New Hampshire Retirement System

Actuarial Valuation Report
as of June 30, 2017

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May 30, 2018

Board of Trustees
New Hampshire Retirement System
54 Regional Drive
Concord, New Hampshire 03301-8507

Re: New Hampshire Retirement System Actuarial Valuation as of June 30, 2017

Dear Board Members:

The results of the June 30, 2017 Annual Actuarial Valuation of the New Hampshire Retirement System (NHRS) are presented in this report. The purposes of the valuation were:

- to measure the System's funding progress; and
- to calculate employer contribution rates for Fiscal Years 2020 and 2021.

This report was prepared at the request of the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the System only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report. This report should not be relied on for any purpose other than the purposes described above.

Calculations required for compliance with the Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68, as well as No. 74 and No. 75, have been issued in separate reports. A description of the actuarial assumptions and methods used in this report may be found in the CAFR Schedules and GASB Nos. 67 and 74 Reporting and Accounting Schedules report dated October 31, 2017.

The contribution rates in this report are determined according to Statute RSA 100-A:16, 53, 53-b, 53-c, and 53-d using the actuarial assumptions and methods disclosed in the 'CAFR Schedules and GASB Statement Nos. 67 and 74 Plan Reporting and Accounting Schedules' report dated October 31, 2017. This report includes risk measures on page 29, but does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment. There is a proposed Actuarial Standard of Practice on Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions that was not considered for this valuation but may apply to future valuations.

The valuation was based upon information, furnished by NHRS staff, concerning Retirement System benefits, financial transactions, and active members, terminated members, retirees and beneficiaries as of June 30, 2017. We checked for internal and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the data provided by NHRS. Detailed demographic information can be found in the 'CAFR Schedules and GASB Statement Nos. 67 and 74 Plan Reporting and Accounting Schedules' report.

The valuation results summarized in this report involve actuarial calculations that require assumptions about future events. The actuarial assumptions are established by the Board after consulting with the actuary under New Hampshire Statute RSA 100-A:14 IX. Actuarial methods and assumptions were adopted by the Board pursuant to the June 30, 2015 Experience Study. We believe that the assumptions and methods used in this report are reasonable and appropriate for the purposes for which they have been used. However, other assumptions and methods could also be reasonable and could result in materially different results. In addition, because it is not possible or practical to consider every possible contingency, we may use summary information, estimates or simplifications of calculations to facilitate the modeling of future events. We may also exclude factors or data that are deemed to be immaterial. The actuarial funding method is the Individual Entry Age Actuarial Cost Method, in compliance with NHRS State Statutes. Each actuarial valuation takes into account all prior differences between actual and assumed experience in each risk area and adjusts the contribution rates as needed.

We certify that the information contained in this report is accurate and fairly presents the actuarial position of the New Hampshire Retirement System as of June 30, 2017. All calculations have been made in conformity with generally accepted actuarial principles and practices, with the Actuarial Standards of Practice issued by the Actuarial Standards Board and with applicable Statutes RSA 100-A:16, 100-A:53, 100-A:53-b, 100-A:53-c, 100-A:53-d and 100-A:53-e.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as: plan experience differing from that anticipated by the economic and demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of the actuary's assignment, the actuary did not perform an analysis of the potential range of such future measurements.

If there is other information that you need in order to make an informed decision regarding the matters discussed in this report, please contact us.

David T. Kausch and Heidi G. Barry are independent of the plan sponsors, are Members of the American Academy of Actuaries (MAAA), and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,

David T Kausch

David T. Kausch, FSA, EA, FCA, MAAA

Heidi G Barry

Heidi G. Barry, ASA, FCA, MAAA

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June 30, 2017 Actuarial Valuation

Employer Contribution Rates for the 2020/2021 Biennium

	Computed Employer Contribution Rates as a Percent of Payroll*			
	State Members			
	Employees	Teachers	Police	Fire
Pension	10.88%	N/A	24.77%	26.43%
Medical Subsidy	1.05%	N/A	3.66%	3.66%
Total	11.93%	N/A	28.43%	30.09%

	Computed Employer Contribution Rates as a Percent of Payroll*			
	Political Subdivision Members			
	Employees	Teachers	Police	Fire
Pension	10.88%	15.99%	24.77%	26.43%
Medical Subsidy	0.29%	1.81%	3.66%	3.66%
Total	11.17%	17.80%	28.43%	30.09%

* *The grand total contribution rates for NHRS (State and Political Subdivisions combined) are 15.17% of payroll for pension and 1.58% for the medical subsidy for a grand total of 16.75% of payroll. The rates shown above for the total State and total Political Subdivisions vary due to different proportions of payroll in the various member classifications.*

The Pension Funded Ratio (Actuarial Value of Assets divided by the Actuarial Accrued Liability) for NHRS in total is 61.8%.

Changes to the System Included in the June 30, 2017 Actuarial Valuation

1) Headcount growth for Teachers continues to fall below the current assumption of (0.25)% per year. The average decrease in the headcount over a 10-year period is 0.32% while the average decrease over a 3-year period is 0.48%. The payroll growth assumption for Teachers was reduced from 3.0% to 2.75% as adopted by the Board at the Board of Trustees meeting on April 10, 2018 for purposes of determining the amortization of the Unfunded Actuarial Accrued Liabilities.

Other Highlights

1) In total, plan experience between June 30, 2016 and June 30, 2017 was favorable for pension and the medical subsidy. The dollar weighted rate of return for the year ending June 30, 2017 was 13.3% on the market value of assets (Note: This dollar weighted measure may differ from investment manager calculations and should not be used as a measure of investment performance). On the basis of statutory funding, the rate of return was 9.1% on the actuarial value of assets, resulting in a recognized asset gain of $141 million (pension and medical subsidy combined). The return on the market value of assets exceeds the return on the actuarial value of assets because some of this year's high market return is deferred and prior years' low returns are recognized this year.

Highlights of
June 30, 2017 Actuarial Valuation

2) Total covered payroll increased by 2.6% versus the assumed increase of 3.25% (3.0% for Teachers through June 30, 2017) resulting in pension liability gains. Between the 2016 and 2017 valuation, the pension funded ratio increased by 1.80% (60.0 to 61.8%). See Comment 1 on page 16.

3) The medical subsidy benefits are effectively pay-as-you-go with total assets in the four subaccounts being roughly half a year's total benefit payments. The market value of assets available to fund medical subsidy benefits increased from $26.6 million to $39.3 million. See Comment 3 on page 18.

Details of the impact of changes can be found in the Comments section.

Executive Summary
Pension

Covered Group		Employees	Teachers	Police	Fire	Total
I. Number of Participants as of June 30, 2017						
a.	Actives	24,478	17,617	4,151	1,640	47,886
b.	Retirees, Disabilities, and Beneficiaries	17,573	12,696	3,786	1,639	35,694
c.	Vested Terminations	1,207	941	115	18	2,281
d.	Non-Vested Inactive Terminations	6,803	43	518	3,113	10,477
e.	Total	50,061	31,297	8,570	6,410	96,338
f.	Total Covered Annual Payroll	$ 1,179,518,298	$ 1,073,446,998	$ 291,003,704	$ 123,642,532	$ 2,667,611,532
II. Statutory Funding Information						
a.	Actuarial Present Value of Projected Benefits	$ 5,014,742,389	$ 5,909,073,260	$ 2,896,949,763	$1,375,838,215	$15,196,603,627
b.	Actuarial Present Value of Future Normal Costs	674,671,498	745,409,744	372,827,417	195,245,594	1,988,154,253
c.	Actuarial Accrued Liability (AAL): a. – b.	4,340,070,891	5,163,663,516	2,524,122,346	1,180,592,621	13,208,449,374
d.	Actuarial Value of Assets	2,734,557,588	2,979,004,853	1,650,907,814	801,213,897	8,165,684,152
e.	Unfunded Actuarial Accrued Liability (UAAL): c. – d.	1,605,513,303	2,184,658,663	873,214,532	379,378,724	5,042,765,222
f.	Funded Status: d. / c.	63.0%	57.7%	65.4%	67.9%	61.8%
III. Additional Information on Payroll						
	State	$ 536,482,267	$ -	$ 76,213,301	$ 3,879,292	$ 616,574,860
	Political Subdivisions	643,036,031	1,073,446,998	214,790,403	119,763,240	2,051,036,672
	Total	$ 1,179,518,298	$ 1,073,446,998	$ 291,003,704	$ 123,642,532	$ 2,667,611,532

Executive Summary
Medical Subsidy

Covered Group	State Employees	Political Subdivision Employees	Teachers	Police and Fire	Grand Total
I. Number of Participants Covered by					
Post Retirement Medical Subsidy as of June 30, 2017					
a. Actives	-	-	-	2,636	2,636
b. Retirees, Disabilities, and Beneficiaries	1,709	1,210	4,278	2,808	10,005
c. Vested Terminations	-	-	-	-	-
d. Total	1,709	1,210	4,278	5,444	12,641
e. Total NHRS Covered Annual Payroll	$ 536,482,267	$ 643,036,031	$ 1,073,446,998	$ 414,646,236	$ 2,667,611,532
II. Statutory Funding Information					
a. Actuarial Present Value of Projected Benefits	$ 67,701,241	$ 53,651,633	$ 241,519,017	$ 345,292,684	$ 708,164,575
b. Actuarial Present Value of Future Normal Costs	-	-	-	11,616,236	11,616,236
c. Actuarial Accrued Liability (AAL): a. – b.	67,701,241	53,651,633	241,519,017	333,676,448	696,548,339
d. Valuation Assets	3,162,662	18,288,882	6,513,728	10,887,772	38,853,044
e. Unfunded Actuarial Accrued Liability (UAAL): c. – d.	64,538,579	35,362,751	235,005,289	322,788,676	657,695,295
f. Funded Status: d. / c.	4.7%	34.1%	2.7%	3.3%	5.6%

Executive Summary
Contribution Rates

State Members

Covered Group	Employees	Teachers	Police	Fire	Total
Total Normal Cost (% of Payroll)	8.92%		16.59%	18.15%	9.92%
UAAL Contribution (% of Payroll)	8.96%		19.73%	20.08%	10.36%
Total Pension Contribution (% of Payroll)	17.88%		36.32%	38.23%	20.28%
Fiscal Year 2020					
Member Contributions (% of Payroll)	7.00%		11.55%	11.80%	7.59%
Employer Pension Contribution (% of Payroll)	10.88%		24.77%	26.43%	12.69%
Employer Medical Subsidy Contribution (% of Payroll)	1.05%		3.66%	3.66%	1.39%
Total Contributions for Fiscal Year 2020					
1. Percent of Payroll	11.93%	N/A	28.43%	30.09%	14.08%
2. Estimated Dollar Amount	$ 70,447,567	N/A	$ 23,849,420	$ 1,284,828	$ 95,581,815
Fiscal Year 2021					
Member Contributions (% of Payroll)	7.00%		11.55%	11.80%	7.59%
Employer Pension Contribution (% of Payroll)	10.88%		24.77%	26.43%	12.69%
Employer Medical Subsidy Contribution (% of Payroll)	1.05%		3.66%	3.66%	1.39%
Total Contributions for Fiscal Year 2021					
1. Percent of Payroll	11.93%	N/A	28.43%	30.09%	14.08%
2. Estimated Dollar Amount	$ 72,737,113	N/A	$ 24,624,526	$ 1,326,585	$ 98,688,224

Executive Summary
Contribution Rates (Concluded)

Political Subdivison Members

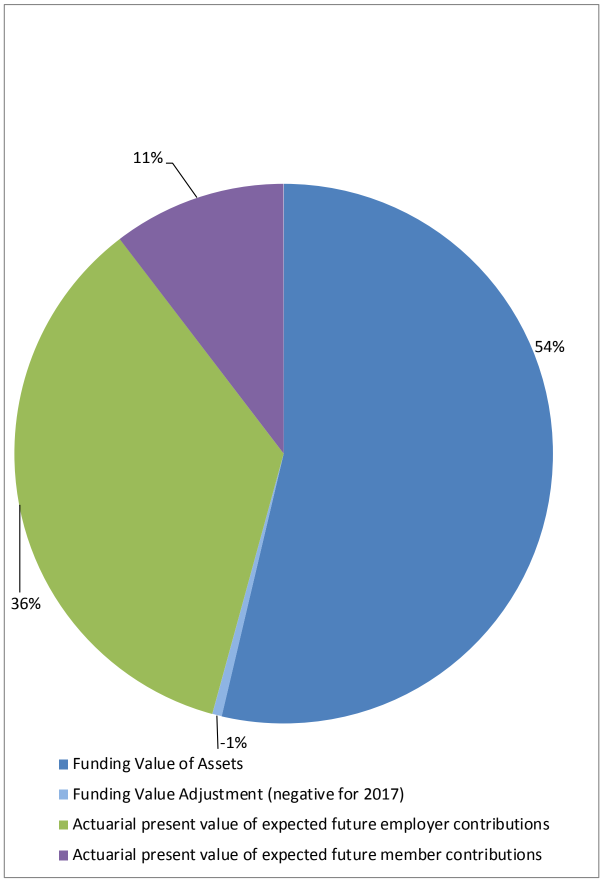
Covered Group	Employees	Teachers	Police	Fire	Total
Total Normal Cost (% of Payroll)	8.92%	8.86%	16.59%	18.15%	10.24%
UAAL Contribution (% of Payroll)	8.96%	14.13%	19.73%	20.08%	13.44%
Total Pension Contribution (% of Payroll)	17.88%	22.99%	36.32%	38.23%	23.68%
Fiscal Year 2020					
Member Contributions (% of Payroll)	7.00%	7.00%	11.55%	11.80%	7.76%
Employer Pension Contribution (% of Payroll)	10.88%	15.99%	24.77%	26.43%	15.92%
Employer Medical Subsidy Contribution (% of Payroll)	0.29%	1.81%	3.66%	3.66%	1.64%
Total Contributions for Fiscal Year 2020					
1. Percent of Payroll	11.17%	17.80%	28.43%	30.09%	17.56%
2. Estimated Dollar Amount	$ 79,060,337	$ 207,274,607	$ 67,214,336	$ 39,665,771	$ 393,215,051
Fiscal Year 2021					
Member Contributions (% of Payroll)	7.00%	7.00%	11.55%	11.80%	7.76%
Employer Pension Contribution (% of Payroll)	10.88%	15.99%	24.77%	26.43%	15.92%
Employer Medical Subsidy Contribution (% of Payroll)	0.29%	1.81%	3.66%	3.66%	1.64%
Total Contributions for Fiscal Year 2021					
1. Percent of Payroll	11.17%	17.80%	28.43%	30.09%	17.56%
2. Estimated Dollar Amount	$ 81,629,798	$ 212,974,659	$ 69,398,802	$ 40,954,909	$ 404,958,168

