



**Board of Trustees - Brown Bag Lunch Session**

**GotoWebinar**

**Wednesday, 10/7/2020**

**1:00 - 2:00 PM ET**

**I. Welcome and Introductions**

**II. Public Comment**

**III. Actuarial 101**

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**IV. VRS Funding Policy Review**

*Funding Policy Oct 2020 - Page 26*



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# Actuarial 101

October 7, 2020



# Agenda

- VRS Plans Requiring Actuarial Valuations

- Actuarial Terminology

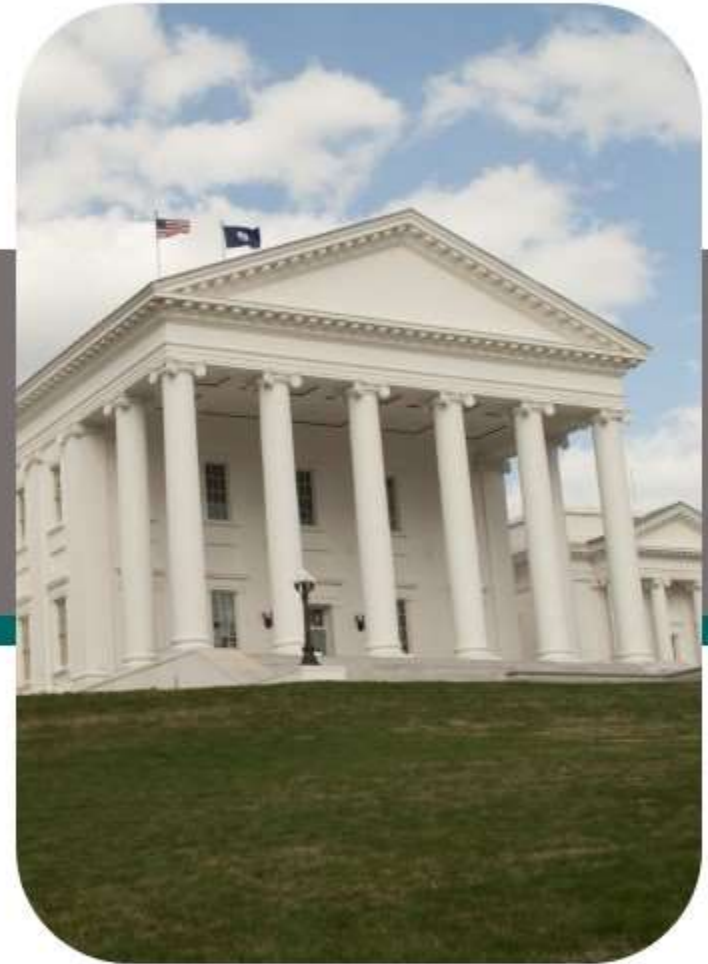
- Actuarial Assumptions

- Contribution Rates and Funded Ratio



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# VRS Plans Requiring Actuarial Valuations



# Types of Benefit Plans

## Pension Plans

### Pooled Cost Sharing Plans

State

Teachers

SPORS

VaLORS

JRS

### Single Employer Plans

Counties – 93

Cities & Towns – 159

Authorities, Commissions, Districts,  
Regional Institutions, and Service  
Boards – 207

Non-Teacher School Plans - 132

## OPEB Plans

Other Post Employment Benefit Plans

### Pooled Cost Sharing Plans

Group Life Insurance

State Health Insurance Credit

Teacher Health Insurance Credit

Constitutional Officers Health Insurance Credit

Social Services Health Insurance Credit

Registrars Health Insurance Credit

Virginia Sickness and Disability Plan (VSDP)

Virginia Local Disability Plan (VLDP)

Line of Duty (LODA)

### Single Employer Plans

Health Insurance Credit Plans



# Basic Pension Funding Equation

**Basic funding equation for benefits:**

$$C + I = B + E$$

**Contributions + Investment returns = Benefits + Expenses**

- Over the long term, actual investment returns, benefits and expenses determine the amount of contributions.
- Over the short term, estimated investment returns, benefits and expenses developed in an actuarial valuation will determine the amount of contributions.

