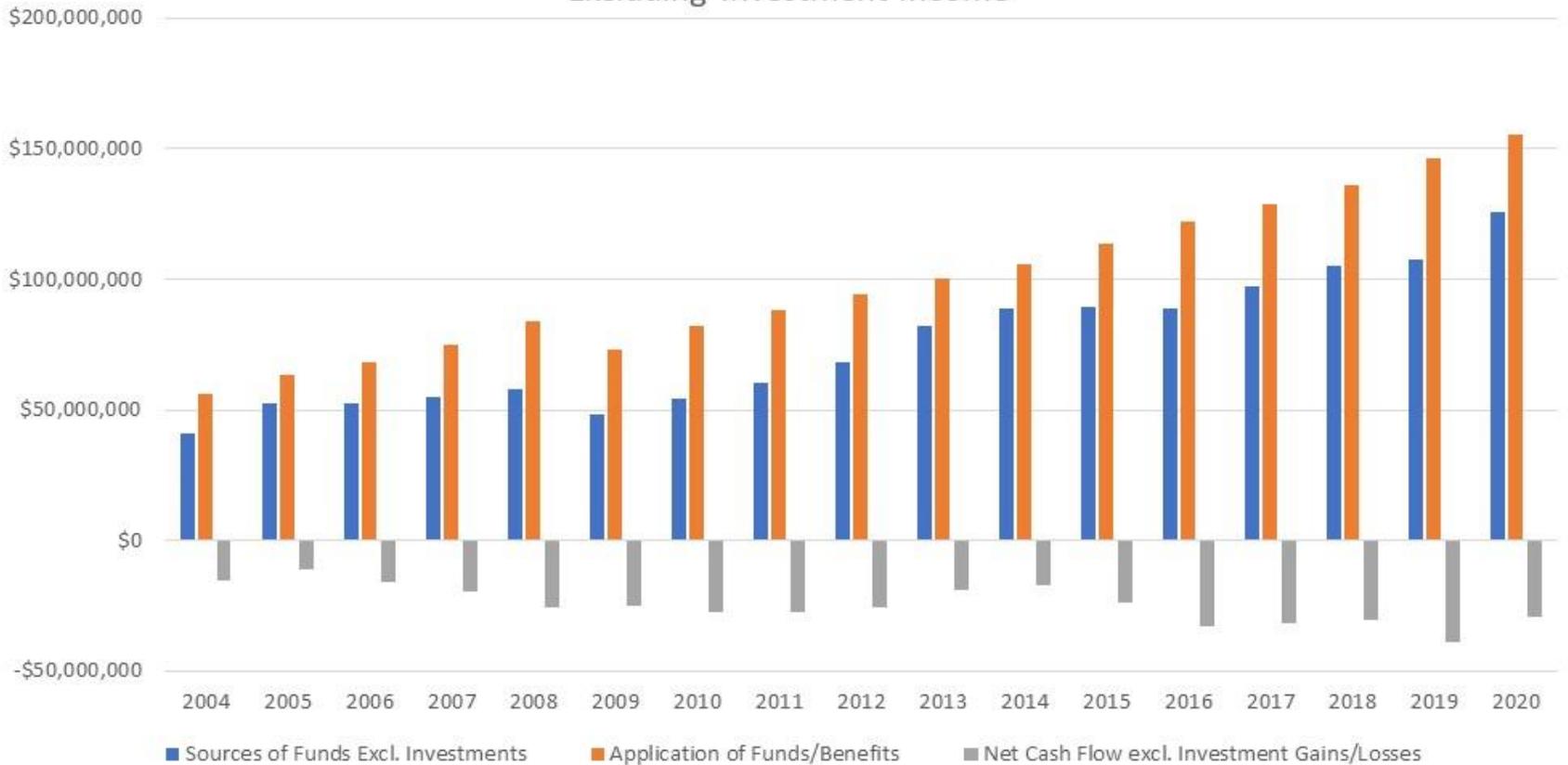
Source: NASRA May Data

# Vermont's Smoothing Period in Line with U.S. Public Pension Plans

“The average investment-smoothing period for respondents remained at 5.3 years, but it rose to 5.4 among participants in both the 2019 and 2020 studies. The distribution of responding funds ... **shows that the majority have smoothing periods of 5 years or shorter.** For funds with Social Security-eligible members, the smoothing period fell 0.1 years, to 5.4 years. Funds with members who are not Social Security eligible have an average smoothing period of 4.9 years, up 0.2 from last year. Large plans average 5.8 years.”