Total NHRS Members

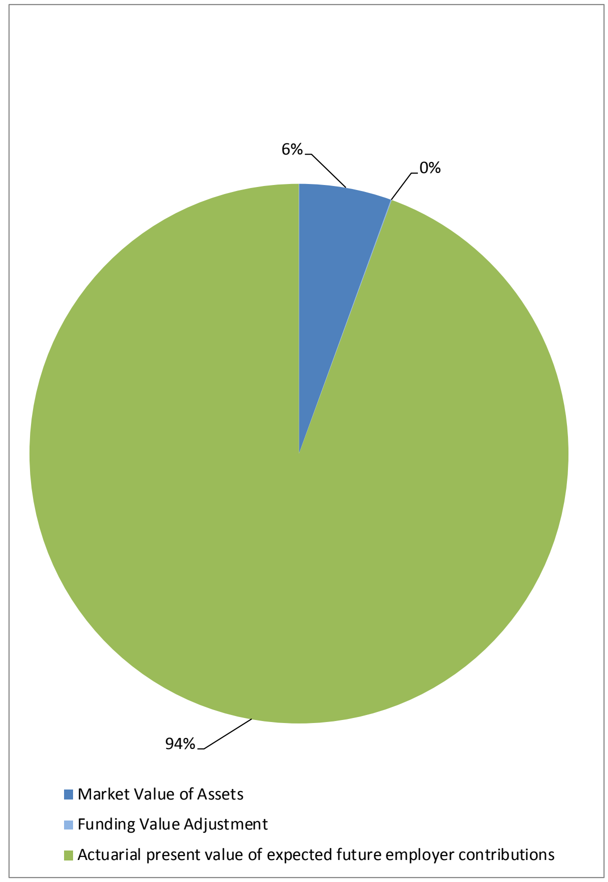
Covered Group	Employees	Teachers	Police	Fire	Total
Fiscal Year 2020					
Estimated Dollar Amount	$ 149,507,904	$ 207,274,607	$ 91,063,756	$ 40,950,599	$ 488,796,866
Fiscal Year 2021					
Estimated Dollar Amount	$ 154,366,911	$ 212,974,659	$ 94,023,328	$ 42,281,494	$ 503,646,392

Sources of Funds

Pension

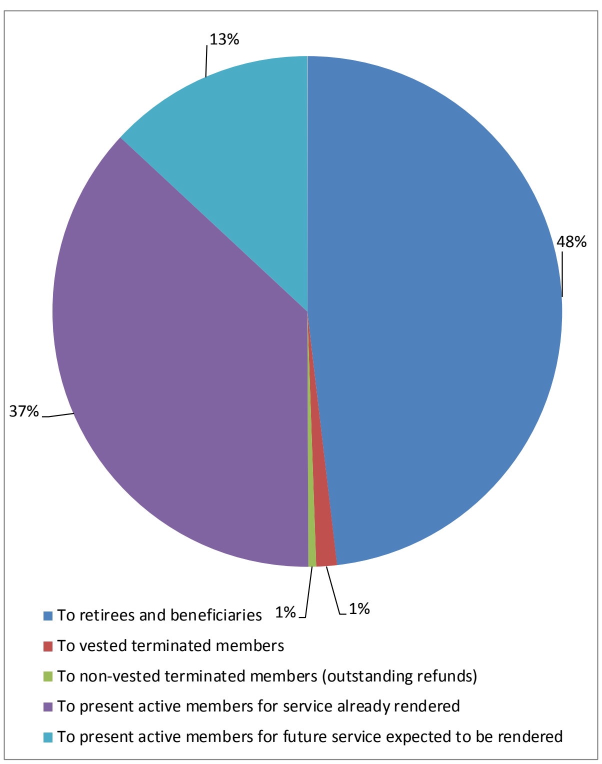


Medical Subsidy

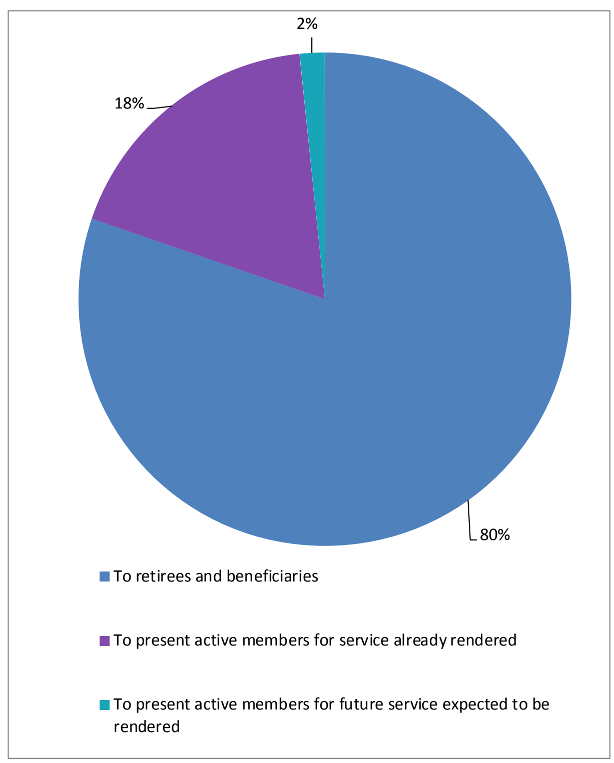


Uses of Funds

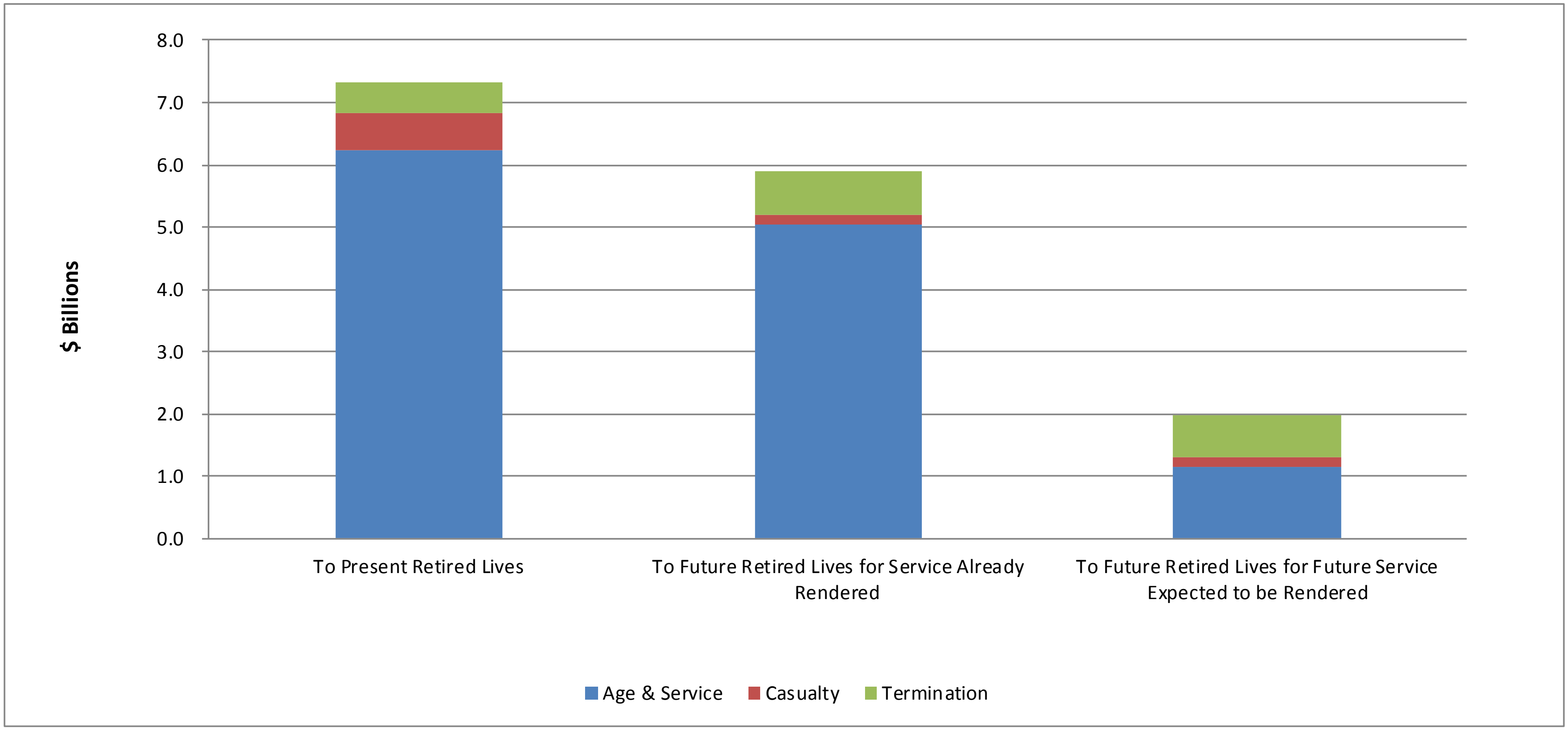
Pension

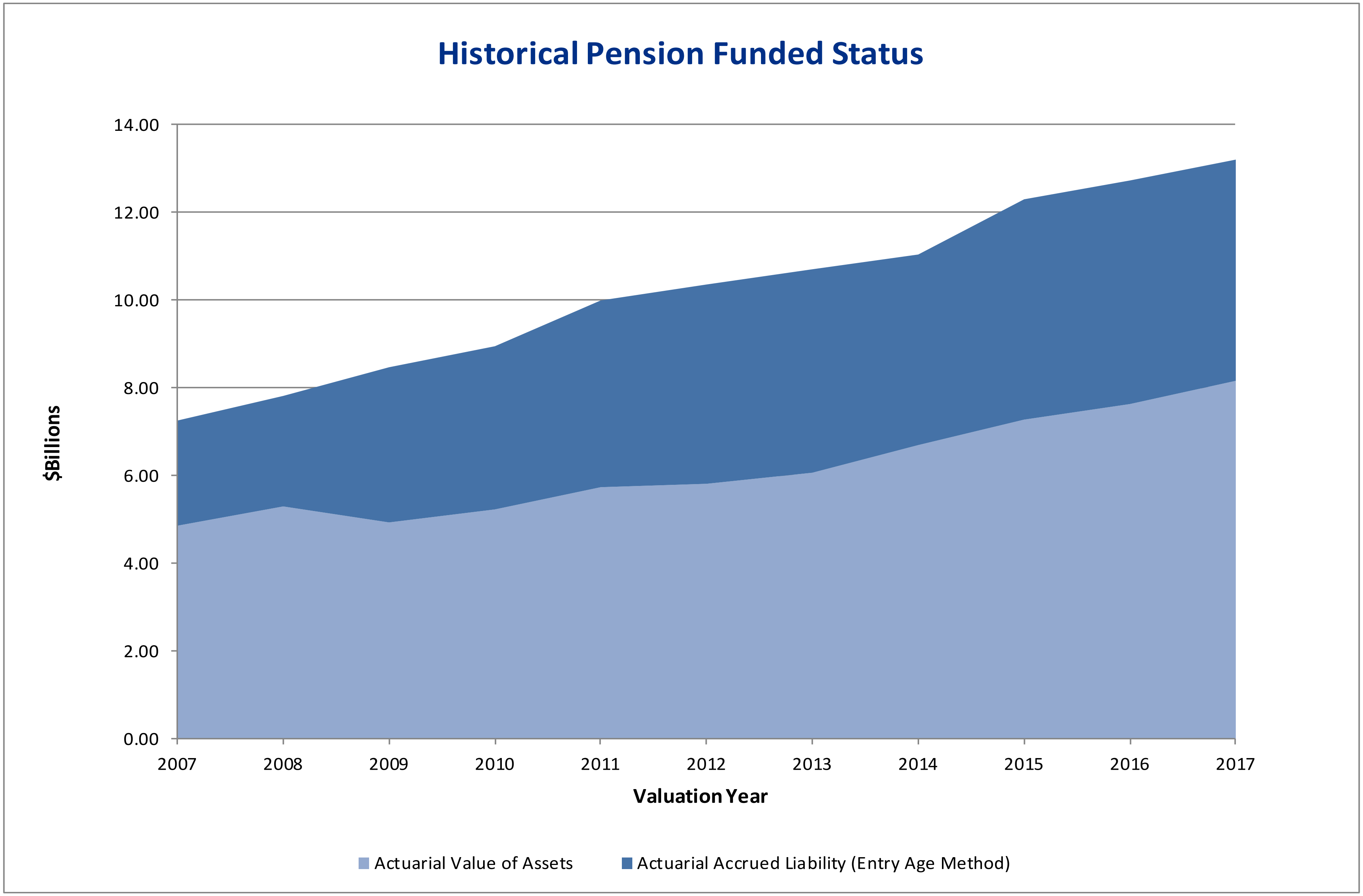


Medical Subsidy



Comparison of Pension Liabilities by Type




Historical Pension Funded Status
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
$Billions
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Valuation Year
Actuarial Value of Assets
Actuarial Accrued Liability (Entry Age Method)

Results of the Valuation

Actuarial Valuation

This is the actuarial valuation of the New Hampshire Retirement System, prepared as of June 30, 2017.

The primary purposes of this valuation report are to measure the plan's liabilities, to analyze changes in NHRS' actuarial position and to determine employer contribution rates.

Valuations for certifying contribution rates are prepared biennially, as of June 30 on the odd numbered years (2017, 2019, etc.). The June 30, 2017 actuarial valuation will establish the Fiscal Year 2020 and Fiscal Year 2021 employer contribution rates.

In addition, this report provides summaries of the member data and financial data. Detailed information regarding member data, plan provisions and actuarial assumptions and methods can be found in the 'CAFR Schedules and GASB Statement Nos. 67 and 74 Plan Reporting and Accounting Schedules' report dated October 31, 2017. Calculations required for compliance with the Governmental Accounting Standards Board (GASB) Statement No. 68 have been issued in a separate report dated November 30, 2017.

Financing Objectives

NHRS is supported by member contributions, employer contributions, and net earnings on the investments of the fund. The member contribution rate is set by statute at 7.00% of member compensation for Group I Members (Employees and Teachers), 11.55% of member compensation for Police Members and 11.80% of member compensation for Fire Members. The employer contributions are determined in accordance with statute by an actuarial valuation. Legislation was enacted in 2007 which requires the use of the entry-age actuarial cost method and a closed 30-year amortization of unfunded actuarial accrued liability in the determination of the employer contributions. The amortization period is 20 years for Fiscal Year 2020 and 19 years for Fiscal Year 2021.

The closed amortization period means that the unfunded actuarial accrued liability is expected to be fully paid off by June 30, 2039 if all assumptions are met. It is important to note that the current amortization period is expected to result in "negative amortization", meaning that the UAAL is expected to increase in nominal (but not real) dollars through June 30, 2019 (see page 25.)

The legislature adopted the use of a layered amortization approach. The outstanding UAAL balance as of June 30, 2017 is referred to hereafter as the "Initial UAAL". The first layer will be the amortization of the Initial UAAL scheduled to be paid by 2039. New layers will be established as they occur in future biennial valuations and will be amortized over separate 20-year periods.

There are four pension member classifications: Employees, Teachers, Police and Fire. There are four separate 401(h) member classifications: State Employees, Political Subdivision Employees, Teachers and Police/Fire. The table below shows the pension and medical subsidy employer contribution rates for the FY 2020/2021 Biennium for each member classification.

Computed Employer Contribution Rates as a Percent of Payroll*

	State Members			
	Employees	**Teachers**	**Police**	**Fire**
Pension	10.88%	N/A	24.77%	26.43%
Medical Subsidy	1.05%	N/A	3.66%	3.66%
Total	11.93%	N/A	28.43%	30.09%

Computed Employer Contribution Rates as a Percent of Payroll*

	Political Subdivision Members			
	Employees	**Teachers**	**Police**	**Fire**
Pension	10.88%	15.99%	24.77%	26.43%
Medical Subsidy	0.29%	1.81%	3.66%	3.66%
Total	11.17%	17.80%	28.43%	30.09%

* *The grand total contribution rates for NHRS (State and Political Subdivisions combined) are 15.17% of payroll for pension and 1.58% for the medical subsidy for a grand total of 16.75% of payroll. The rates shown above for the total State and total Political Subdivisions vary due to different proportions of payroll in the various member classifications.*

The accounts for Teachers and State Employees have reached pay-as-you-go status.