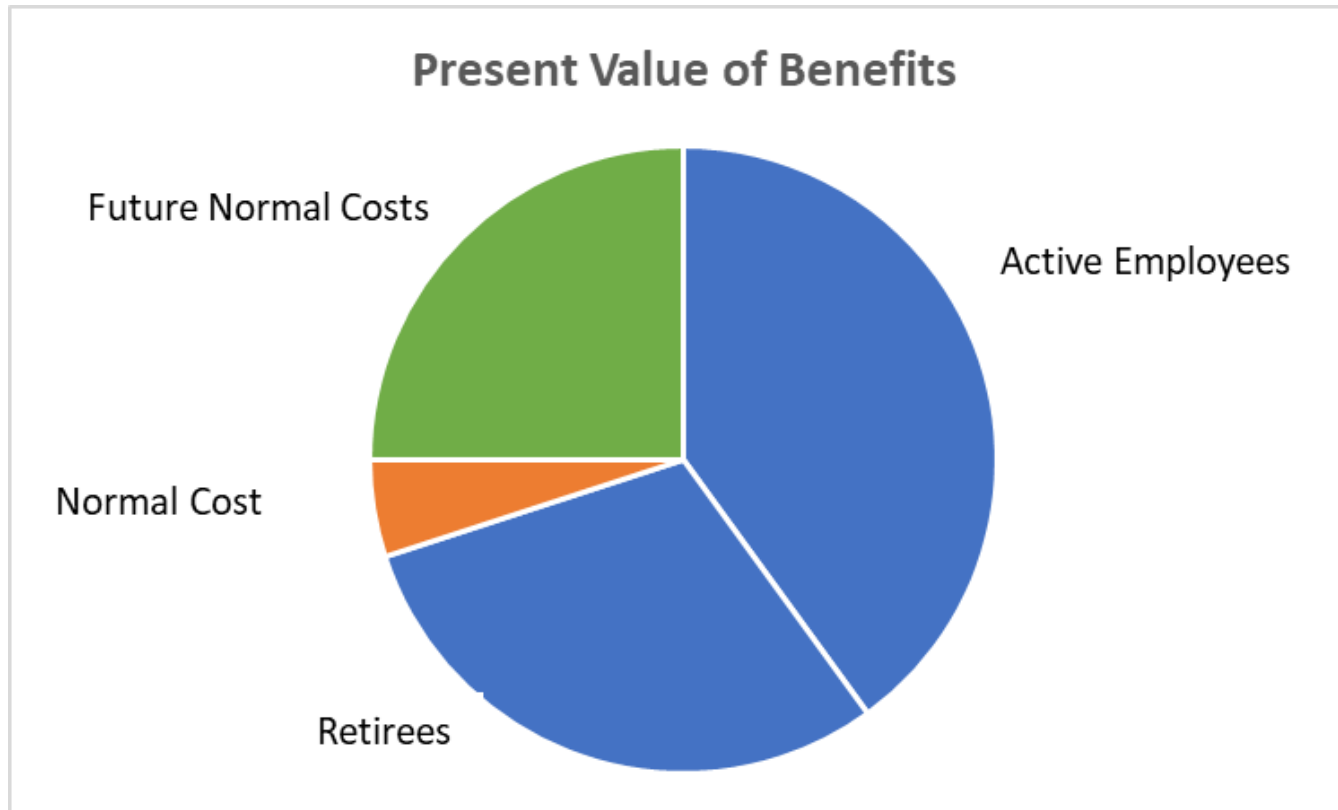
# Concept of Present Value

- Actuarial calculations almost always begin with the calculation of a present value.
- The present value of an amount of money payable in the future is the amount of money that, if we had it today, would accumulate with investment income to the amount that will be payable in the future.
- The calculation of the present value depends upon assumptions.
  - Economic Assumptions
    - Sets expectations for investment income.
  - Demographic Assumptions
    - Sets expectations of when benefit will be paid.



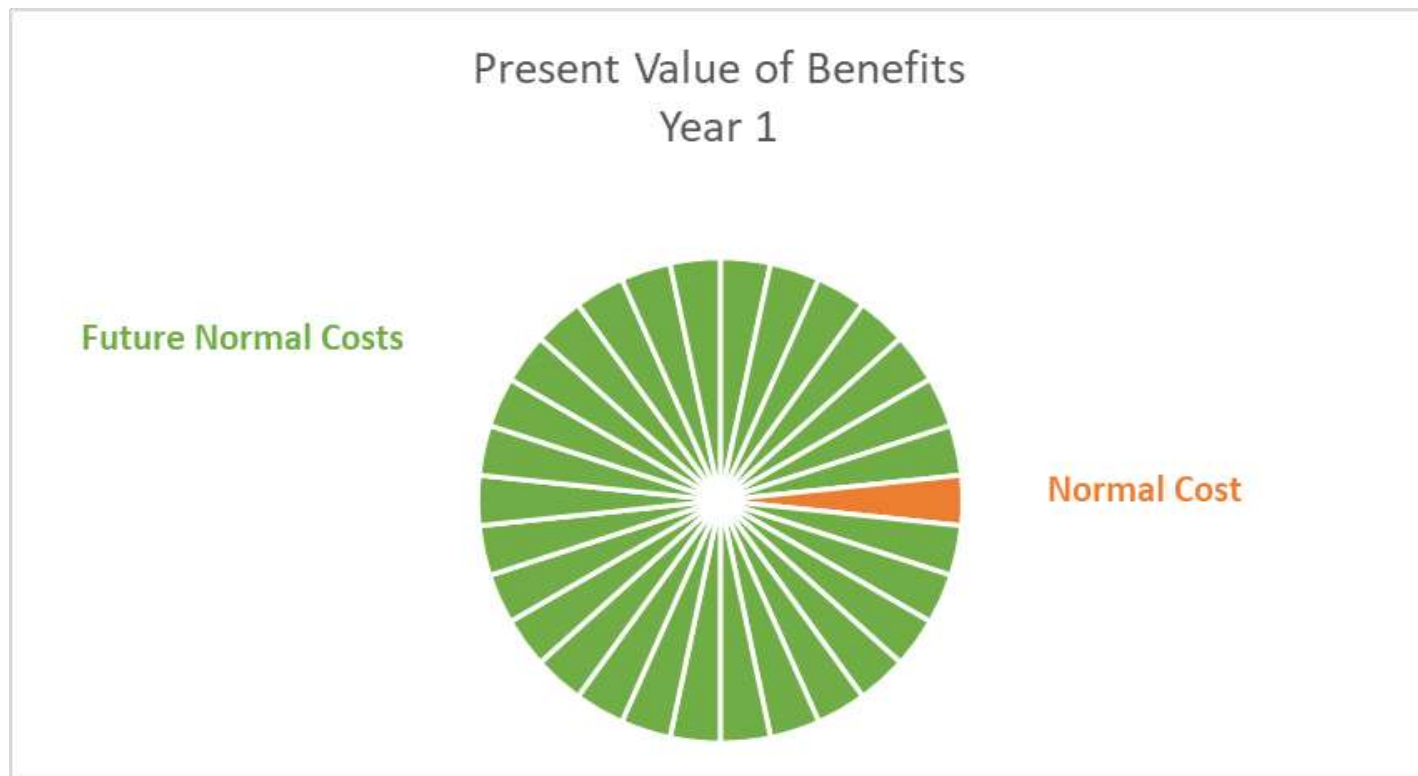
- **Present Value of Benefits** - Value, using actuarial assumptions, of all benefits expected to be paid to current employees & retirees.
- **Actuarial Accrued Liability (AAL)** - Liability for benefits “earned” for past service.
- **Normal Cost (NC)** - Value of benefits “earned” during the current year.
- **Unfunded Actuarial Accrued Liability (UAAL)** – Amount of actuarial accrued liabilities not covered by plan assets.