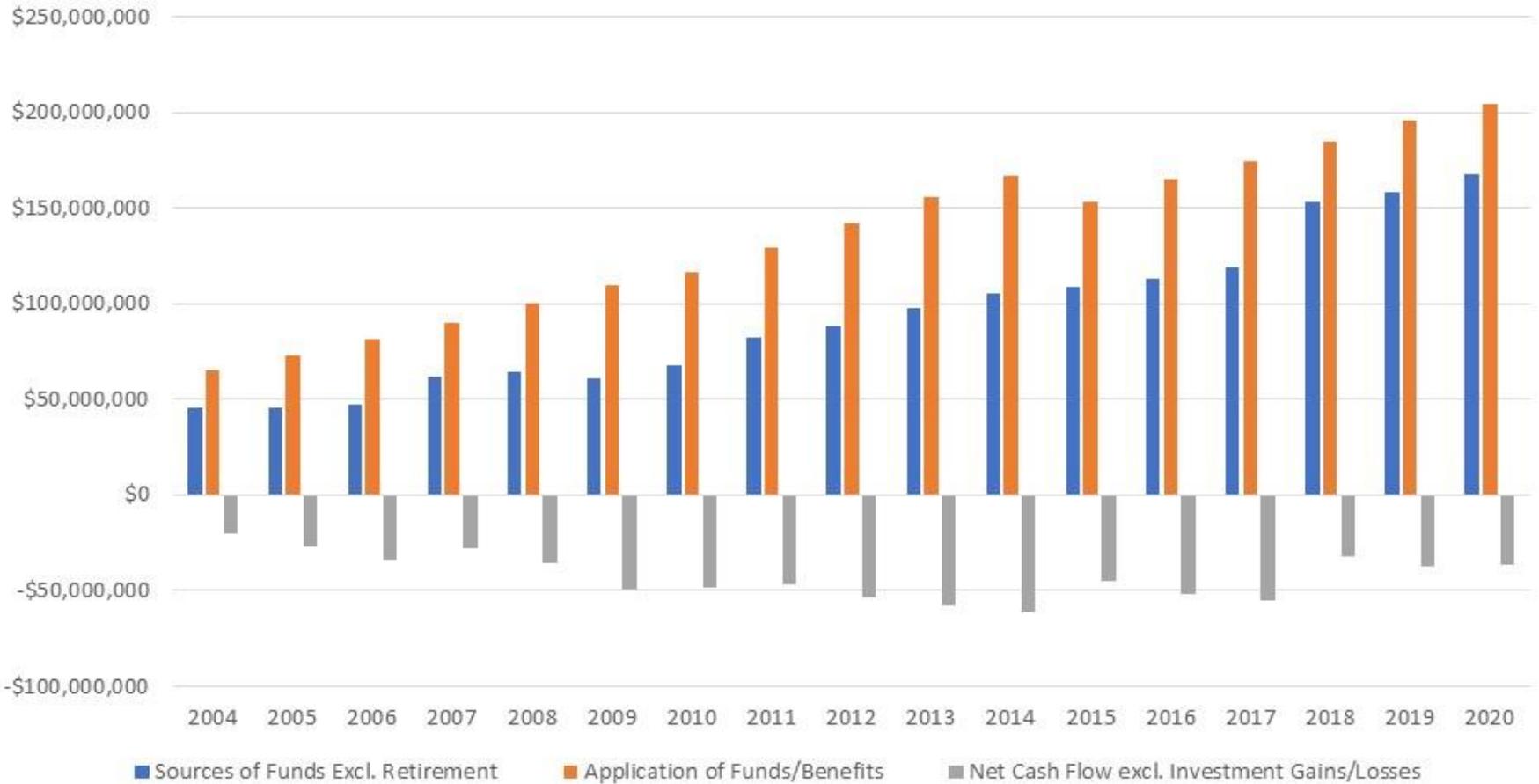
- 2020 National Conference on Public Employee Retirement Systems (NCPERS) *Public Retirement Systems Study, 2020* (underline added)