The Political Subdivision Employees' account is projected to reach pay-as-you-go status in the fiscal year ending June 30, 2030. This is the same year as the projection in the prior rate-setting valuation.

The Police/Fire account is projected to reach pay-as-you-go status in the fiscal year ending June 30, 2027. This is two years later than the projection in the prior rate-setting valuation.

The medical subsidy contribution rates for State Employees and Teachers shown above are the computed amounts needed for pay-as-you-go financing of the retiree medical subsidy with a 20% margin for adverse experience by June 30, 2020 and to maintain that margin thereafter. It is imperative that NHRS monitor collections closely to ensure the necessary funds are collected to provide the benefit.

History of Certified Contribution Rates

Pension

Fiscal Year Ending	Employer Contribution Rates Employees	Teachers	Police	Fire	Total
2010	9.09%	9.38%	17.34%	22.52%	10.70%
2011	9.09%	9.38%	17.34%	22.52%	10.70%
July 1, 2011 -July 30, 2011	10.71%	11.51%	22.92%	28.25%	13.11%
Aug 1, 2011 - June 30, 2012	8.48%	8.99%	15.98%	18.92%	9.97%
2013	8.48%	8.99%	15.98%	18.92%	9.97%
2014-2015#	10.44%	11.96%	21.35%	23.79%	12.79%
2016-2017	10.86%	12.72%	22.54%	25.32%	13.55%
2018-2019	11.08%	15.70%	25.33%	27.79%	15.27%
2020-2021	10.88%	15.99%	24.77%	26.43%	15.17%

Fiscal Year Ending	Employer Dollars ($Millions)* Employees	Teachers	Police	Fire	Total
2010	$101.2	$ 97.1	$46.4	$25.0	$269.7
2011	$103.5	$ 98.0	$46.9	$26.2	$274.6
2012	$ 94.4	$ 93.5	$44.5	$22.2	$254.6
2013	$ 91.7	$ 92.9	$43.2	$22.0	$249.8
2014	$115.5	$126.1	$58.9	$27.9	$328.4
2015	$118.3	$124.2	$61.1	$28.7	$332.3
2016	$124.6	$136.4	$65.6	$30.9	$357.5
2017	$129.1	$138.6	$66.9	$32.0	$366.6
2018	*$134.9*	*$173.2*	*$76.1*	*$35.5*	*$419.7*
2019	*$139.3*	*$177.9*	*$78.6*	*$36.6*	*$432.4*
2020	*$141.3*	*$186.2*	*$79.3*	*$36.0*	*$442.8*
2021	*$145.8*	*$191.3*	*$81.9*	*$37.1*	*$456.1*

Medical Subsidy

Fiscal Year Ending	Employer Contribution Rates State Employees	Employees Political Sub	Teachers	Police & Fire	Total
2010	3.03%	0.00%	1.32%	2.17%	1.47%
2011	3.03%	0.00%	1.32%	2.17%	1.47%
July 1, 2011 -July 30, 2011	1.60%	0.38%	2.44%	2.65%	1.82%
Aug 1, 2011 - June 30, 2012	1.60%	0.32%	2.31%	3.97%	1.95%
2013	1.60%	0.32%	2.31%	3.97%	1.95%
2014-15	1.62%	0.33%	2.20%	3.95%	1.90%
2016-17	1.64%	0.31%	2.95%	3.84%	2.21%
2018-19	1.07%	0.30%	1.66%	4.10%	1.60%
2020-21	1.05%	0.29%	1.81%	3.66%	1.58%

Fiscal Year Ending	Employer Dollars ($Millions)* State Employees	Employees Political Sub	Teachers	Police & Fire	Total
2010	$10.4	$0.4	$13.6	$8.1	$32.6
2011	$10.3	$0.4	$13.8	$8.4	$32.9
2012	$8.3	$1.9	$24.0	$14.7	$48.9
2013	$8.8	$1.9	$23.8	$15.3	$49.8
2014	$8.2	$2.0	$23.3	$15.4	$48.9
2015	$8.6	$1.8	$22.6	$16.0	$49.0
2016	$8.6	$1.9	$31.8	$15.9	$58.2
2017	$8.9	$2.0	$32.0	$16.2	$59.1
2018	*$5.9*	*$2.0*	*$18.3*	*$17.6*	*$43.8*
2019	*$6.1*	*$2.1*	*$18.8*	*$18.1*	*$45.1*
2020	*$6.2*	*$2.1*	*$21.1*	*$16.7*	*$46.1*
2021	*$6.4*	*$2.1*	*$21.7*	*$17.2*	*$47.4*

** Dollar amounts for 2018 and beyond are estimated. The total rate as a percent of payroll will vary over the projection period as different payroll growth assumptions apply.*

 # Rates shown are for Political Subdivision. Rates for State are 10.51%, 21.45% and 23.90% for Employees, Police and Fire, respectively.

History of Certified Contribution Rates (Concluded)

Member Contributions

Fiscal Year Ending	Member Contribution Rates Employees	Teachers	Police	Fire	Total
2010	5.00%	5.00%	9.30%	9.30%	5.64%
2011	5.00%	5.00%	9.30%	9.30%	5.64%
2012	7.00%	7.00%	11.55%	11.80%	7.69%
2013	7.00%	7.00%	11.55%	11.80%	7.69%
2014-15	7.00%	7.00%	11.55%	11.80%	7.69%
2016-17	7.00%	7.00%	11.55%	11.80%	7.71%
2018-19	7.00%	7.00%	11.55%	11.80%	7.71%
2020-21	7.00%	7.00%	11.55%	11.80%	7.72%

Fiscal Year Ending	Member Dollars ($Millions)* Employees	Teachers	Police	Fire	Total
2010	$59.6	$54.2	$25.4	$10.2	$149.5
2011	$59.3	$56.2	$26.2	$10.7	$152.4
2012	$80.5	$75.0	$30.7	$13.4	$199.6
2013	$77.8	$74.1	$31.0	$13.7	$196.5
2014	$78.9	$74.7	$31.8	$13.7	$199.0
2015	$81.7	$74.8	$33.4	$14.2	$204.1
2016	$82.7	$76.7	$34.0	$14.6	$208.0
2017	$85.4	$78.0	$34.7	$15.0	$213.1
2018	*$85.2*	*$77.2*	*$34.7*	*$15.1*	*$212.2*
2019	*$88.0*	*$79.3*	*$35.8*	*$15.6*	*$218.7*
2020	*$90.9*	*$81.5*	*$37.0*	*$16.1*	*$225.5*
2021	*$93.8*	*$83.8*	*$38.2*	*$16.6*	*$232.4*

** Dollar amounts for 2018 and beyond are estimated. The total rate as a percent of payroll will vary over the projection period as different payroll growth assumptions apply.*

Funded Status

As of the valuation date, the Unfunded Actuarial Accrued Liability (UAAL) is $5,042.8 million (pension only), and the funded ratio (the ratio of the Actuarial Value of Assets to the Actuarial Accrued Liability) is 61.8% (pension only). This valuation was prepared using the Entry-Age Actuarial Cost Method. For comparison, the funded ratio as of June 30, 2016 was 60.0% (pension only).

The funded status measure is not appropriate for assessing the sufficiency of assets to cover the estimated cost of settling the Plan's benefit obligation. The funded status is appropriate for assessing the need for additional UAAL contributions. The funded status on the basis of the market value of assets would be 62.5%

Variability of Future Contribution Rates

The Actuarial Cost Method used to determine the contribution rate is intended to produce contribution rates which are generally level as a percent of payroll. Even so, when experience differs from the assumptions, as it often does, the employer's contribution rate can vary from year to year.

The level percent of payroll amortization of the UAAL assumes that the plan will remain open to new hires, that the size of the covered active population will remain constant, and that the covered payroll will grow at 3.25% per year (2.75% for Teachers). To the extent that this does not occur, there may be variability in future contribution rates.

Actuarial Value of Assets

The Market Value of Assets of the System totaling approximately $8.3 billion is greater than the Actuarial Value of Assets of $8.2 billion by about $89 million as of the valuation date (see page 49). This difference will be gradually recognized over the next four years.

The dollar-weighted rate of return for the year ending June 30, 2017 was 13.3% on the market value of assets. (Note: This dollar-weighted measure may differ from investment manager calculations and should not be used as a measure of investment performance.) The recognized dollar-weighted rate of return on the actuarial value of assets was 9.1% for the year ending June 30, 2017.

Please see Section C for additional asset information.

Actuarial Assumptions and Methods

Normal cost rates from the first year of the rate setting biennium are projected forward to better reflect the impact of the changing benefit tiers and generational mortality. This method for determining the normal cost was first used for the June 30, 2015 valuation.

Interest rate and wage inflation assumptions are 7.25% and 3.25%, respectively. Detailed information regarding actuarial assumptions and methods can be found in the 'CAFR Schedules and GASB Statement Nos. 67 and 74 Plan Reporting and Accounting Schedules' report.

Summary of Changes from June 30, 2016 to June 30, 2017
($ in Millions)

	Pension				
	Employees	Teachers	Police	Fire	Total
Reconciliation of UAAL					
Expected	$1,614.5	$2,257.8	$888.1	$387.1	$5,147.5
Impact of (Gain)Loss	(9.0)	(73.1)	(14.9)	(7.7)	(104.7)
Impact of Assumption Change	0.0	0.0	0.0	0.0	0.0
Impact of Plan Change	0.0	0.0	0.0	0.0	0.0
Total	$1,605.5	$2,184.7	$873.2	$379.4	$5,042.8
Funded %					
Prior Valuation	61.2 %	55.8 %	63.7 %	66.1 %	60.0 %
Expected Change	1.3 %	0.7 %	0.9 %	0.9 %	1.0 %
Impact of Gain(Loss)	0.5 %	1.2 %	0.8 %	0.9 %	0.8 %
Impact of Assumption Change	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Impact of Plan Change	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Total	63.0 %	57.7 %	65.4 %	67.9 %	61.8 %
Reconciliation of Employer Contribution Rate *					
State Employees					
Prior Rate Setting Valuation	11.08 %		25.33 %	27.79 %	12.97 %
Impact of (Gain)Loss	(0.20)%		(0.56)%	(1.36)%	(0.28)%
Impact of Assumption Change	0.00 %		0.00 %	0.00 %	0.00 %
Impact of Plan Change	0.00 %		0.00 %	0.00 %	0.00 %
Total	10.88 %		24.77 %	26.43 %	12.69 %
Political Subdivision Employees					
Prior Rate Setting Valuation	11.08 %	15.70 %	25.33 %	27.79 %	15.96 %
Impact of (Gain)Loss	(0.20)%	(0.09)%	(0.56)%	(1.36)%	(0.94)%
Impact of Assumption Change	0.00 %	0.38 %	0.00 %	0.00 %	0.15 %
Impact of Plan Change	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %
Total	10.88 %	15.99 %	24.77 %	26.43 %	15.17 %

	Medical Subsidy				
	State Employees	Political Subdivision Employees	Teachers	Police & Fire	Total
Reconciliation of UAAL					
Expected	$65.2	$36.7	$232.0	$334.3	$668.2
Impact of (Gain)Loss	(0.7)	(1.3)	3.0	(11.5)	(10.5)
Impact of Assumption Change	0.0	0.0	0.0	0.0	0.0
Impact of Plan Change	0.0	0.0	0.0	0.0	0.0
Total	$64.5	$35.4	$235.0	$322.8	$657.7
Reconciliation of Employer Contribution Rate *					
Prior Rate Setting Valuation	1.07 %	0.30 %	1.66 %	4.10 %	1.60 %
Impact of (Gain)Loss	(0.02)%	(0.01)%	0.12 %	(0.44)%	(0.03)%
Impact of Assumption Change	0.00 %	0.00 %	0.03 %	0.00 %	0.01 %
Impact of Plan Change	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %
Total	1.05 %	0.29 %	1.81 %	3.66 %	1.58 %

** Reconciliation of employer rates is from the prior rate-setting actuarial valuation as of June 30, 2015.*

Comments

Comment 1:

In total, plan experience between June 30, 2016 and June 30, 2017 was favorable for pension and the medical subsidy on the basis of statutory funding. The dollar-weighted rate of return for the year ending June 30, 2017 was 13.3% on the market value of assets (Note: This dollar weighted measure may differ from investment manager calculations and should not be used as a measure of investment performance). On the basis of statutory funding, the rate of return was 9.1% on the actuarial value of assets, resulting in a recognized asset gain of $141 million (pension and medical subsidy combined). The return on the market value of assets exceeds the return on the actuarial value of assets because prior years' low returns are still being recognized this year.

Overall, the System had a gain of $115 million comprised of an asset gain of $141 million and a liability loss of $26 million. Additional information on gains and losses is on page 28.

Total covered payroll increased by 2.6% versus the assumed increase of 3.25% (3.00% for teachers through June 30, 2017). Between the 2016 and 2017 valuation, the pension funded ratio increased by 1.8% (60.0% to 61.8%).

The expectation if all assumptions are met is that future pension contribution rates will decline as new hires with lower normal cost replace those hired before July 1, 2011 with higher normal cost. The contribution for the unfunded actuarial accrued liability is designed to be a level percent of payroll with 20 years remaining in the 2020 Fiscal Year. Medical Subsidy contribution rates are expected to decline as the covered population diminishes. There are currently unrecognized asset gains which will put additional downward pressure on the rates to the extent that future market experience meets expectations. For additional information, see the projections beginning on page 34.

Comment 2:

The normal cost rate as of June 30, 2017 for members hired on or after July 1, 2011 is shown in the table below.

Normal Cost	Employees	Teachers	Police	Fire	Total
Total	9.00 %	8.49 %	14.48 %	15.13 %	9.70 %
Member	7.00 %	7.00 %	11.55 %	11.80 %	7.72 %
Employer	2.00 %	1.49 %	2.93 %	3.33 %	1.98 %

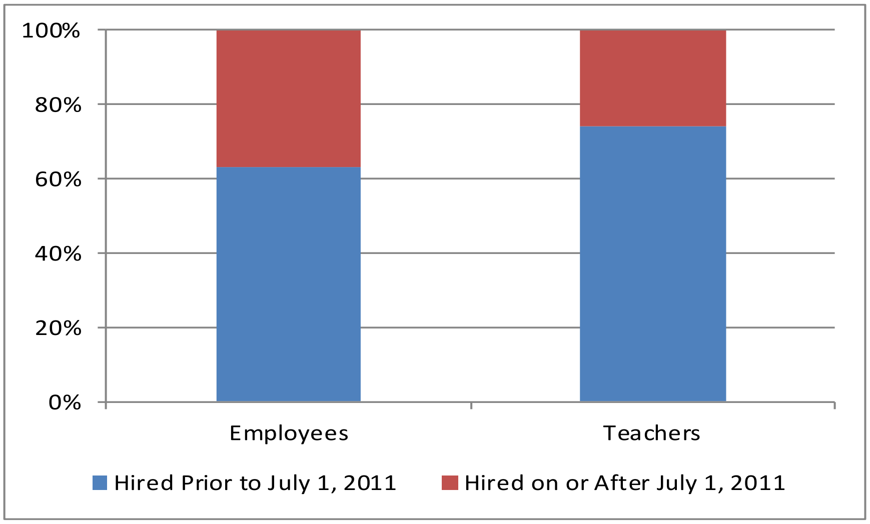
The total normal cost for the active populations of the four member classifications is expected to decrease each year towards the rates for new hires. Normal cost is expected to increase each year with generational mortality. Note that the group of those hired on and after July 1, 2011 is 32% of the total active population. There may be fluctuations in the normal cost rate for these members over the next few years which should level out over time as the group grows.