# Present Value of Benefits



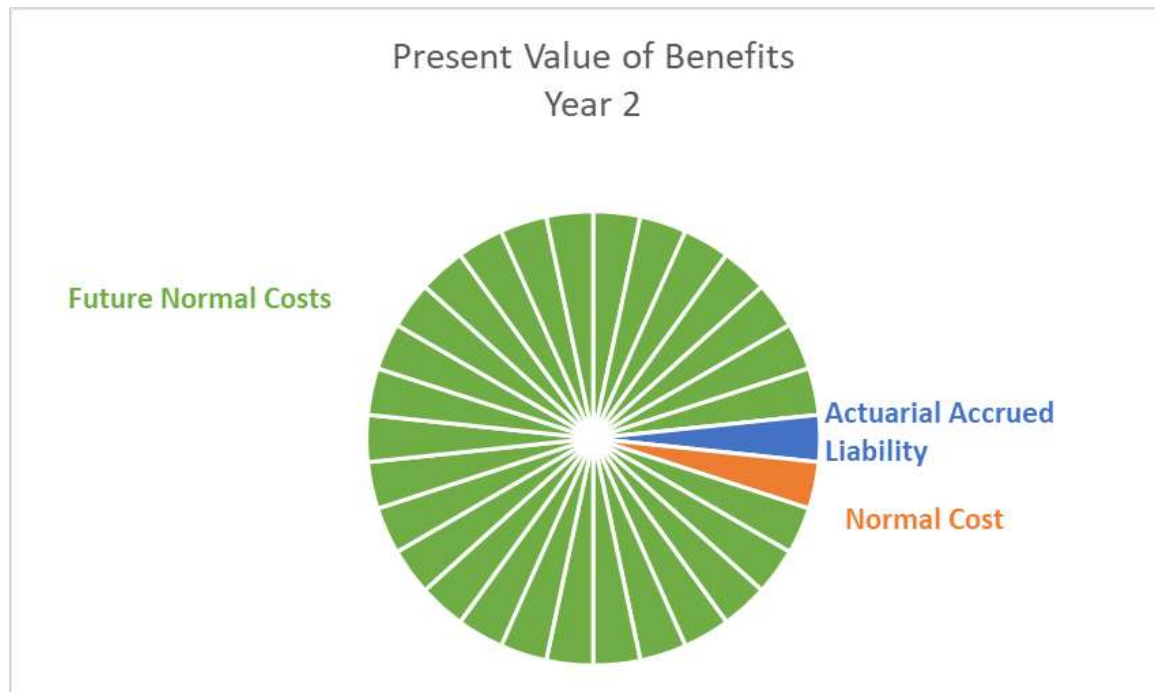
# Present Value of Benefits – Year 1

- New hire expected to work for 30 years until retirement
- Entry-Age funding method expects to fund same normal cost percentage each of the 30 years