### VSERS- Sources of Funds and Application of Funds Excluding Investment Income

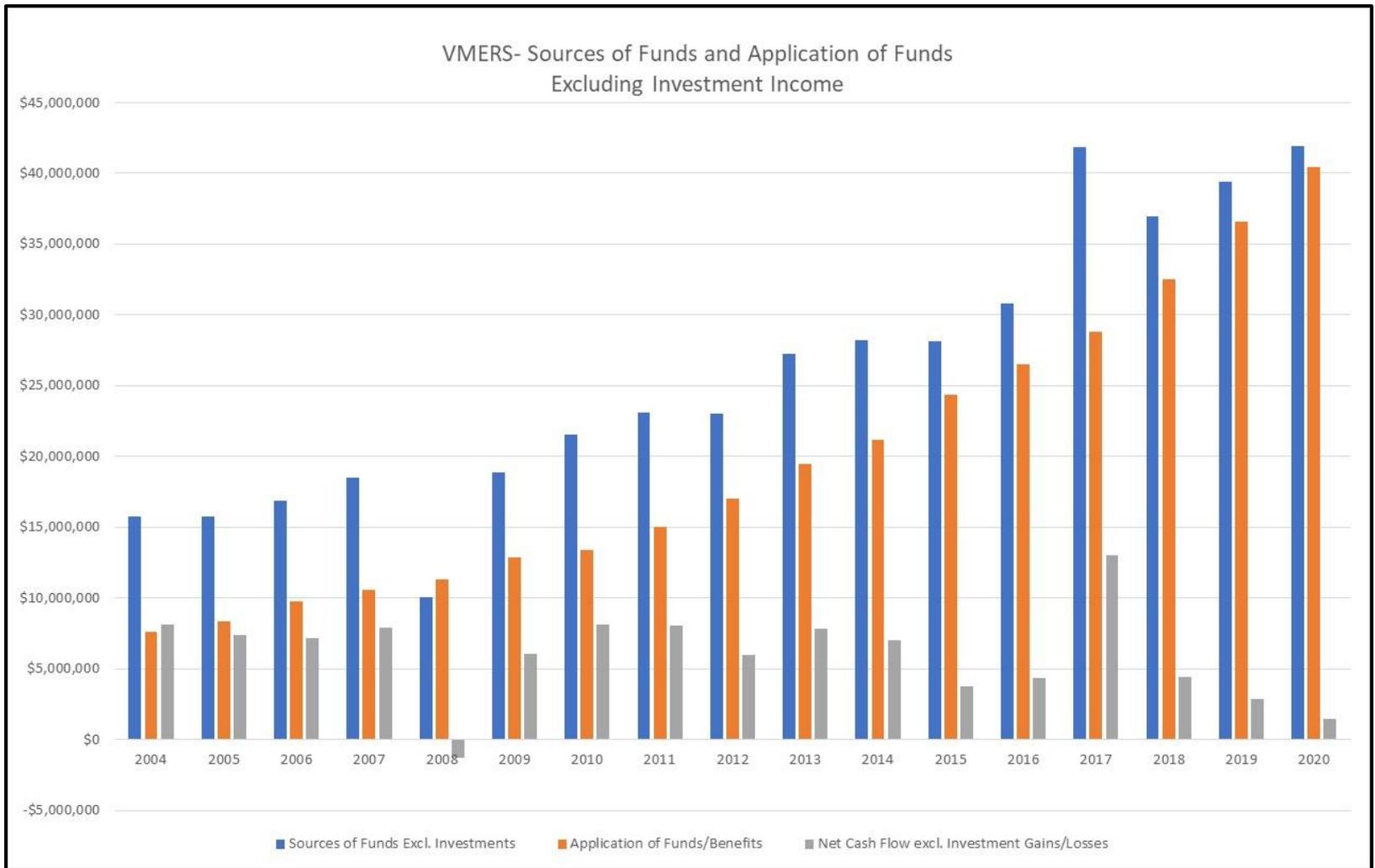


Source: Audited Financial Statements

## VSTRS - Sources of Funds and Application of Funds Excluding Investment Income



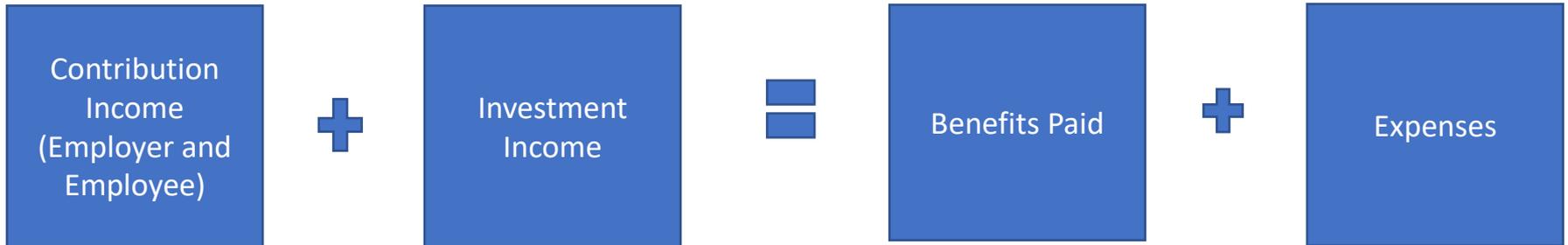
Source: Audited Financial Statements



VMERS Included For Comparative Purposes: VMERS is a “new” plan, started in 1974, and as such is accumulating assets at a higher rate for future use. While assets must continue to grow in more “mature” funds (VSERS, VSTRS), the expectation is that investment dollars will be a source to pay benefit payments, lowering cost to taxpayers.

# Balancing Act of Pension Systems

## Retirement Equation



$$C + I = B + E$$

- Crossover or Depletion: Plan assets and expected future contributions are no longer sufficient to pay expected future benefit payments.
- The critical tipping point is not when assets run out or even decline, but when Governors and Legislatures no longer believe the required contributions are realistic and give up trying to fund the actuarially required contributions

- Treasurer's Office 2005 teacher Funding Report

# Funding for Health Care - Other Post Employment Benefits (OPEB)

## Key Points

- Most of post retirement efforts have been concentrated on reducing liabilities
  - Tiered health care structure
  - EGWP
  - Contract Provision Changes
- VSERS- Benefit structure changes effective for new employees after July 1, 2008