The tables and charts on the following page show the proportion of the active member population by benefit structure for the four member classifications.

Proportion of Active Population by Benefit Structure as of June 30, 2017

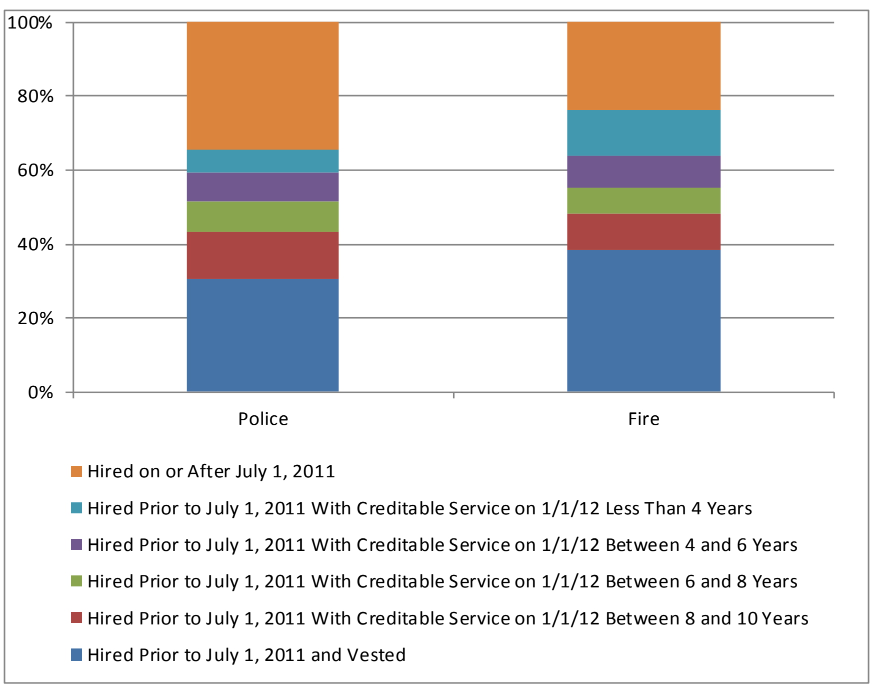
Group I

	Employees	Teachers
Hired Prior to July 1, 2011	15,451	13,083
Hired on or After July 1, 2011	9,027	4,534
Total	24,478	17,617



Group II

Group II	Police	Fire
Hired Prior to July 1, 2011 and Vested	1,268	628
Hired Prior to July 1, 2011 With Creditable Service on 1/1/12 Between 8 and 10 Years	527	166
Hired Prior to July 1, 2011 With Creditable Service on 1/1/12 Between 6 and 8 Years	349	114
Hired Prior to July 1, 2011 With Creditable Service on 1/1/12 Between 4 and 6 Years	323	142
Hired Prior to July 1, 2011 With Creditable Service on 1/1/12 Less Than 4 Years	248	199
Hired on or After July 1, 2011	1,436	391
Total	4,151	1,640



Comment 3:

June 30, 2017 Medical Subsidy Contribution Rates

Medical Subsidy benefits continue to warrant close monitoring. As required by the statutes, the objective is to contribute the minimum amount necessary to maintain assets sufficient to pay medical subsidy benefits in each of the four subaccounts. Given the absence of assets from prior pre-funding (as exists for pension benefits), medical subsidy benefits payable in the future will be largely funded by future employer contributions. However, employer contributions toward medical subsidy benefits are subject to certain limitations as defined in IRC Section 401(h).

In addition, year-to-year deviations between actual contributions and benefits and projected contributions and benefits are more problematic with regard to medical subsidy funding than pension funding due to the lack of significant assets for medical subsidy benefits and the lag between the setting of the rates and the collection of contributions.

For purposes of determining the contribution rates for the 2020-2021 biennium as shown on page 1, we have assumed that benefits for all members receiving a benefit on the valuation date and those Group I eligible members not yet age 60 get paid. In addition, there are a significant number of eligible members who are not receiving benefits, particularly for Group I. 5% of those who opted-out of receiving benefits are assumed to opt back in on the valuation date. We have assumed that each subaccount maintains at least a 20% margin each year beginning in the first year of the 2020-2021 biennium.

Comment 4:

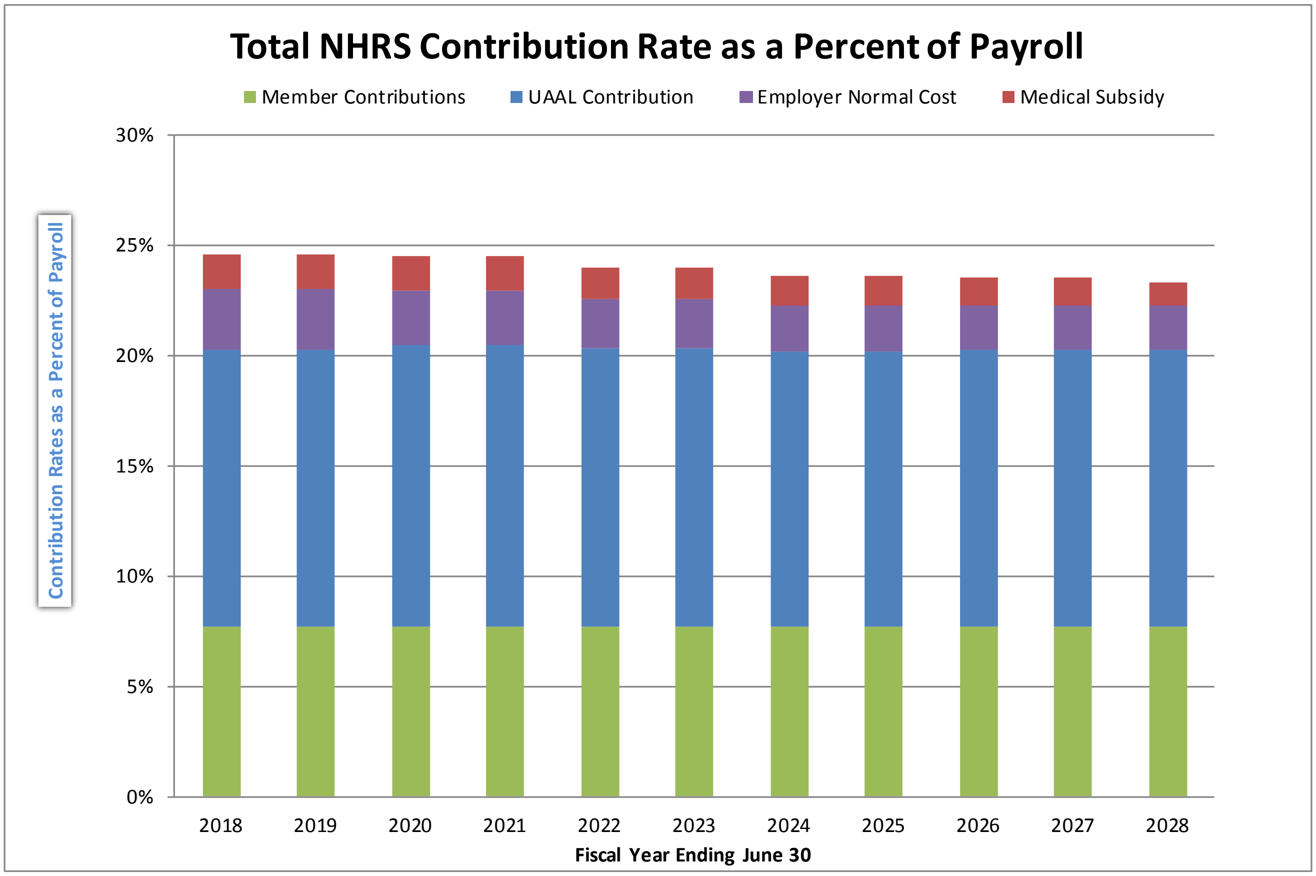
Prior to June 30, 2007, the statutory funding method did not report a funded status nor did it report that assets were below the retiree liability. As of June 30, 2017, there were 72% of assets needed to cover retiree liabilities, as shown in the table on page 30. The assets in the plan are not sufficient to cover current retiree liabilities and the ratio of retiree benefit payroll to the market value of assets is 0.09; this means that approximately 12 years of current retiree benefit payments can be paid from current assets if all assumptions are met and ignoring future contributions. The ability to make such payments beyond that period is heavily dependent upon future contributions and future investment return.

Comment 5:

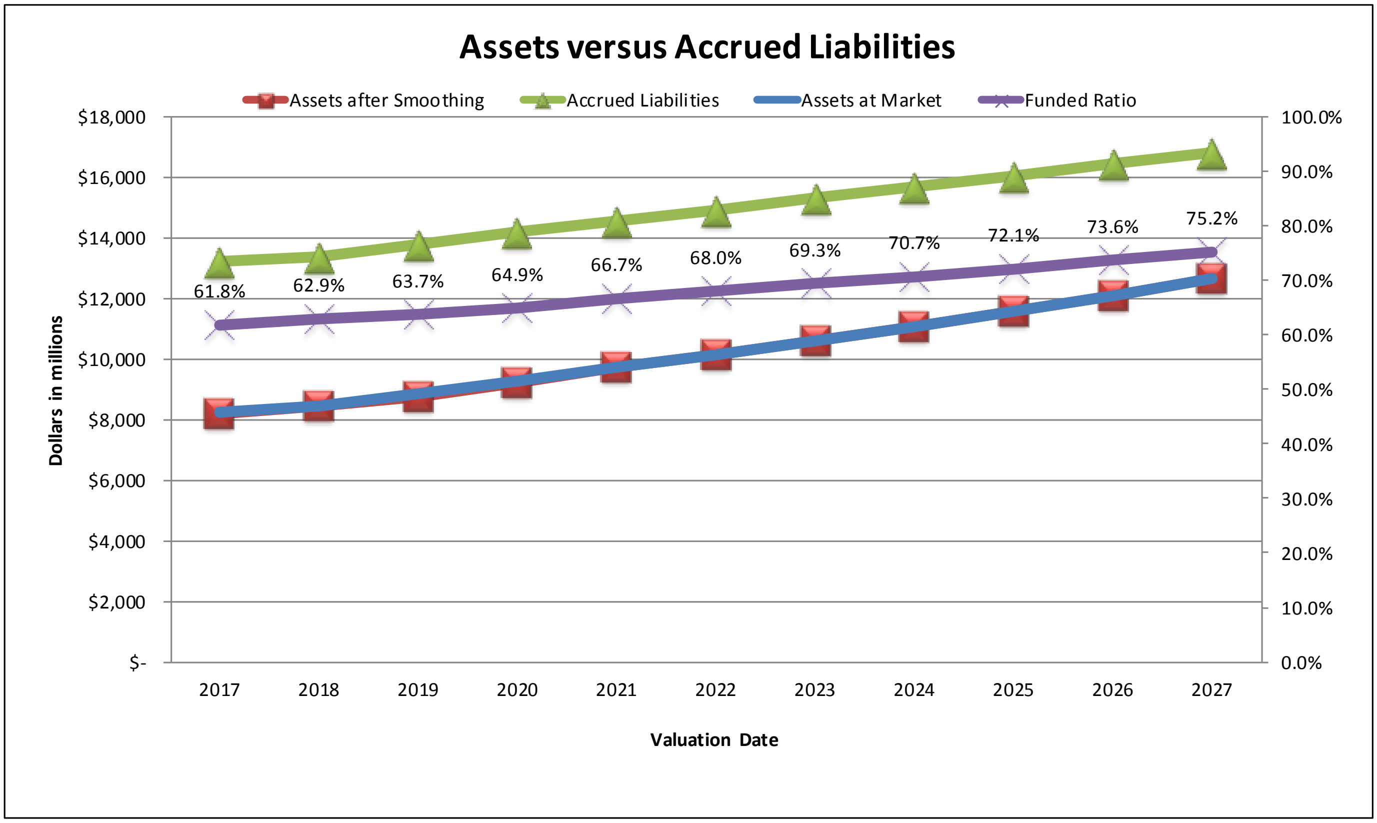
To reflect negative population growth within the group, the Board of Trustees elected to decrease the payroll growth assumption for teachers from 3.0% to 2.75% at the April 10, 2018 Board meeting. The 2.75% payroll growth assumption is thus comprised of the wage inflation assumption of 3.25% and a head count growth assumption of (0.5)% per year. This assumption is used in determining an employer contribution amount for the financing of unfunded accrued liabilities. This change increased the Fiscal Year 2020/2021 pension UAAL contribution amount by 0.38% of active teacher payroll. It increased the medical subsidy contribution by 0.03% of active teacher payroll.

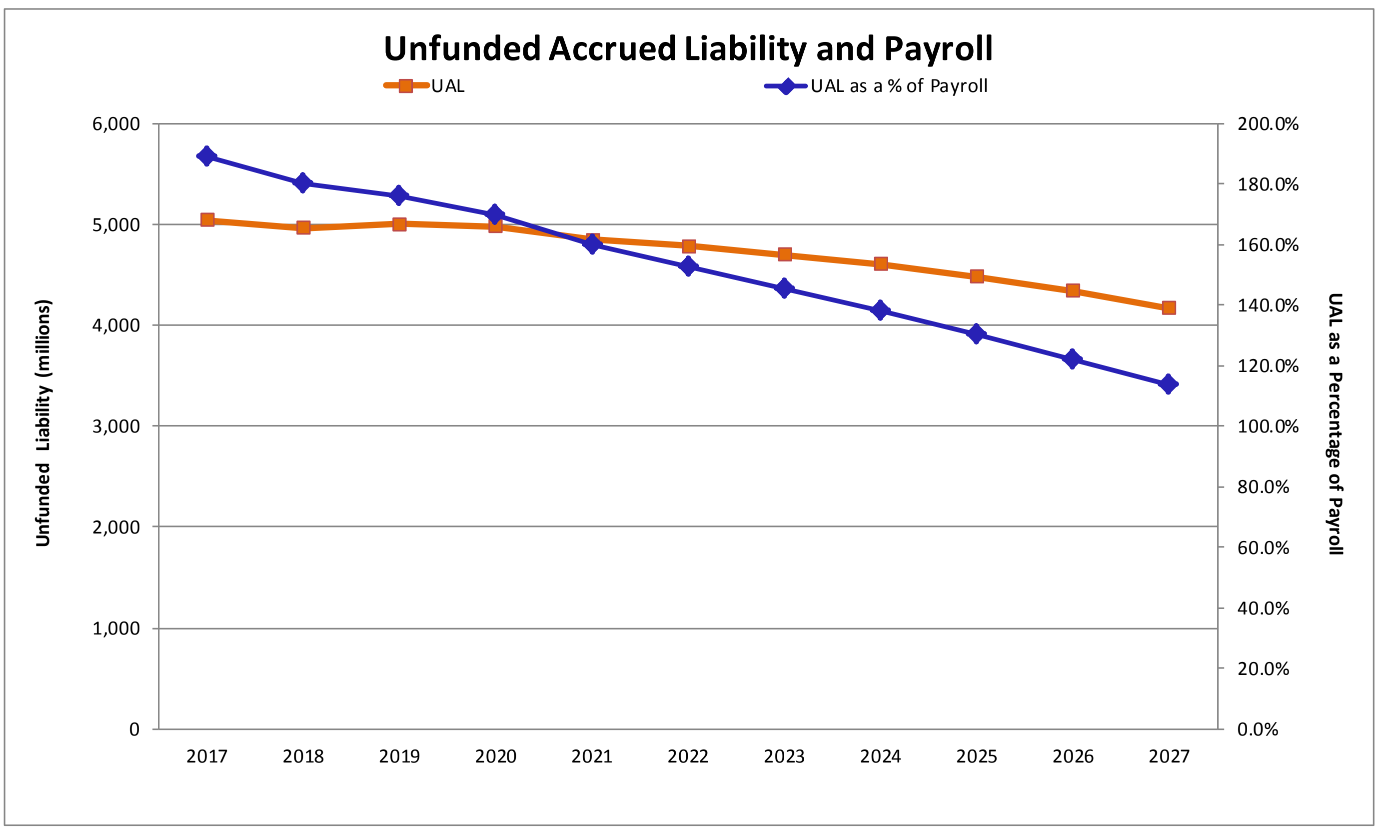
Projections

Projection results are useful in demonstrating changing relationships among key elements affecting system financial activity. For example, it demonstrates how benefits and system assets will grow in future decades. Projections are not predictions of specific future events and do not provide numeric precision in absolute terms. For instance, cash flow projected to occur 10 years in the future will not be exact (except by coincidence), but understanding the changing relationships between future benefit payout and future investment return can be very useful. It is important to understand that actual experience will differ from the projections.