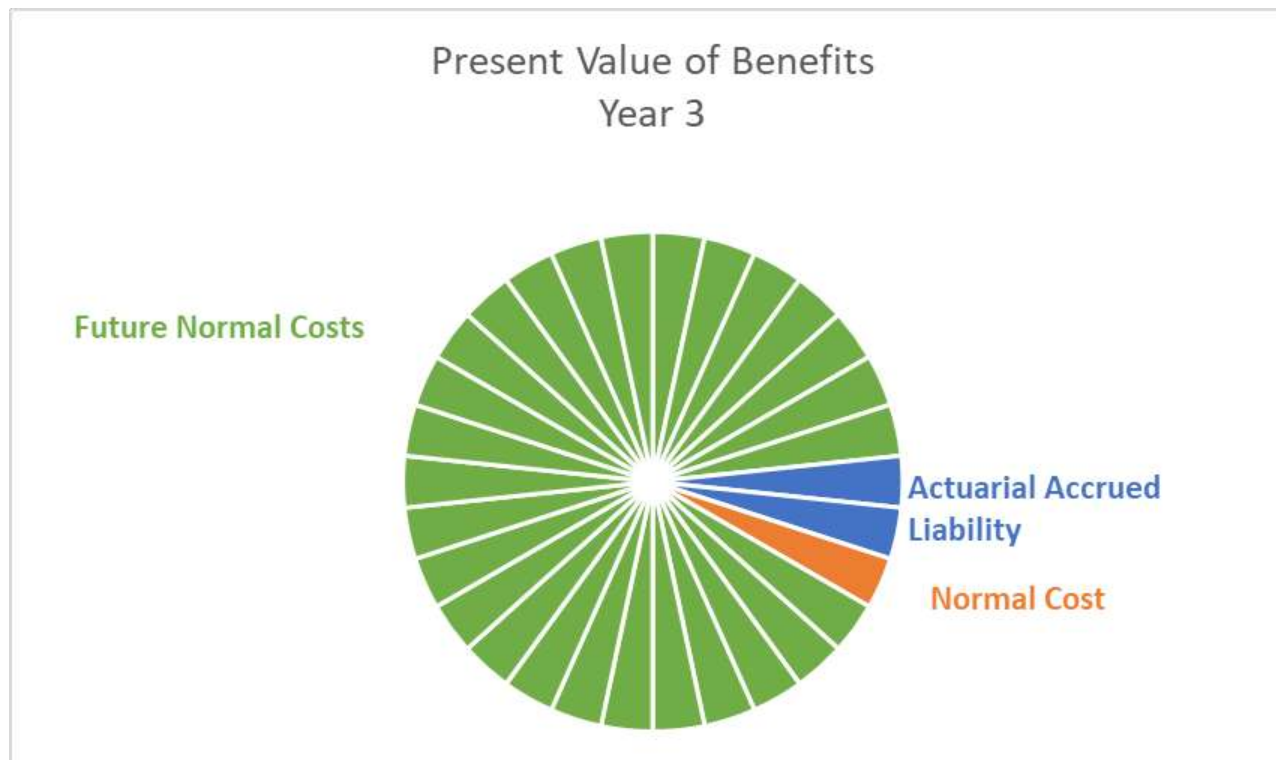
# Present Value of Benefits – Year 2

- First year normal cost becomes accrued liability
- Collect second normal cost



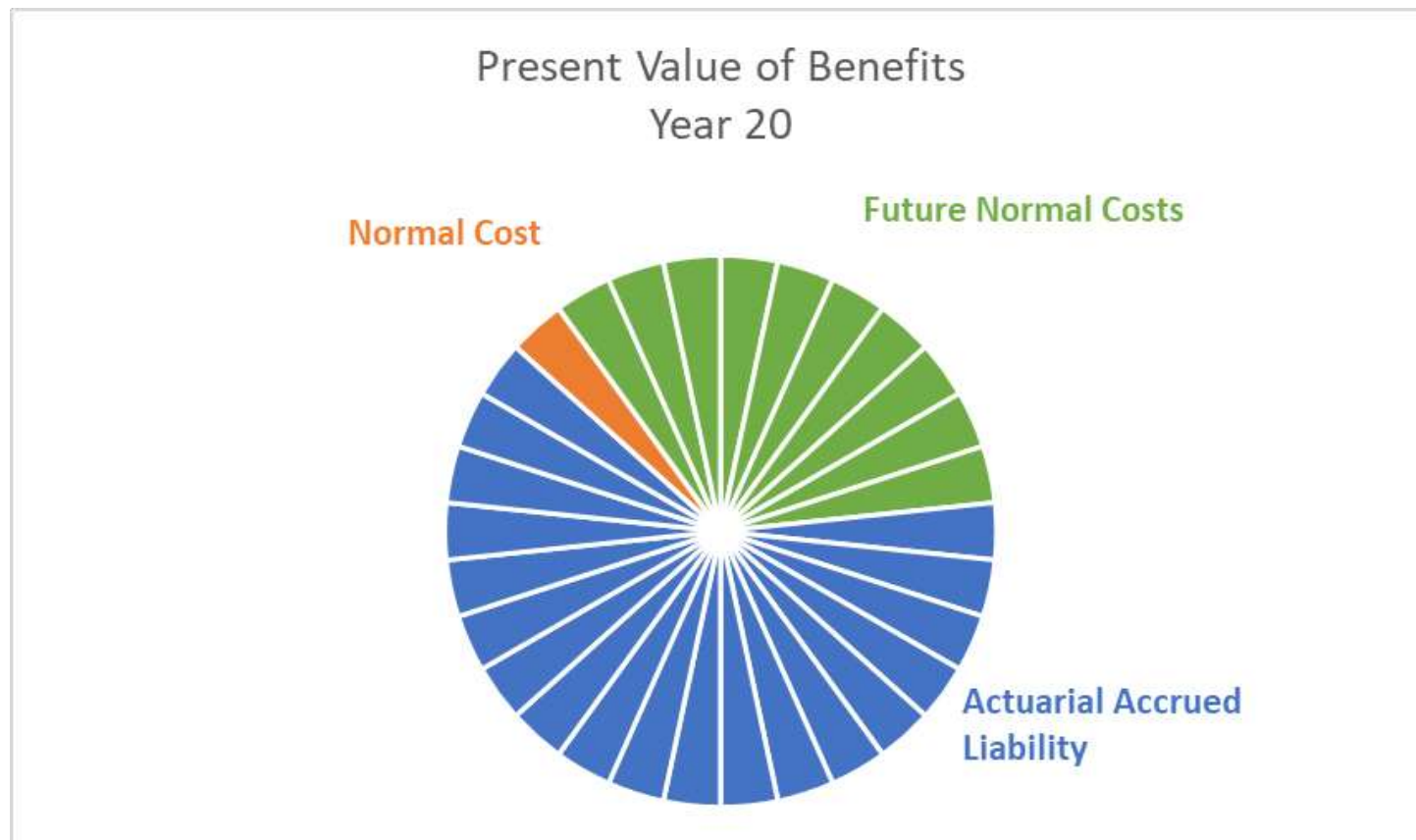
# Present Value of Benefits – Year 3

- Accrued liability grows by additional normal cost payment
- Collect third normal cost



# Present Value of Benefits – Year 20

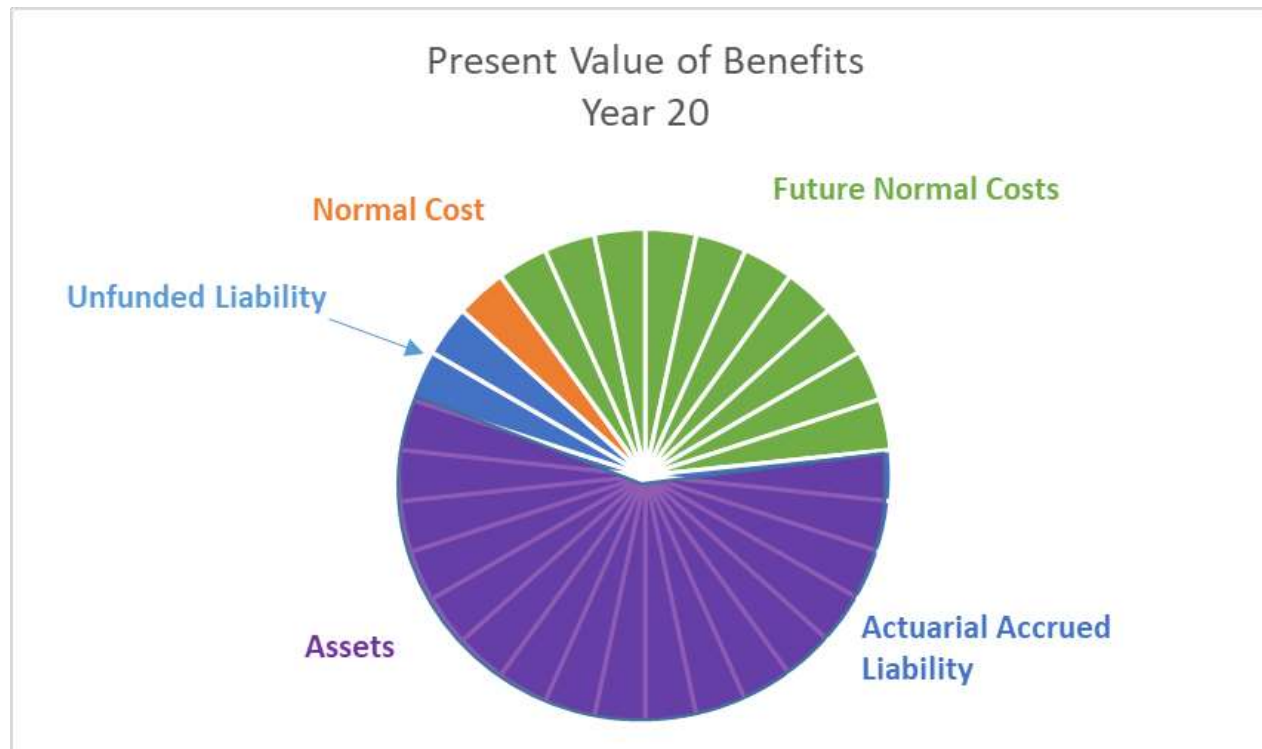
- After 20 years plan has accumulated two-thirds of the money needed for projected retirement
- Normal cost collection continues



# Present Value of Benefits – Year 20

## Assets & Unfunded Liability

- In theory the value of assets should equal the accrued liability.
- If assets are less than the accrued liability the portion of liability not covered by assets is considered unfunded liability.
- Future contributions would require both a normal cost payment and a payment to collect a portion of the unfunded liabilities.