- VSTRS-Benefit changes to a tiered structure effective July 1, 2010
- VSTRS – historical lack of funding of premium payments- put on the “credit card” resolved but negatively impacted pension system
- Real progress requires prefunding of VSTRS and VSERS!
- Opportunity to lower combined OPEB liabilities by \$1.6 billion

# Fundamental Changes to VSTRS Health Care Funding Effective 7/1/2015

- “Retroactive” funding approach prior to FY 2015.
- The State established and funded a separate trust to account for the assets and liabilities of the VSTRS retiree medical benefit plan.
- Annual contributions to the retiree medical plan are now separately appropriated in the state budget and not commingled with retirement plan contributions.
- A series of funding sources were put in place (federal, state and local).
- Projected to save \$480 million in interest from 2015 through 2038.

# Other Post Employment Benefits (OPEB)

## What is OPEB?

- Other Post Employment Benefits (OPEB) are benefits that employers provide to their retirees, other than pension benefits. They are usually composed of retiree health care benefits but can also include life insurance and other services.
  - Does not include pension plans or compensated absences

## Who is covered through OPEB plans?

- VSTRS (RTHMB) and VSERS - Active employees eligible to receive those future benefits, terminated employees who have accumulated the benefits but are not yet receiving them, and retired employees (or their beneficiaries) currently receiving benefits.