Projected Contribution Rates - NHRS Total											
Fiscal Year Ending June 30	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**
Medical Subsidy	1.60%	1.60%	1.57%	1.57%	1.42%	1.42%	1.31%	1.31%	1.21%	1.21%	1.11%
Employer Normal Cost	2.73%	2.73%	2.44%	2.44%	2.27%	2.27%	2.13%	2.13%	2.04%	2.04%	1.97%
UAAL Contribution	12.54%	12.54%	12.73%	12.73%	12.69%	12.69%	12.47%	12.47%	12.47%	12.47%	12.47%
Employer Subtotal	**16.87%**	**16.87%**	**16.74%**	**16.74%**	**16.38%**	**16.38%**	**15.92%**	**15.92%**	**15.73%**	**15.73%**	**15.56%**
Member Contributions	7.71%	7.71%	7.72%	7.72%	7.72%	7.72%	7.72%	7.72%	7.72%	7.72%	7.72%
Grand Total	**24.58%**	**24.58%**	**24.46%**	**24.46%**	**24.10%**	**24.10%**	**23.64%**	**23.64%**	**23.45%**	**23.45%**	**23.28%**


Assets versus Accrued Liabilities
Assets after Smoothing
Accrued Liabilities
Assets at Market
Funded Ratio
Dollars in millions
$18,000
$16,000
$14,000
$12,000
$10,000
$8,000
$6,000
$4,000
$2,000
$-
100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
61.8%
62.9%
63.7%
64.9%
66.7%
68.0%
69.3%
70.7%
72.1%
73.6%
75.2%
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
Valuation Date


Unfunded Accrued Liability and Payroll
UAL
UAL as a % of Payroll
Unfunded Liability (millions)
6,000
5,000
4,000
3,000
2,000
1,000
0
200.0%
180.0%
160.0%
140.0%
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
UAL as a Percentage of Payroll
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027

The actuarial projections of retirement and medical subsidy benefits are based on the regular valuation assumptions of NHRS including an open active group with constant population (Teachers' active population is assumed to decline 0.50% per year). The projections lead to some general observations:

1. Employer contribution rates are projected to be stable and gradually decline throughout the projection period. The expected gradual decline is due to the lower normal cost for post-July 1, 2011 hires, declining medical subsidy contributions as a percent of payroll, and decreases from the asset smoothing method caused by past gains being phased into the actuarial value of assets. Normal cost is expected to increase each year with generational mortality. Note that for the current valuation, the determination of the UAAL amortization assumes no future asset gains or losses.

2. The funded ratio is projected to increase steadily to 74% by the end of the projection period. The statutory 30-year amortization period is projected to bring the plan to 100% funded by June 30, 2039.

3. The projection of the funded ratio above reflects certain factors that are not reflected in the funded ratio projections provided in Section B. For example, the projection above reflects the phase-in of unrecognized investment gains as of June 30, 2017.

4. The projection is highly sensitive to the actual and expected profile of new hires. This is the sixth valuation with members hired on and after July 1, 2011. As the group of those hired on or after July 1, 2011 grows, the projection results may fluctuate year-to-year until the population stabilizes.

SECTION B

FUNDING RESULTS

Development of Employer Contribution Rates
State Employees

Division:		Employees	Teachers		Police		Fire		Total
Normal Cost									
Age and Service Retirement		4.57%			9.42%		13.19%		5.22%
Termination		3.12%			4.95%		2.66%		3.34%
Death-in-Service		0.23%			0.25%		0.30%		0.23%
Disability		0.65%			1.62%		1.65%		0.78%
Expenses		0.35%			0.35%		0.35%		0.35%
Total		8.92%			16.59%		18.15%		9.92%
UAAL Payment*		8.96%			19.73%		20.08%		10.36%
Total Pension Contribution		17.88%			36.32%		38.23%		20.28%
Fiscal Year 2020									
Member Contributions		7.00%			11.55%		11.80%		7.59%
Employer Pension Contribution		10.88%			24.77%		26.43%		12.69%
Employer Medical Subsidy Contribution		1.05%			3.66%		3.66%		1.39%
Total Employer Contribution		**11.93%**	N/A		**28.43%**		**30.09%**		**14.08%**
Estimated Dollar Contribution	$	70,447,567	N/A	$	23,849,420	$	1,284,828	$	95,581,815
Fiscal Year 2021									
Member Contributions		7.00%			11.55%		11.80%		7.59%
Employer Pension Contribution		10.88%			24.77%		26.43%		12.69%
Employer Medical Subsidy Contribution		1.05%			3.66%		3.66%		1.39%
Total Employer Contribution		**11.93%**	N/A		**28.43%**		**30.09%**		**14.08%**
Estimated Dollar Contribution	$	72,737,113	N/A	$	24,624,526	$	1,326,585	$	98,688,224
Contribution Rates from Prior Valuation									
FY 2018#		**12.15%**			**29.43%**		**31.89%**		**14.44%**
FY 2019#		**12.15%**			**29.43%**		**31.89%**		**14.44%**

* *Unfunded Actuarial Accrued Liability, financed over a 20-year period from the contribution effective date -- 7/1/2019.*

\# *Computed in June 30, 2015 Actuarial Valuation.*

Development of Employer Contribution Rates
Political Subdivision Members

Division:	Employees	Teachers	Police	Fire	Total
Normal Cost					
Age and Service Retirement	4.57%	5.18%	9.42%	13.19%	5.90%
Termination	3.12%	2.93%	4.95%	2.66%	3.19%
Death-in-Service	0.23%	0.12%	0.25%	0.30%	0.18%
Disability	0.65%	0.28%	1.62%	1.65%	0.62%
Expenses	0.35%	0.35%	0.35%	0.35%	0.35%
Total	8.92%	8.86%	16.59%	18.15%	10.24%
UAAL Payment*	8.96%	14.13%	19.73%	20.08%	13.44%
Total Pension Contribution	17.88%	22.99%	36.32%	38.23%	23.68%
Fiscal Year 2020					
Member Contributions	7.00%	7.00%	11.55%	11.80%	7.76%
Employer Pension Contribution	10.88%	15.99%	24.77%	26.43%	15.92%
Employer Medical Subsidy Contribution	0.29%	1.81%	3.66%	3.66%	1.64%
Total Employer Contribution	**11.17%**	**17.80%**	**28.43%**	**30.09%**	**17.56%**
Estimated Dollar Contribution	$ 79,060,337	$ 207,274,607	$ 67,214,336	$ 39,665,771	$ 393,215,051
Fiscal Year 2021					
Member Contributions	7.00%	7.00%	11.55%	11.80%	7.76%
Employer Pension Contribution	10.88%	15.99%	24.77%	26.43%	15.92%
Employer Medical Subsidy Contribution	0.29%	1.81%	3.66%	3.66%	1.64%
Total Employer Contribution	**11.17%**	**17.80%**	**28.43%**	**30.09%**	**17.56%**
Estimated Dollar Contribution	$ 81,629,798	$ 212,974,659	$ 69,398,802	$ 40,954,909	$ 404,958,168
Contribution Rates from Prior Valuation					
FY 2018#	**11.38%**	**17.36%**	**29.43%**	**31.89%**	**17.59%**
FY 2019#	**11.38%**	**17.36%**	**29.43%**	**31.89%**	**17.59%**

* *Unfunded Actuarial Accrued Liability, financed over a 20-year period from the contribution effective date -- 7/1/2019.*

\# *Computed in June 30, 2015 Actuarial Valuation.*

Development of Pension Actuarial Liabilities
June 30, 2017

Actuarial Present Value of	Total Present Value (1)	Portion Covered by Future Normal Cost Contributions (2)	Actuarial Accrued Liabilities (1) - (2)
Age and service allowances based on total service likely to be rendered by present active members	$ 6,199,399,972	$ 1,153,675,034	$ 5,045,724,938
Disability benefits likely to be paid to present active members	240,350,766	122,688,151	117,662,615
Death-in-service benefits likely to be paid on behalf of present active members (employer financed portion)	76,344,820	35,099,795	41,245,025
Separation benefits (refunds of contributions and deferred allowances) likely to be paid to present active members	1,090,952,716	676,691,273	414,261,443
Benefits likely to be paid to current inactive and vested deferred members	274,115,019	-	274,115,019
Benefits to be paid to current retirees, beneficiaries, and future beneficiaries of current retirees	7,315,440,334	-	7,315,440,334
Total	$ 15,196,603,627	$ 1,988,154,253	$ 13,208,449,374
Actuarial Value of Assets	$ 8,165,684,152	$ -	$ 8,165,684,152
Liabilities to be Covered by Future Contributions	$ 7,030,919,475	$ 1,988,154,253	$ 5,042,765,222
Funded Ratio			61.8%

NHRS Total Pension
Unfunded Actuarial Accrued Liability Payoff Projection
($Millions)

Level Percent Amortization

Year	Fiscal Year Ending June 30,	Employer Contribution Rates UAAL Payment*	Projected Payroll	UAAL Beginning of Year	UAAL Payment	UAAL End of Year	Beginning of Year Funded Ratio
	2018	12.83%	$ 2,749	$ 5,043	$ 353	$ 5,043	61.8%
	2019	12.83%	2,832	5,043	363	5,032	62.4%
1	2020	N/A	2,918	5,032	371	5,013	63.6%
2	2021	N/A	3,007	5,013	382	4,981	64.8%
3	2022	N/A	3,099	4,981	394	4,934	66.1%
4	2023	N/A	3,195	4,934	407	4,871	67.4%
5	2024	N/A	3,292	4,871	418	4,790	68.7%
6	2025	N/A	3,393	4,790	431	4,691	70.1%
7	2026	N/A	3,496	4,691	445	4,569	71.6%
8	2027	N/A	3,603	4,569	457	4,427	73.1%
9	2028	N/A	3,714	4,427	472	4,259	74.7%
10	2029	N/A	3,827	4,259	486	4,064	76.4%
11	2030	N/A	3,944	4,064	501	3,840	78.2%
12	2031	N/A	4,064	3,840	516	3,584	80.1%
13	2032	N/A	4,188	3,584	532	3,293	82.2%
14	2033	N/A	4,316	3,293	548	2,964	84.3%
15	2034	N/A	4,449	2,964	565	2,594	86.6%
16	2035	N/A	4,585	2,594	581	2,180	89.1%
17	2036	N/A	4,725	2,180	599	1,716	91.6%
18	2037	N/A	4,869	1,716	617	1,201	94.3%
19	2038	N/A	5,019	1,201	636	629	97.1%
20	2039	N/A	5,172	629	655	-	100.0%

** The payroll projections for Teachers is assumed to be at a different rate than the other member classifications. Therefore, each member classification has a level percentage of payroll, but the aggregate rate will vary.*

The funded ratio is projected in this amortization schedule assuming all actuarial assumptions are exactly met. Projections are not predictions of specific future events and do not provide numeric precision in absolute terms. It is important to understand that actual experience will differ from the projections shown on this page. When experience differs from the assumptions, as it often does, the employer's contribution rate can vary from year to year.

NHRS Total Pension
Unfunded Actuarial Accrued Liability Payoff Projection
($Millions)

Level Dollar Amortization
(Not the Statutory Method)

(Hypothetical Illustration)

Year	Fiscal Year Ending June 30,	UAAL Beginning of Year	UAAL Payment	UAAL End of Year	Beginning of Year Funded Ratio
	2018	$ 5,043	$ 353	$ 5,043	61.8%
	2019	5,043	363	5,032	62.4%
1	2020	5,032	468	4,912	64.1%
2	2021	4,912	468	4,784	65.8%
3	2022	4,784	468	4,646	67.7%
4	2023	4,646	468	4,499	69.6%
5	2024	4,499	468	4,340	71.4%
6	2025	4,340	468	4,170	73.3%
7	2026	4,170	468	3,988	75.2%
8	2027	3,988	468	3,793	77.2%
9	2028	3,793	468	3,583	79.1%
10	2029	3,583	468	3,358	81.0%
11	2030	3,358	468	3,117	83.0%
12	2031	3,117	468	2,858	84.9%
13	2032	2,858	468	2,581	86.9%
14	2033	2,581	468	2,284	88.8%
15	2034	2,284	468	1,965	90.8%
16	2035	1,965	468	1,623	92.7%
17	2036	1,623	468	1,256	94.6%
18	2037	1,256	468	862	96.4%
19	2038	862	468	440	98.3%
20	2039	440	468	0	100.0%

The funded ratio is projected in this amortization schedule assuming all actuarial assumptions are exactly met. Projections are not predictions of specific future events and do not provide numeric precision in absolute terms. It is important to understand that actual experience will differ from the projections shown on this page. When experience differs from the assumptions, as it often does, the employer's contribution rate can vary from year to year.