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# Actuarial Assumptions





# Selection of Assumptions

## What Are They?

## How are They Determined?

### Economic

- Investment Return
- Payroll Growth
- Wage Inflation
- Price Inflation

### Demographic

- Mortality Rates
- Retirement Rates
- Turnover Rates
- Disability Rates
- Pay Increases

### Economic

- Investment Staff
- Investment Managers
- Other Advisors
- Actuary
- Board Approves

### Demographic

- Recommended by Actuary
- Board Approves

# Impact of Major Assumptions

Assumption	Action	Impact
Plan Discount Rate	Recently Lowered to 6.75%	Lowering Discount Rate Increases Liabilities and Contribution Rates
Inflation Rate	Currently 2.5%	Current low inflation environment has provided actuarial gains on funded COLAs
Payroll Growth	Assumed to be 3.0%	Used in amortizing unfunded liability in the future. If payroll increases at slower rate than assumed, contribution rates will increase to collect the necessary funding dollars.
Mortality	Mortality Improvements	People living longer and receiving benefits for longer periods of time. This will be reviewed in Spring of 2021 experience study. Differing views regarding mortality in light of opioid crisis and impacts of COVID-19. Assuming people live longer will increase liabilities.
Population Growth	VRS assumes level population	Decreasing populations can cause rates to increase as percentage of covered payroll. State and VaLORS plans have shown signs of decreasing populations in recent years. This will also be reviewed as part of the next experience study to see if patterns are becoming trends.



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# Developing Contribution Rates & Funded Ratio



# Determination of Employer Contribution

Required employer contribution rate is based on the following elements:

Rate Components			State Plan Contribution Rate
1.		Total Normal Cost Rate	9.39%
2.	Less	<u>Employee Member Contribution</u>	4.60%
3.	Equals	Employer Normal Cost Rate (1. - 2.)	4.79%
4.	Plus	Administrative Expense Rate	0.29%
5.	Plus	<u>Amortization Rate for Unfunded Liabilities</u>	8.59%
6.	Equals	Total Employer Defined Benefit Rate (3.+ 4. + 5.)	13.67%
7.	Plus	Estimated Hybrid Defined Contribution Rate	0.79%
8.	Equals	Total Employer Contribution Rate (6. + 7.)	14.46%

Under the Funding Policy, in some instances an additional surcharge rate or supplemental rate may be required for certain political subdivision employers whose plans are determined to be “At-Risk” as determined by the Plan Actuary.

# Development of Contribution Rates

## State Plan Employer Rate for 2020/2021



### Development of Employer Normal Cost

	Total Normal Cost Rate % of Payroll		Member Contribution % of Payroll		Employer Normal Cost % of Payroll
Plan 1	11.51%	-	5.00%	=	6.51%
Plan 2	10.55%	-	5.00%	=	5.55%
Hybrid	6.58%	-	4.00%	=	2.58%
Total Blended	9.39%	-	4.60%	=	4.79%
Administrative Expense Load					0.29%
Employer Normal Cost Rate					5.08%



### Development of Unfunded Amortization of Liability

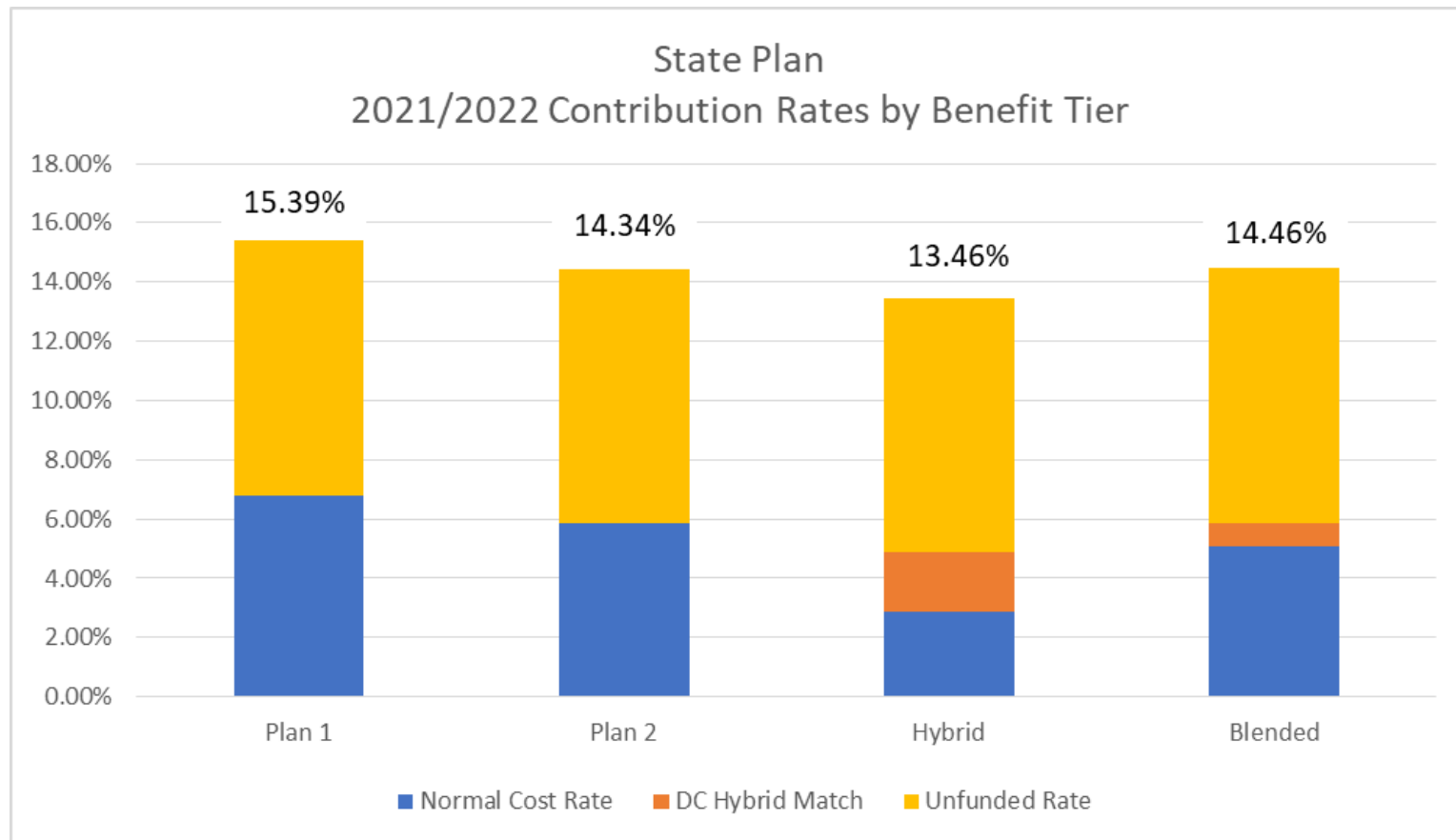
Amortization of Unfunded Liability % of Payroll	
Legacy Unfunded - 2013 (24 Years Remaining)	10.62%
2014-2019 Experience Gains/Losses (15 - 20 Years Remaining)	-3.21%
2017 & 2019 Assumption Changes (18 - 20 Years Remaining)	1.18%
Total Unfunded Amortization	8.59%