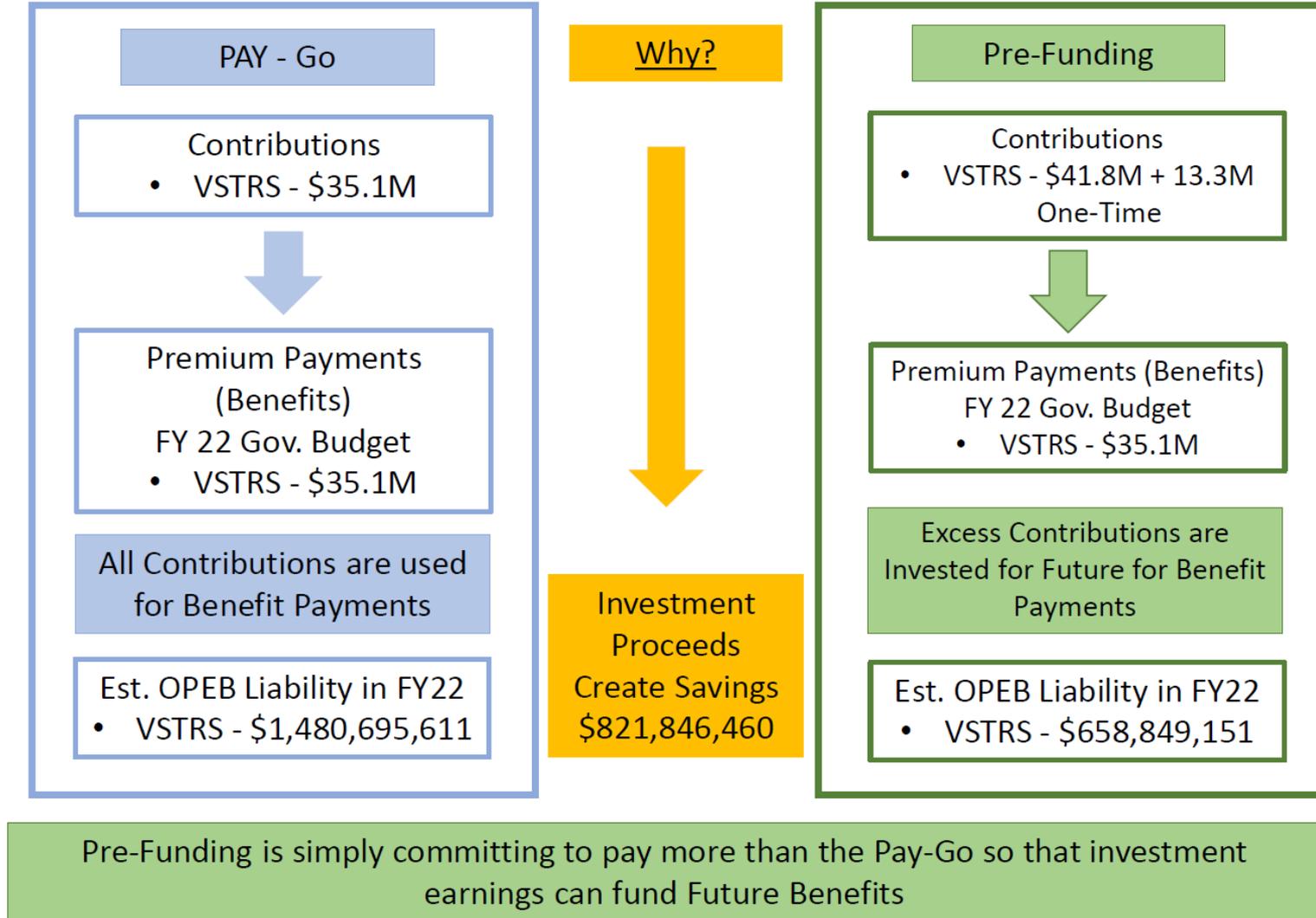
## How do we pay for it?