Actuarial Balance Sheet as of June 30, 2017

Assets and Present Value of Expected Future Contributions

	Pension	Medical Subsidy
A. Present valuation assets		
1. Net assets from system financial statements	$ 8,253,987,979	$ 39,273,201
2. Funding value adjustment	(88,303,827)	(420,157)
3. Valuation assets	8,165,684,152	38,853,044
B. Actuarial present value of expected future employer contributions		
1. For normal costs	388,752,668	11,616,236
2. For unfunded actuarial accrued liability	5,042,765,222	657,695,295
3. Total	5,431,517,890	669,311,531
C. Actuarial present value of expected future member contributions	1,599,401,585	-
D. Total Present and Expected Future Resources	$ 15,196,603,627	$ 708,164,575

Present Value of Expected Future Benefit Payments

	Pension	Medical Subsidy
A. To retirees and beneficiaries	$ 7,315,440,334	$ 568,676,429
B. To vested terminated members	197,509,100	-
C. To non-vested terminated members (outstanding refunds)	76,605,919	-
D. To present active members		
1. Allocated to service rendered prior to valuation date - actuarial accrued liability	5,618,894,021	127,871,910
2. Allocated to service likely to be rendered after valuation date	1,988,154,253	11,616,236
3. Total	7,607,048,274	139,488,146
E. Total Actuarial Present Value of Expected Future Benefit Payments	$ 15,196,603,627	$ 708,164,575

Experience Gain/(Loss) -- June 30, 2017

	Pension	Medical Subsidy
(1) Actual UAAL* as of June 30, 2016	$ 5,096,799,491	$ 702,781,993
(2) Normal cost from 2016 valuation	272,017,989	2,680,011
(3) Actual contributions (employer and employee)	579,713,841	59,196,827
(4) Interest accrual: [(1)+1/2 [(2)-(3)]] x {.0725 for pension; .0325 for medical subsidy}	358,363,988	21,922,017
(5) Expected UAAL end of year: (1)+(2)-(3)+(4)	5,147,467,627	668,187,194
(6) Change from legislation	-	-
(7) Change from revised actuarial assumptions	-	-
(8) Expected UAAL after changes: (5)+(6)+(7)	5,147,467,627	668,187,194
(9) Actual UAAL as of June 30, 2017	5,042,765,222	657,695,295
(10) Gain/(loss) for year: (8)-(9)	104,702,405	10,491,899
(11) Gain/(loss) as percent of actuarial accrued liabilities at start of year	0.8 %	1.4 %

* *Unfunded Actuarial Accrued Liabilities.*

Summary of Risk Measures - Pension

	Funded Ratio								Ratio to Payroll				
		Percentage of AAL Covered by Net Funding Value of Assets Available											
Valuation Year	NHRS in Total	Aggregate Member Contributions	Current Retirees & Beneficiaries	Active & Inactive Members	Actual Total Payroll / Expected Total Payroll	Net Cash Flow as a Percent of MVA	Ratio of Actives to Retirees	Initial UAAL Amortization Period	UAAL	AVA	AAL	Standard Deviation of Investment Return	Standard Deviation of Contribution Rate
June 30, 2008	67.8%	100%	83%	0%	101%	(1.2)%	2.2	30	109%	230%	339%	***	***
June 30, 2009*	58.3	100	63	0	103	(2.3)	2.1	30	145	202	346	23%	0.3%
June 30, 2010	58.5	100	61	0	98	(2.8)	2.0	30	150	211	361	23	0.3%
June 30, 2011#*	57.4	100	63	0	98	(3.1)	1.8	29	169	228	397	26	0.3%
June 30, 2012	56.1	100	58	0	96	(2.3)	1.7	28	183	234	417	28	0.3%
June 30, 2013	56.7	100	59	0	97	(2.9)	1.6	27	185	243	428	29	0.3%
June 30, 2014	60.7	100	67	0	97	(1.7)	1.6	26	173	267	440	32	0.4%
June 30, 2015#^	59.2	100	66	0	99	(1.8)	1.5	25	195	283	478	33	0.4%
June 30, 2016	60.0	100	67	0	98	(1.7)	1.5	24	196	294	489	34	0.4%
June 30, 2017#	61.8	100	72	0	99	(2.0)	1.3	23	189	306	495	36	0.5%

 # After reflection of changes in assumptions.

** After reflection of changes in legislation.*

**** Unavailable.*

^ The standard deviation of investment return as of June 30, 2015 was updated in the 7/1/2010-6/30/2015 experience study.

These risk measures are provided in accordance with the System's Actuarial Funding Policy. Short-term fluctuations will occur due to experience, plan changes, and assumption and method changes. Long term expectations are described below.

Funded Ratio: The funded ratio is expected to reach 100% by the end of longest remaining amortization period (June 30, 2039 under the current valuation).
Actual Total Payroll / Expected Total Payroll: This ratio is expected to remain near 100% each year.
Net Cash Flow as a Percent of MVA: This ratio is expected to be negative and trend toward the negative of the real return assumption.
Initial UAAL Amortization Period: The Initial UAAL layer was established June 30, 2017. The period shown is for the year ending on the valuation date. The statutory amortization period on the Initial UAAL is decreased by one year each year. Future layers after June 30, 2017 will be added in future rate-setting valuations.
UAAL / Total Payroll: The ratio of the unfunded actuarial accrued liability to payroll is expected to reach 0% by the end of longest remaining amortization period (June 30, 2039 under the current valuation).
Funding Value of Assets / Total Payroll: As the funded ratio increases, this ratio is expected to converge to the ratio of Total AAL / Payroll.
Total AAL / Total Payroll: Total AAL / Total Payroll is expected to grow as the System matures. The rate of growth may slow down as members hired on or after July 1, 2011 replace current members.
Standard Deviation of Investment Return / Total Payroll: This measure illustrates the impact of a one standard deviation change in investment return as a percent of payroll. Investment return experience other than expected ultimately affects the employer contribution rates. The higher the ratio of this risk metric, the greater the expected volatility in employer contribution rates. Absent changes in investment policy, this metric is expected to increase as the assets grow to 100% of the AAL.
Standard Deviation of Contribution Rate: This measure illustrates the impact of a one standard deviation change in investment return on the annual contribution rate. This rate is expected to stabilize with the introduction of layered amortization.

Pension Solvency Test

The New Hampshire Retirement System funding objective is to meet long-term benefit promises through contributions that remain approximately level from year to year as a percent of member payroll. If the contributions to the System are level in concept and soundly executed, the System will pay all promised benefits when due -- the ultimate test of financial soundness.

A solvency test is one means of checking a system's progress under its funding program. In a solvency test, the plan's present assets (cash and investments) are compared with:

1) Active member contributions on deposit;
2) The liabilities for future benefits to present retired lives; and
3) The liabilities for service already rendered by active and inactive members.

In a system that has been following the discipline of level percent-of-payroll financing, with assumptions and benefits unchanged and all assumptions met, the liabilities for active member contributions on deposit (liability 1) and the liabilities for future benefits to present retired lives (liability 2) will be fully covered by present assets (except in rare circumstances). In addition, the liabilities for service already rendered by active members (liability 3) will be partially covered by the remainder of present assets. The larger the funded portion of liability 3, the stronger the condition of the System.

As of June 30, 2017, there were 72% of assets needed to cover retiree liabilities, as shown in the table below.

Prior to June 30, 2007, the statutory funding method did not report a funded status nor did it report that assets were below the retiree liability. The assets in the plan are not sufficient to cover current retiree liabilities and the ratio of retiree benefit payroll to the market value of assets is 0.09. Approximately 12 years of current retiree benefit payments can be paid from current assets if all assumptions are met and ignoring future contributions. The ability to make such payments beyond that period is heavily dependent upon future contributions and future investment return.

Total of all Groups
($ in Thousands)

		Projected Pension Liabilities for				Percentage of Accrued Liabilities Covered by Net Assets Available		
		(1)	(2)	(3)				
Fiscal Year		Aggregate Member Contributions	Current Retirees & Beneficiaries	Active & Inactive Members (Employer Financed Portion)	Net Assets Available for Benefits	(1)	(2)	(3)
2008		$2,312,069	$3,618,118	$1,891,129	$5,302,034	100%	83%	0%
2009	*	2,393,635	4,012,274	2,069,143	4,937,320	100%	63%	0%
2010		2,553,612	4,378,205	2,022,115	5,233,838	100%	61%	0%
2011	#*	2,631,430	4,959,865	2,406,956	5,740,516	100%	63%	0%
2012		2,773,081	5,246,672	2,341,847	5,817,882	100%	58%	0%
2013		2,808,526	5,519,814	2,380,428	6,070,681	100%	59%	0%
2014		2,842,340	5,789,052	2,413,782	6,700,553	100%	67%	0%
2015	#	2,949,169	6,565,522	2,788,945	7,280,761	100%	66%	0%
2016		2,978,817	6,964,227	2,789,822	7,636,066	100%	67%	0%
2017	#	2,915,811	7,315,440	2,977,198	8,165,684	100%	72%	0%

 # After reflection of changes in assumptions.
** After reflection of changes in legislation.*

Pension Solvency Test -- Comparative Statement
($ in Thousands)

Group	Fiscal Year		Projected Pension Liabilities for (1) Aggregate Member Contributions	(2) Current Retirees & Beneficiaries	(3) Active & Inactive Members (Employer Financed Portion)	Net Assets Available for Benefits	Percentage of Accrued Liabilities Covered by Net Assets Available (1)	(2)	(3)
Employees	2008		$ 837,375	$ 1,124,075	$ 581,109	$ 1,696,189	100%	76%	0%
Teachers	2008		943,611	1,387,605	828,084	2,114,543	100%	84%	0%
Police	2008		359,611	727,584	339,186	1,014,088	100%	90%	0%
Fire	2008		171,471	378,854	142,751	477,214	100%	81%	0%
Employees	2009	*	899,364	1,217,430	666,232	1,600,150	100%	58%	0%
Teachers	2009	*	926,049	1,608,341	855,367	1,957,103	100%	64%	0%
Police	2009	*	381,273	790,433	378,409	940,825	100%	71%	0%
Fire	2009	*	186,949	396,070	169,135	439,241	100%	64%	0%
Employees	2010		955,735	1,344,902	680,958	1,721,002	100%	57%	0%
Teachers	2010		998,775	1,770,635	783,710	2,049,650	100%	59%	0%
Police	2010		397,440	851,136	386,621	997,325	100%	70%	0%
Fire	2010		201,661	411,532	170,827	465,861	100%	64%	0%
Employees	2011	#*	995,389	1,548,109	810,983	1,834,609	100%	54%	0%
Teachers	2011	#*	1,041,699	1,893,862	973,407	2,153,182	100%	59%	0%
Police	2011	#*	396,344	1,030,900	432,256	1,179,798	100%	76%	0%
Fire	2011	#*	197,998	486,994	190,310	572,927	100%	77%	0%
Employees	2012		1,052,106	1,641,026	756,255	1,877,395	100%	50%	0%
Teachers	2012		1,101,262	1,999,152	949,670	2,173,315	100%	54%	0%
Police	2012		411,672	1,092,005	432,116	1,189,308	100%	71%	0%
Fire	2012		208,041	514,489	203,805	577,864	100%	72%	0%
Employees	2013		1,069,628	1,729,855	755,482	1,977,479	100%	52%	0%
Teachers	2013		1,107,192	2,087,926	977,937	2,255,011	100%	55%	0%
Police	2013		417,630	1,160,173	438,580	1,236,579	100%	71%	0%
Fire	2013		214,076	541,860	208,430	601,612	100%	72%	0%
Employees	2014		1,083,878	1,823,517	784,437	2,195,284	100%	61%	0%
Teachers	2014		1,113,650	2,198,892	966,511	2,482,496	100%	62%	0%
Police	2014		422,972	1,209,741	454,133	1,361,280	100%	78%	0%
Fire	2014		221,840	556,902	208,701	661,493	100%	79%	0%
Employees	2015	#	1,137,601	2,007,299	863,247	2,403,294	100%	63%	0%
Teachers	2015	#	1,155,922	2,555,611	1,141,245	2,682,083	100%	60%	0%
Police	2015	#	433,215	1,364,908	543,229	1,477,517	100%	77%	0%
Fire	2015	#	222,431	637,704	241,223	717,867	100%	78%	0%
Employees	2016		1,152,928	2,139,549	857,347	2,538,563	100%	65%	0%
Teachers	2016		1,171,831	2,692,037	1,156,821	2,799,863	100%	60%	0%
Police	2016		430,490	1,460,840	535,225	1,546,665	100%	76%	0%
Fire	2016		223,568	671,801	240,428	750,975	100%	79%	0%
Employees	2017		1,133,071	2,272,436	934,564	2,734,558	100%	70%	0%
Teachers	2017	#	1,132,876	2,819,228	1,211,560	2,979,005	100%	65%	0%
Police	2017		426,606	1,526,761	570,755	1,650,908	100%	80%	0%
Fire	2017		223,258	697,015	260,320	801,214	100%	83%	0%

 # After reflection of changes in assumptions.
** After reflection of changes in legislation.*

Schedule of Pension Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (UAAL) (b)-(a)	Funded Ratio (a)/(b)	Covered Payroll (c)	UAAL as a Percent of Covered Payroll [(b)-(a)]/(c)
June 30, 2008	$ 5,302,034,006	$ 7,821,316,352	$ 2,519,282,346	67.8%	$ 2,308,320,669	109.1 %
June 30, 2009*	4,937,319,506	8,475,051,817	3,537,732,311	58.3%	2,448,287,042	144.5 %
June 30, 2010	5,233,838,359	8,953,932,346	3,720,093,987	58.5%	2,481,383,620	149.9 %
June 30, 2011#*	5,740,516,293	9,998,251,218	4,257,734,925	57.4%	2,517,779,470	169.1 %
June 30, 2012	5,817,881,588	10,361,600,451	4,543,718,863	56.1%	2,487,757,437	182.6 %
June 30, 2013	6,070,681,258	10,708,768,437	4,638,087,179	56.7%	2,501,741,708	185.4 %
June 30, 2014	6,700,553,435	11,045,173,866	4,344,620,431	60.7%	2,507,898,809	173.2 %
June 30, 2015	7,280,760,612	11,488,613,381	4,207,852,769	63.4%	2,575,031,210	163.4 %
June 30, 2015#	7,280,760,612	12,303,635,908	5,022,875,296	59.2%	2,575,031,210	195.1 %
June 30, 2016	7,636,066,231	12,732,865,722	5,096,799,491	60.0%	2,601,403,606	195.9 %
June 30, 2017#	**8,165,684,152**	**13,208,449,374**	**5,042,765,222**	**61.8%**	**2,667,611,532**	**189.0 %**

 # After reflection of changes in assumptions.
** After reflection of changes in legislation.*

Development of Pension Actuarial Liabilities
June 30, 2017

Employees Pension

Actuarial Present Value of	Total Present Value (1)	Portion Covered by Future Normal Cost Contributions (2)	Actuarial Accrued Liabilities (1) - (2)
Age and service allowances based on total service likely to be rendered by present active members	$ 2,107,629,587	$ 347,896,224	$ 1,759,733,363
Disability benefits likely to be paid to present active members	75,759,051	44,373,905	31,385,146
Death-in-service benefits likely to be paid on behalf of present active members (employer financed portion)	37,761,176	16,615,808	21,145,368
Separation benefits (refunds of contributions and deferred allowances) likely to be paid to present active members	394,312,743	265,785,561	128,527,182
Benefits likely to be paid to current inactive and vested deferred members	126,844,033	-	126,844,033
Benefits to be paid to current retirees, beneficiaries, and future beneficiaries of current retirees	2,272,435,799	-	2,272,435,799
Total	$ 5,014,742,389	$ 674,671,498	$ 4,340,070,891
Actuarial Value of Assets	$ 2,734,557,588	$ -	$ 2,734,557,588
Liabilities to be Covered by Future Contributions	$ 2,280,184,801	$ 674,671,498	$ 1,605,513,303
Funded Ratio			63.0%

Employees Pension
Unfunded Actuarial Accrued Liability Payoff Projection
($Millions)

Year	Fiscal Year Ending June 30,	Employer Contribution Rates UAAL Payment*	Projected Payroll	UAAL Beginning of Year	UAAL Payment	UAAL End of Year	Beginning of Year Funded Ratio
	2018	9.16%	$ 1,218	$ 1,606	$ 112	$ 1,606	63.0%
	2019	9.16%	1,257	1,606	115	1,603	63.3%
1	2020	8.96%	1,298	1,603	116	1,599	64.6%
2	2021	8.96%	1,340	1,599	120	1,591	65.8%
3	2022	8.96%	1,384	1,591	124	1,578	67.0%
4	2023	8.96%	1,429	1,578	128	1,560	68.3%
5	2024	8.96%	1,475	1,560	132	1,536	69.6%
6	2025	8.96%	1,523	1,536	136	1,506	71.0%
7	2026	8.96%	1,572	1,506	141	1,469	72.4%
8	2027	8.96%	1,623	1,469	145	1,425	73.9%
9	2028	8.96%	1,676	1,425	150	1,373	75.5%
10	2029	8.96%	1,730	1,373	155	1,312	77.1%
11	2030	8.96%	1,786	1,312	160	1,241	78.9%
12	2031	8.96%	1,844	1,241	165	1,160	80.8%
13	2032	8.96%	1,904	1,160	171	1,067	82.7%
14	2033	8.96%	1,966	1,067	176	962	84.8%
15	2034	8.96%	2,030	962	182	843	87.1%
16	2035	8.96%	2,096	843	188	709	89.5%
17	2036	8.96%	2,164	709	194	559	91.9%
18	2037	8.96%	2,234	559	200	392	94.5%
19	2038	8.96%	2,307	392	207	206	97.2%
20	2039	8.96%	2,382	206	213	-	100.0%

** UAAL rates for the first biennium are based on the adopted rates from the previous rate setting valuation less the employer normal cost from this valuation.*

The funded ratio is projected in this amortization schedule assuming all actuarial assumptions are exactly met. Projections are not predictions of specific future events and do not provide numeric precision in absolute terms. It is important to understand that actual experience will differ from the projections shown on this page. When experience differs from the assumptions, as it often does, the employer's contribution rate can vary from year to year.