### Development of Board Certified Employer Contribution Requirement

Blended Normal Cost Rate		Rate to Amortize Unfunded Liability		Board Certified Rate Defined Benefit Plan		Employer Contribution Rate to Hybrid DC Component		Board Certified Rate
5.08%	+	8.59%	=	13.67%	+	0.79%	=	14.46%

# State Plan – Blended Employer Rate Impact of Pension Reforms



# Timing of Employer Contribution

- Contribution rates developed in odd years are used to set employer rates for the next biennium.
- So there is a two year lag period between valuation date and the collection of contributions.
- For example:
  - The June 30, 2019 valuation is used to determine rates that will be collected beginning July 1, 2020 through June 30, 2022.
- Even year valuations are informational only.

# Funded Ratio

- **Funded Ratio**- Actuarial accrued liability (AAL) divided by plan assets
  - Often used as measure of “health” of plan
  - Difficult to compare from one system to another due to assumptions not being uniform
  - Trend in funded ratio can be more important than the absolute value

System	Market Value of Assets		
	2018	2019	
		Before Assumption Changes	After Assumption Changes
State	76.8%	77.2%	75.2%
Teachers	75.1%	76.4%	74.1%
SPORS	75.2%	75.3%	73.3%
VaLORS	69.2%	69.6%	67.7%
JRS	83.6%	85.0%	83.2%
HIC State	9.6%	11.0%	10.7%
HIC Teachers	8.1%	9.3%	9.1%
VSDP	174.5%	199.5%	196.5%
Group Life	50.4%	53.5%	51.6%



# Additional Funding Terms

- **Funding Policy** - Determines how much should be contributed each year by employers and participants to provide for the secure funding of benefits in a systematic fashion.
- **Funding Method** - The actuarial cost method determines the allocation of cost between the past and future.
- **Entry-Age Normal** - Cost method that funds the present value of future benefits as a level percentage of pay from entry-age into the plan until a members expected retirement date.
- **Asset Smoothing Method** - Smoothed asset value that is based on market value of assets plus recognition of asset gains/losses over a five-year period.
- **Amortization of Unfunded Liabilities** – Method of paying for shortfalls in funding by adding additional rate to employers required annual contribution.



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# VRS Funding Policy

October 7, 2020



- The VRS Funding Policy memorializes the methods by which the Board has elected to govern how it funds each plan.
- The policy determines how much should be contributed each year by employers and participants to provide for the secure funding of benefits in a systematic fashion.
- The principal goal of a funding policy is to ensure that future contributions along with current plan assets are sufficient to provide for all benefits expected to be paid to members and their beneficiaries when due.

# Funding Policy History



- In June 2012 GASB revised public pension accounting standards, making a clear separation between accounting and funding of pensions.
- Many public employers, including VRS, had previously relied on GASB standards as the guideline for pension funding.
- Pension Funding Taskforce made up of several national public sector groups was formed to create new funding policy guidelines for employers.
- VRS Board suggested that VRS document and review the current funding policy and create a written policy.