- Pay-As-You Go: No assets set aside. Instead benefits/premiums are paid by as they come due for payment. Generally paid out of current revenues.
- Pre-funding: Setting aside funds to pay for future benefits to employees. These assets are invested and the proceeds are used to pay benefits in the future.

While we have some accumulated assets for the OPEB's, we currently only Fund the Pay-Go

Up to 2015 State did not even pay pay-go- for VSTRS  
Change approved in 2014 stop putting premium payments on the "credit Card"  
But...from 2007 to 2015 that added \$175 million to the Pension Unfunded Liability  
In 2014 estimated that this eroded the plan funded status by at least a percentage point each year.

# Pay-Go versus Pre-Funding?



# Summary

## What Does All of this Mean?

- There are significant impacts to unfunded liabilities resulting growing need for increased appropriations to fund the ADEC
  - Combined Increase of \$604 million in Unfunded Liability in 2020 valuation
  - Combined Increase in FY2022 Actuarially Determined Contribution (ADEC) of \$96.6 million
- Look Under the Hood- what is driving the gains and losses?
  - VSTRS System- largest issue is turnover/accelerated retirements
- Remain disciplined investors and continue evolution of VPIC
  - Separate Entity
  - Adequate Staff
  - Long-Term Perspective- Return Data is Endpoint Sensitive
- Prefund the OPEBS and establish funding policy

# History of Disciplined Incremental Steps to Reduce Pension And Retiree Health Care Liabilities

**2010 VSTRS:** Lengthened age for normal retirement, contribution increases, and other changes, effective in FY2011, resulting in **\$15 million in annual pension savings, increasing each year.** In addition to pension costs, additional health care savings accrued.

**2011 VSERS:** Employee contribution rate increases beginning FY2012, initially generating **\$5 million in savings per year, increasing each year.**

**2011-2012 VSTRS:** Secured **one-time revenues in excess of \$5 million for VSERS and VSTRS** under the Federal Early Retirement Reinsurance Program.

**2012 - 2015:** Incremental increases in employee and employer contributions to municipal system (VMERS), demonstrating shared responsibility by all parties. These changes put VMERS on a stronger financial track.

**2014 VSTRS:** additional contribution increases for new and non-vested members, effective FY2015, generating **\$1 million initial annual savings, increasing each year.** 45

# History of Disciplined Incremental Steps to Reduce Pension And Retiree Health Care Liabilities (ctd.)

- **2015:** Created Retired Teachers' Health and Medical Benefits Fund starting FY2015
  - From the 1980s to 2014, teacher health care premiums for teachers were paid out of a sub-trust of teachers pension fund but with no appropriations to cover expenses: by 2014 this arrangement was costing over \$20 million per year in interest costs.
  - Created a separate fund with federal, state and local resources instead of putting it on the credit card.
  - A new health care assessment for LEAs was implemented, linking local employment decisions to the benefit costs.
  - Projected to save taxpayers \$480 million in unfunded liability interest costs through FY2038.
- **2016:** Changes to the amortization financing schedule for VSERS and VSTRS will result in saving \$165 million in interest from present to 2038.
- **2016:** Increased employee contributions resulting in \$1.2 million in annual savings, with savings growing larger in future years.

# In Conclusion...

- Need to address the growth in liabilities and the ADEC- cannot delay
- Prefund the OPEB
- Legislature Must Act- They are the creators and owners of the solution
  - By statute, the general assembly sets the benefits, appropriates funds and establishes the funding (amortization) schedule
  - Trustee Boards advise but the Governor and General Assembly are the final decision makers
  - Engage employee groups
- Continue policies for full actuarial funding of the pension funds
- Utilize periodic valuations with reasonable assumptions to assure that the pension systems are achieving the dual goals of benefit security & fiscal responsibility to both members & other taxpayers
- Review changes to the benefit systems to assess their impacts
- Remain disciplined investors
- Exercise prudence, assess current risk management framework & develop productive strategies