Development of Pension Actuarial Liabilities
June 30, 2017

Teachers Pension

Actuarial Present Value of	Total Present Value (1)	Portion Covered by Future Normal Cost Contributions (2)	Actuarial Accrued Liabilities (1) - (2)
Age and service allowances based on total service likely to be rendered by present active members	$ 2,481,905,032	$ 446,292,003	$ 2,035,613,029
Disability benefits likely to be paid to present active members	53,193,025	23,700,170	29,492,855
Death-in-service benefits likely to be paid on behalf of present active members (employer financed portion)	22,492,378	9,742,553	12,749,825
Separation benefits (refunds of contributions and deferred allowances) likely to be paid to present active members	416,044,198	265,675,018	150,369,180
Benefits likely to be paid to current inactive and vested deferred members	116,210,208	-	116,210,208
Benefits to be paid to current retirees, beneficiaries, and future beneficiaries of current retirees	2,819,228,419	-	2,819,228,419
Total	$ 5,909,073,260	$ 745,409,744	$ 5,163,663,516
Actuarial Value of Assets	$ 2,979,004,853	$ -	$ 2,979,004,853
Liabilities to be Covered by Future Contributions	$ 2,930,068,407	$ 745,409,744	$ 2,184,658,663
Funded Ratio			57.7%

Teachers Pension
Unfunded Actuarial Accrued Liability Payoff Projection
($Millions)

Year	Fiscal Year Ending June 30,	Employer Contribution Rates UAAL Payment*	Projected Payroll	UAAL Beginning of Year	UAAL Payment	UAAL End of Year	Beginning of Year Funded Ratio
	2018	13.84%	$ 1,103	$ 2,185	$ 153	$ 2,185	57.7%
	2019	13.84%	1,133	2,185	157	2,181	58.3%
1	2020	14.13%	1,164	2,181	165	2,169	59.6%
2	2021	14.13%	1,196	2,169	169	2,151	60.9%
3	2022	14.13%	1,229	2,151	174	2,127	62.3%
4	2023	14.13%	1,263	2,127	179	2,096	63.7%
5	2024	14.13%	1,298	2,096	183	2,058	65.2%
6	2025	14.13%	1,334	2,058	189	2,012	66.7%
7	2026	14.13%	1,371	2,012	194	1,957	68.3%
8	2027	14.13%	1,409	1,957	199	1,893	70.1%
9	2028	14.13%	1,448	1,893	205	1,818	71.9%
10	2029	14.13%	1,488	1,818	210	1,732	73.8%
11	2030	14.13%	1,529	1,732	216	1,634	75.8%
12	2031	14.13%	1,571	1,634	222	1,523	78.0%
13	2032	14.13%	1,614	1,523	228	1,397	80.2%
14	2033	14.13%	1,658	1,397	234	1,256	82.6%
15	2034	14.13%	1,704	1,256	241	1,098	85.2%
16	2035	14.13%	1,751	1,098	247	921	87.8%
17	2036	14.13%	1,799	921	254	724	90.7%
18	2037	14.13%	1,848	724	261	506	93.6%
19	2038	14.13%	1,899	506	268	265	96.7%
20	2039	14.13%	1,951	265	276	-	100.0%

** UAAL rates for the first biennium are based on the adopted rates from the previous rate setting valuation less the employer normal cost from this valuation.*

The funded ratio is projected in this amortization schedule assuming all actuarial assumptions are exactly met. Projections are not predictions of specific future events and do not provide numeric precision in absolute terms. It is important to understand that actual experience will differ from the projections shown on this page. When experience differs from the assumptions, as it often does, the employer's contribution rate can vary from year to year.

Development of Pension Actuarial Liabilities
June 30, 2017

Police Pension

Actuarial Present Value of	Total Present Value (1)	Portion Covered by Future Normal Cost Contributions (2)	Actuarial Accrued Liabilities (1) - (2)
Age and service allowances based on total service likely to be rendered by present active members	$ 1,038,389,653	$ 215,046,132	$ 823,343,521
Disability benefits likely to be paid to present active members	76,389,141	36,668,590	39,720,551
Death-in-service benefits likely to be paid on behalf of present active members (employer financed portion)	10,003,470	5,531,957	4,471,513
Separation benefits (refunds of contributions and deferred allowances) likely to be paid to present active members	218,241,870	115,580,738	102,661,132
Benefits likely to be paid to current inactive and vested deferred members	27,164,521	-	27,164,521
Benefits to be paid to current retirees, beneficiaries, and future beneficiaries of current retirees	1,526,761,108	-	1,526,761,108
Total	$ 2,896,949,763	$ 372,827,417	$ 2,524,122,346
Actuarial Value of Assets	$ 1,650,907,814	$ -	$ 1,650,907,814
Liabilities to be Covered by Future Contributions	$ 1,246,041,949	$ 372,827,417	$ 873,214,532
Funded Ratio			65.4%

Police Pension
Unfunded Actuarial Accrued Liability Payoff Projection
($Millions)

Year	Fiscal Year Ending June 30,	Employer Contribution Rates UAAL Payment*	Projected Payroll	UAAL Beginning of Year	UAAL Payment	UAAL End of Year	Beginning of Year Funded Ratio
	2018	20.29%	$ 300	$ 873	$ 61	$ 873	65.4%
	2019	20.29%	310	873	63	871	66.2%
1	2020	19.73%	320	871	63	869	67.3%
2	2021	19.73%	331	869	65	865	68.4%
3	2022	19.73%	341	865	67	858	69.5%
4	2023	19.73%	353	858	70	848	70.6%
5	2024	19.73%	364	848	72	835	71.8%
6	2025	19.73%	376	835	74	819	73.0%
7	2026	19.73%	388	819	77	798	74.3%
8	2027	19.73%	401	798	79	774	75.6%
9	2028	19.73%	414	774	82	745	77.1%
10	2029	19.73%	427	745	84	712	78.6%
11	2030	19.73%	441	712	87	674	80.2%
12	2031	19.73%	455	674	90	629	81.9%
13	2032	19.73%	470	629	93	579	83.8%
14	2033	19.73%	485	579	96	521	85.8%
15	2034	19.73%	501	521	99	456	87.8%
16	2035	19.73%	517	456	102	384	90.0%
17	2036	19.73%	534	384	105	303	92.4%
18	2037	19.73%	552	303	109	212	94.8%
19	2038	19.73%	570	212	112	111	97.3%
20	2039	19.73%	588	111	116	-	100.0%

** UAAL rates for the first biennium are based on the adopted rates from the previous rate setting valuation less the employer normal cost from this valuation.*

The funded ratio is projected in this amortization schedule assuming all actuarial assumptions are exactly met. Projections are not predictions of specific future events and do not provide numeric precision in absolute terms. It is important to understand that actual experience will differ from the projections shown on this page. When experience differs from the assumptions, as it often does, the employer's contribution rate can vary from year to year.

Development of Pension Actuarial Liabilities
June 30, 2017

Fire Pension

Actuarial Present Value of	Total Present Value (1)	Portion Covered by Future Normal Cost Contributions (2)	Actuarial Accrued Liabilities (1) - (2)
Age and service allowances based on total service likely to be rendered by present active members	$ 571,475,700	$ 144,440,675	$ 427,035,025
Disability benefits likely to be paid to present active members	35,009,549	17,945,486	17,064,063
Death-in-service benefits likely to be paid on behalf of present active members (employer financed portion)	6,087,796	3,209,477	2,878,319
Separation benefits (refunds of contributions and deferred allowances) likely to be paid to present active members	62,353,905	29,649,956	32,703,949
Benefits likely to be paid to current inactive and vested deferred members	3,896,257	-	3,896,257
Benefits to be paid to current retirees, beneficiaries, and future beneficiaries of current retirees	697,015,008	-	697,015,008
Total	$ 1,375,838,215	$ 195,245,594	$ 1,180,592,621
Actuarial Value of Assets	$ 801,213,897	$ -	$ 801,213,897
Liabilities to be Covered by Future Contributions	$ 574,624,318	$ 195,245,594	$ 379,378,724
Funded Ratio			67.9%

Fire Pension
Unfunded Actuarial Accrued Liability Payoff Projection
($Millions)

Year	Fiscal Year Ending June 30,	Employer Contribution Rates UAAL Payment*	Projected Payroll	UAAL Beginning of Year	UAAL Payment	UAAL End of Year	Beginning of Year Funded Ratio
	2018	21.44%	$ 128	$ 379	$ 27	$ 379	67.9%
	2019	21.44%	132	379	28	377	68.8%
1	2020	20.08%	136	377	27	376	69.8%
2	2021	20.08%	140	376	28	374	70.9%
3	2022	20.08%	145	374	29	371	71.9%
4	2023	20.08%	150	371	30	367	73.0%
5	2024	20.08%	155	367	31	361	74.1%
6	2025	20.08%	160	361	32	354	75.2%
7	2026	20.08%	165	354	33	345	76.4%
8	2027	20.08%	170	345	34	335	77.6%
9	2028	20.08%	176	335	35	323	78.9%
10	2029	20.08%	182	323	37	308	80.3%
11	2030	20.08%	188	308	38	291	81.8%
12	2031	20.08%	194	291	39	272	83.4%
13	2032	20.08%	200	272	40	250	85.0%
14	2033	20.08%	207	250	42	225	86.8%
15	2034	20.08%	214	225	43	197	88.7%
16	2035	20.08%	221	197	44	166	90.7%
17	2036	20.08%	228	166	46	130	92.9%
18	2037	20.08%	235	130	47	91	95.2%
19	2038	20.08%	243	91	49	47	97.6%
20	2039	20.08%	251	47	50	-	100.0%

** UAAL rates for the first biennium are based on the adopted rates from the previous rate setting valuation less the employer normal cost from this valuation.*

The funded ratio is projected in this amortization schedule assuming all actuarial assumptions are exactly met. Projections are not predictions of specific future events and do not provide numeric precision in absolute terms. It is important to understand that actual experience will differ from the projections shown on this page. When experience differs from the assumptions, as it often does, the employer's contribution rate can vary from year to year.

Determination of Unfunded Actuarial Accrued Liability (Medical) as of June 30, 2017

	State Employees	Political Subdivision Employees	Teachers	Police & Fire	Total
A. Present Value of Future Medical Benefits					
1. Retirees and Beneficiaries	$ 67,701,241	$ 53,651,633	$ 241,519,017	$ 205,804,538	$ 568,676,429
2. Vested Terminated Members	-	-	-	-	-
3. Active Members	-	-	-	139,488,146	139,488,146
Total Present Value of Future Medical Benefits	67,701,241	53,651,633	241,519,017	345,292,684	708,164,575
B. Present Value of Future Employer Normal Costs	-	-	-	11,616,236	11,616,236
C. Present Value of Future Contributions from Current Active Members	-	-	-	-	-
D. Actuarial Medical Accrued Liability (A.-B.-C.)	67,701,241	53,651,633	241,519,017	333,676,448	696,548,339
E. 401(h) Subtrust Actuarial Value of Assets	3,162,662	18,288,882	6,513,728	10,887,772	38,853,044
F. Unfunded Actuarial Accrued Liability (D.-E.)	$ 64,538,579	$ 35,362,751	$ 235,005,289	$ 322,788,676	$ 657,695,295

The Unfunded Actuarial Accrued Liability (UAAL) shown here is for funding purposes using a discount rate of 3.25% per year. This differs from the Net OPEB Liability reported under GASB Statement No. 74 for accounting and reporting purposes.

Determination of Medical Subsidy Contribution Rates

There are four separate 401(h) member classifications: State Employees, Political Subdivision Employees, Teachers and Police/Fire.

Under New Hampshire Statute, contribution rates to the 401(h) sub-trust are determined as the lesser of 25% of the employers' total contributions or the actuarial required contribution rate that keeps the medical subsidy sub-trust solvent (the "solvency rate"). Under IRS Regulations, 401(h) sub-trust contributions are limited by 25% of the total contributions to the plan (other than contributions to fund past service credits). NHRS maintains the historical information for determining compliance with IRC Section 401(h). A test for compliance with IRC Section 401(h) was outside the scope of this valuation.

The 401(h) cash flow projections on the following pages are used to develop the employer contribution rates for the medical subsidy. The medical subsidy contribution rates are the computed amounts needed for pay-as-you-go financing of the retiree medical subsidy with a 20% margin for adverse experience by June 30, 2020 and to maintain that margin thereafter.

It is imperative that NHRS monitor collections closely to ensure the necessary funds are collected to provide the benefit.

NHRS - 401(h) Cash Flow Projections
June 30, 2017

State Employees

Year Ending	Valuation Pay	Employer Contributions Rate -- Total	Employer Contributions Rate -- Health	Employer Contributions Dollars -- Health	Benefits and Expenses Paid	Solvency Assets	Projected Margin
6/30/2017	$ 536,482,267					$ 3,196,863	
6/30/2018	553,917,941	12.15%	1.07%	$ 5,926,922	$ 7,226,950	2,081,482	29%
6/30/2019	571,920,274	12.15%	1.07%	6,119,547	6,838,017	1,487,874	22%
6/30/2020	590,507,683	11.93%	**1.05%**	6,200,331	6,463,921	1,322,601	20%
6/30/2021	609,699,183	11.93%	**1.05%**	6,401,841	6,107,049	1,723,967	28%
6/30/2022	629,514,406	11.79%	0.91%	5,753,289	5,753,289		
6/30/2023	649,973,624	11.71%	0.83%	5,404,710	5,404,710		
6/30/2024	671,097,767	11.63%	0.75%	5,054,796	5,054,796		
6/30/2025	692,908,444	11.56%	0.68%	4,712,757	4,712,757		
6/30/2026	715,427,968	11.49%	0.61%	4,374,824	4,374,824		
6/30/2027	738,679,377	11.43%	0.55%	4,044,300	4,044,300		
6/30/2028	762,686,457	11.37%	0.49%	3,730,301	3,730,301		
6/30/2029	787,473,767	11.32%	0.44%	3,427,551	3,427,551		
6/30/2030	813,066,664	11.27%	0.39%	3,133,712	3,133,712		
6/30/2031	839,491,331	11.22%	0.34%	2,846,651	2,846,651		
6/30/2032	866,774,799	11.18%	0.30%	2,570,791	2,570,791		
6/30/2033	894,944,980	11.14%	0.26%	2,313,951	2,313,951		
6/30/2034	924,030,692	11.10%	0.22%	2,072,307	2,072,307		
6/30/2035	954,061,689	11.07%	0.19%	1,845,767	1,845,767		
6/30/2036	985,068,694	11.05%	0.17%	1,635,501	1,635,501		
6/30/2037	1,017,083,427	11.02%	0.14%	1,441,860	1,441,860		
6/30/2038	1,050,138,638	11.00%	0.12%	1,265,689	1,265,689		
6/30/2039	1,084,268,144	10.98%	0.10%	1,104,719	1,104,719		