# Funding Policy Objectives



- Funding policy based on actuarially determined contributions.
- Build funding discipline into policy to ensure that promised benefits can be paid.
- Maintain intergenerational equity so that cost of employee benefits is paid by the generation of those who receive services.
- As required by the *Code of Virginia*, make employer costs a consistent percentage of payroll.
- Require clear reporting to show how and when pension plans will be fully funded.

# Funding Policy

## Core Elements



- **Actuarial Cost Method**

Method used to allocate the plan costs and contributions over an employee's career.

- **Asset smoothing method**

Method used to recognize gains or losses in plan assets over some period of time to reduce the effects of market volatility and provide stability to contributions.

- **Amortization Policy**

Determines the length of time and structure of payments required to systematically fund accrued employee benefits not covered by actuarial value of assets (unfunded liability).

# Funding Policy

## Actuarial Cost Method



- Each participant's benefit should be fully funded under a reasonable allocation method by their expected retirement date.
- The benefit costs should be determined as a level percentage of member compensation and include expected income adjustments.

### VRS Actuarial Cost Method

The Entry Age Normal level percentage of payroll actuarial cost method is especially well-suited to meeting this policy objective.

# Funding Policy

## Asset Smoothing Method



- Funding policy should specify the components of asset smoothing, such as amount of return subject to smoothing and the time period(s) used for smoothing a specific gain or loss.
- The asset smoothing method should be the same for gains and losses and should not be reset or biased toward high or low investment returns.

### VRS Asset Smoothing Method

The use of a five-year period for “smoothing” investment experience is especially well-suited to meeting this policy objectives.



# Funding Policy

## Amortization Method



- The unfunded liability is paid off according to an amortization method that makes adjustments to contributions over time that balance intergenerational equity against the goal of keeping contributions level as a percentage of payroll over time.
- Should reflect (a) investment and demographic gains and losses experienced by plan, (b) changes in assumptions and methods, and (c) benefit or plan changes.
- Components of an amortization method include:
  - Level dollar versus level percent of pay
  - Closed versus open amortization
  - Length of amortization periods

# Funding Policy

## Amortization Method



- Level dollar is similar to a mortgage payment
  - More conservative since it funds the unfunded accrued liability faster in the early years.
- Majority of public pension systems use level percent of pay amortization
  - Consistent with pay-related structure of benefits.
  - Also consistent with normal cost which is determined as level percent of pay.

### VRS Amortization Method

- Gains, losses, plan changes, and assumption changes are amortized over closed, 20-year periods.
- The legacy unfunded liability as of 7/1/2013 was amortized over a closed 30-year period with 23 years remaining as of 7/1/2020.

# Funding Policy Assumptions



Actuarial assumptions are used to model future experience when determining the plan liabilities. Assumptions are set in conjunction with quadrennial experience studies. The next study will be completed in spring 2021.

The assumptions used include, but are not limited to the following:

- Demographic
  - Retirement
  - Termination before retirement
  - Disability
  - Death
- Economic
  - Investment return – 6.75%
  - Salary increase – 3.50% to 5.35% based on service
  - Inflation – 2.50%
  - Total payroll growth – 3.00%

# Funding Policy

## Recent modifications



Recent modifications were made to the Funding Policy to:

- Allow for accelerated funding of unfunded liabilities in pension or OPEB plans where feasible.
- Apply alternative funding requirements to political subdivision plans to help maintain solvency while also meeting the other objectives of the Board's funding policy.
- Clarify funding parameters for political subdivision plans joining VRS or enhancing benefits for current participants.

# Recent Modifications Statewide Plans



- If unfunded liabilities exist in a plan, the Board may recommend alternative contribution rates in excess of the actuarially determined rates if opportunities exist to accelerate pay down of unfunded liabilities.
- Examples of alternative rates include:
  - Maintaining rates from the prior year if rates drop in subsequent rate setting; or
  - Maintaining a higher, level contribution rate until a certain funded status is achieved.
- Amortization periods of explicit bases may be shortened in an effort to pay off unfunded liabilities of either pensions or OPEBs earlier than originally scheduled if feasible.

# Recent Modifications

## Political Subdivisions - Surcharge for “At-Risk” Plans



- Political subdivision plans identified as potentially “at-risk” due to low funded levels may require an additional surcharge or shortened amortization periods to bring the funded level of the plans to a sustainable level as determined by the Plan Actuary.
- “At-Risk” plans are determined by VRS Staff and the Plan Actuary.
- Surcharge is developed and action plan communicated to employer as part of the rate-setting process.

# Recent Modifications

## Political Subdivisions - Benefit Enhancements



- Employers seeking to modify their plan design are required to be at least 75% funded both before and after the benefit enhancements.
- In order to increase benefits under these circumstances, the political subdivision is required to make a lump sum contribution in the amount necessary to bring the funded level to 75%.
  - This would be in addition to any increase in annual employer contributions due to plan enhancements.
  - This serves to protect the employer as well as members and beneficiaries.

# Recent Modifications

## Political Subdivisions - New Employers



- New employers seeking to grant prior service to members are required to meet the same 75% funded level upon joining VRS.
- Any past service that is granted by the employer or purchased at the time the employer joins VRS must be:
  - at least 75% funded at the join date;
  - with the remaining amount eligible to be amortized over no more than 10 years.