NHRS - 401(h) Cash Flow Projections
June 30, 2017

Political Subdivision Employees

Year Ending	Valuation Pay	Employer Contribution Rate -- Total	Employer Contribution Rate -- Health	Employer Contribution Dollars -- Health	Benefits and Expenses Paid	Solvency Assets	Projected Margin
6/30/2017	$ 643,036,031					$ 18,486,659	
6/30/2018	663,934,702	11.38%	0.30%	$ 1,991,804	$5,501,417	16,190,105	295%
6/30/2019	685,512,580	11.38%	0.30%	2,056,538	5,273,394	14,030,421	267%
6/30/2020	707,791,739	11.17%	**0.29%**	2,052,596	5,063,454	11,927,624	236%
6/30/2021	730,794,971	11.17%	**0.29%**	2,119,305	4,846,498	9,966,324	206%
6/30/2022	754,545,808	11.17%	0.29%	2,188,183	4,625,885		
6/30/2023	779,068,547	11.17%	0.29%	2,259,299	4,402,877		
6/30/2024	804,388,275	11.17%	0.29%	2,332,726	4,175,356		
6/30/2025	830,530,894	11.17%	0.29%	2,408,540	3,941,750		
6/30/2026	857,523,148	11.17%	0.29%	2,486,817	3,716,784		
6/30/2027	885,392,650	11.17%	0.29%	2,567,639	3,495,708		
6/30/2028	914,167,911	11.17%	0.29%	2,651,087	3,268,411		
6/30/2029	943,878,368	11.17%	0.29%	2,737,247	3,042,200		
6/30/2030	974,554,415	11.17%	0.29%	2,818,745	2,818,745		
6/30/2031	1,006,227,433	11.14%	0.26%	2,597,050	2,597,050		
6/30/2032	1,038,929,825	11.11%	0.23%	2,378,397	2,378,397		
6/30/2033	1,072,695,044	11.08%	0.20%	2,166,459	2,166,459		
6/30/2034	1,107,557,633	11.06%	0.18%	1,960,706	1,960,706		
6/30/2035	1,143,553,256	11.03%	0.15%	1,762,372	1,762,372		
6/30/2036	1,180,718,737	11.01%	0.13%	1,572,676	1,572,676		
6/30/2037	1,219,092,096	10.99%	0.11%	1,392,747	1,392,747		
6/30/2038	1,258,712,589	10.98%	0.10%	1,223,563	1,223,563		
6/30/2039	1,299,620,748	10.96%	0.08%	1,065,946	1,065,946		

NHRS - 401(h) Cash Flow Projections
June 30, 2017

Teachers

Year Ending	Valuation Pay	Employer Contributions Rate -- Total	Rate -- Health	Dollars -- Health	Benefits and Expenses Paid	Solvency Assets	Projected Margin
6/30/2017	$1,073,446,998					$ 6,584,167	
6/30/2018	1,102,966,790	17.36%	1.66%	$ 18,309,249	$21,201,886	4,064,024	19%
6/30/2019	1,133,298,377	17.36%	1.66%	18,812,753	20,492,778	2,617,740	13%
6/30/2020	1,164,464,082	17.80%	**1.81%**	21,076,800	19,858,415	4,070,077	20%
6/30/2021	1,196,486,844	17.80%	**1.81%**	21,656,412	19,253,218	6,855,468	36%
6/30/2022	1,229,390,232	17.51%	1.52%	18,651,257	18,651,257		
6/30/2023	1,263,198,463	17.42%	1.43%	18,029,409	18,029,409		
6/30/2024	1,297,936,421	17.33%	1.34%	17,389,714	17,389,714		
6/30/2025	1,333,629,673	17.24%	1.25%	16,728,854	16,728,854		
6/30/2026	1,370,304,489	17.16%	1.17%	16,046,866	16,046,866		
6/30/2027	1,407,987,862	17.08%	1.09%	15,348,031	15,348,031		
6/30/2028	1,446,707,528	17.00%	1.01%	14,632,518	14,632,518		
6/30/2029	1,486,491,985	16.93%	0.94%	13,900,882	13,900,882		
6/30/2030	1,527,370,515	16.85%	0.86%	13,156,235	13,156,235		
6/30/2031	1,569,373,204	16.78%	0.79%	12,401,768	12,401,768		
6/30/2032	1,612,530,967	16.71%	0.72%	11,639,107	11,639,107		
6/30/2033	1,656,875,569	16.65%	0.66%	10,871,553	10,871,553		
6/30/2034	1,702,439,647	16.58%	0.59%	10,102,843	10,102,843		
6/30/2035	1,749,256,737	16.52%	0.53%	9,337,113	9,337,113		
6/30/2036	1,797,361,297	16.47%	0.48%	8,578,882	8,578,882		
6/30/2037	1,846,788,733	16.41%	0.42%	7,832,958	7,832,958		
6/30/2038	1,897,575,423	16.36%	0.37%	7,108,440	7,108,440		
6/30/2039	1,949,758,747	16.32%	0.33%	6,402,221	6,402,221		

NHRS - 401(h) Cash Flow Projections
June 30, 2017

Police and Fire

Year Ending	Valuation Pay	Employer Contributions: Rate -- Total	Employer Contributions: Rate -- Health	Employer Contributions: Dollars -- Health	Benefits and Expenses Paid	Solvency Assets	Projected Margin
6/30/2017	$ 414,646,236					$ 11,005,512	
6/30/2018	428,122,239	N/A	4.10%	$ 17,553,012	$16,278,163	13,124,473	81%
6/30/2019	442,036,212	N/A	4.10%	18,123,485	18,350,629	13,840,620	75%
6/30/2020	456,402,389	N/A	**3.66%**	16,704,327	19,198,899	12,259,065	64%
6/30/2021	471,235,467	N/A	**3.66%**	17,247,218	19,914,690	10,383,679	52%
6/30/2022	486,550,620	N/A	3.66%	17,807,753	20,405,855		
6/30/2023	502,363,515	N/A	3.66%	18,386,505	20,701,068		
6/30/2024	518,690,329	N/A	3.66%	18,984,066	20,798,687		
6/30/2025	535,547,765	N/A	3.66%	19,601,048	20,756,780		
6/30/2026	552,953,067	N/A	3.66%	20,238,082	20,558,295		
6/30/2027	570,924,042	N/A	3.55%	20,284,434	20,284,434		
6/30/2028	589,479,073	N/A	3.38%	19,930,069	19,930,069		
6/30/2029	608,637,143	N/A	3.20%	19,480,748	19,480,748		
6/30/2030	628,417,850	N/A	3.02%	18,959,425	18,959,425		
6/30/2031	648,841,430	N/A	2.83%	18,392,504	18,392,504		
6/30/2032	669,928,776	N/A	2.66%	17,795,900	17,795,900		
6/30/2033	691,701,461	N/A	2.48%	17,142,999	17,142,999		
6/30/2034	714,181,758	N/A	2.31%	16,468,776	16,468,776		
6/30/2035	737,392,665	N/A	2.14%	15,791,942	15,791,942		
6/30/2036	761,357,927	N/A	1.98%	15,095,719	15,095,719		
6/30/2037	786,102,060	N/A	1.83%	14,386,835	14,386,835		
6/30/2038	811,650,377	N/A	1.69%	13,687,387	13,687,387		
6/30/2039	838,029,014	N/A	1.55%	12,989,465	12,989,465		

SECTION C

FUND ASSETS

Comparative Balance Sheet
at Market Value

		June 30, 2017		June 30, 2016
ASSETS				
Current Assets				
Cash - Local Custodian	$	9,381,535	$	6,746,868
Contributions Receivable		70,795,872		68,934,041
OPEB Plan Receivable		0		4,483,158
Receivable for Investments Sold		15,807,591		29,961,249
Interest and Dividends Receivable		17,484,416		17,856,619
Other Receivables		0		0
Foreign Taxes Receivable		3,162,307		1,674,410
Prepaid Management Fees		97,347		80,756
Total Current Assets	$	116,729,068	$	129,737,101
Capital Assets (Net of Accumulated Depreciation)		73,617		108,189
Investments at Quoted Market Value:				
Domestic Investments		2,594,028,041		2,422,529,777
International Investments		1,301,820,070		1,071,977,225
Global Investments		299,370,052		255,577,945
Fixed Income Investments		1,874,022,776		1,798,307,196
Investments at Fair Market Value:				
Alternative Investments		1,247,184,598		984,972,455
Absolute Return Strategies		0		
Commercial R/E Investments (Net Equity)		815,292,887		787,937,368
Temporary Investments		73,462,691		51,388,239
TOTAL ASSETS	$	8,321,983,800	$	7,502,535,495
LIABILITIES				
Management Fees & Other Payables	$	9,631,744	$	8,456,128
OPEB Plan Payable		0		4,483,158
Payable for Investments Purchased		19,090,876		28,651,532
TOTAL LIABILITIES	$	28,722,620	$	41,590,818
TOTAL FUND BALANCES	$	8,293,261,180	$	7,460,944,677

Reconciliation of System Assets

Item	Employees	Teachers	Police#	Fire#	Total
	June 30, 2017				
A. Market Value of Assets at Beginning of Year	$ 2,492,342,574	$ 2,721,406,225	$ 1,511,923,124	$ 735,272,754	$ 7,460,944,677
B. Revenues and Expenditures					
1. Contributions					
a. Employee Contributions	$ 85,393,534	$ 77,956,881	$ 34,747,808	$ 14,962,604	$ 213,060,827
b. Employer Contributions	140,029,272	170,675,879	78,336,900	36,800,290	425,842,341
c. Total	$ 225,422,806	$ 248,632,760	$ 113,084,708	$ 51,762,894	$ 638,903,168
2. Investment Return					
a. Interest, Dividends, and Other Income	$ 58,030,080	$ 62,656,087	$ 35,062,041	$ 17,019,376	$ 172,767,584
b. Net Realized and Unrealized Gains/(Losses)	280,616,132	303,070,357	169,463,765	82,249,937	835,400,191
c. Investment Expenses*	(8,540,134)	(9,219,793)	(5,156,035)	(2,502,346)	(25,418,308)
d. Net Investment Income	$ 330,106,078	$ 356,506,651	$ 199,369,771	$ 96,766,967	$ 982,749,467
3. Benefits and Refunds					
a. Refunds	$ (12,890,430)	$ (5,926,715)	$ (3,637,969)	$ (953,346)	$ (23,408,460)
b. Regular Monthly Benefits	(231,985,829)	(277,878,086)	(131,378,894)	(62,317,843)	(703,560,652)
c. Partial Lump-Sum Benefits Paid	(1,427,406)	(591,051)	(387,511)	(337,226)	(2,743,194)
d. Medical Premium Subsidy Payments	(12,800,622)	(20,922,641)	(10,910,968)	(5,925,547)	(50,559,778)
e. Total	$ (259,104,287)	$ (305,318,493)	$ (146,315,342)	$ (69,533,962)	$ (780,272,084)
4. Administrative Expenses*	$ (2,585,478)	$ (2,793,559)	$ (1,563,419)	$ (758,914)	$ (7,701,370)
5. Miscellaneous Expenses*	$ (489,249)	$ (448,333)	$ (295,557)	$ (129,539)	$ (1,362,678)
6. Interest Expense on OPEB Deficit	$ -	$ (181,230)	$ -	$ -	$ (181,230)
7. Interest Income on OPEB Deficit	$ 120,209	$ -	$ 41,494	$ 19,527	$ 181,230
8. Transfers	$ -	$ -	$ -	$ -	$ -
C. Market Value of Assets at End of Year	$ 2,785,812,653	$ 3,017,804,021	$ 1,676,244,779	$ 813,399,727	$ 8,293,261,180

 # 401(h) subsidy income and expense reported by NHRS in total for Police and Fire was allocated by staff to be approximately 68% to Police and 32% to Fire for purposes of this schedule.

** The allocation of expenses has been adjusted by $6,332 since the publication of the CAFR and GASB Nos. 67 and 74 report. For purposes of determining the net cash flows for the development of the actuarial value of assets, the GASB Nos. 67 and 74 reported expenses were used.*

Development of Actuarial Value of Assets

Year Ended June 30:	2015	2016	2017	2018	2019	2020	2021
A. Funding Value Beginning of Year	$ 6,721,799,334	$ 7,300,276,091	$ 7,663,416,136				
B. Market Value End of Year	7,530,056,191	7,460,944,677	8,293,261,180				
C. Market Value Beginning of Year	7,414,061,986	7,530,056,191	7,460,944,677				
D. Non-Investment Net Cash Flow	(134,800,821)	(131,267,165)	(150,426,632)				
E. Investment Income							
E1. Market Total: B - C - D	250,795,026	62,155,651	982,743,135				
E2. Assumed Rate	7.75%	7.25%	7.25%				
E3. Amount for Immediate Recognition	515,715,917	524,511,582	550,144,704				
E4. Amount for Phased-In Recognition: E1-E3	(264,920,891)	(462,355,931)	432,598,431				
F. Phased-In Recognition of Investment Income							
F1. Current Year: 0.20 x E4	(52,984,178)	(92,471,186)	86,519,686				
F2. First Prior Year	126,027,156	(52,984,178)	(92,471,186)	$ 86,519,686			
F3. Second Prior Year	74,311,509	126,027,156	(52,984,178)	(92,471,186)	$ 86,519,686		
F4. Third Prior Year	(84,987,675)	74,311,509	126,027,156	(52,984,178)	(92,471,186)	$ 86,519,686	
F5. Fourth Prior Year	135,194,849	(84,987,673)	74,311,510	126,027,155	(52,984,179)	(92,471,187)	$ 86,519,687
F6. Total Recognized Investment Gain	197,561,661	(30,104,372)	141,402,988	67,091,477	(58,935,679)	(5,951,501)	86,519,687
G. Preliminary Funding Value End of Year: A + D + E3 + F6	$7,300,276,091	$ 7,663,416,136	$ 8,204,537,196				
H. Additional Recognized G/L due to Corridor	-	-	-				
I. Final Funding Value after 20% Corridor	$ 7,300,276,091	$ 7,663,416,136	$ 8,204,537,196				
J. Difference between Market & Funding Value: B-I	$ 229,780,100	$ (202,471,459)	$ 88,723,984				
K. Recognized Rate of Return	10.72%	6.83%	9.11%				
L. Market Rate of Return	3.41%	0.83%	13.31%				
M. Ratio of Funding Value to Market Value	96.95%	102.71%	98.93%				

The Funding Value of Assets recognizes assumed investment income (line E3) fully each year. Differences between actual and assumed investment income (line E4) are phased-in over a closed 5-year period. During periods when investment performance exceeds the assumed rate, Funding Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than market value. The Funding Value of Assets is unbiased with respect to Market Value. At any time it may be either greater or less than Market Value. If assumed rates are exactly realized for 4 consecutive years, it will become equal to Market Value. Final Funding Value of Assets may not be less than 80% nor more than 120% of Market Value of Assets.

Allocation of Assets
June 30, 2017

	Employees	Teachers	Police	Fire	Total
Allocated Fund Assets (Actuarial Value)	$2,756,009,132	$2,985,518,581	$1,658,311,769	$804,697,714	$8,204,537,196
Less Reserve for TSAs	-	-	-	-	-
Less 401(h) Account	21,451,544	6,513,728	7,403,955	3,483,817	38,853,044
Net Pension Valuation Assets	$2,734,557,588	$2,979,004,853	$1,650,907,814	$801,213,897	$8,165,684,152

The Actuarial Value of Assets was allocated to the pension and medical subsidy plans based on the Market Value of those plans. The Actuarial Value of Assets was then further allocated to each fund (either pension or medical subsidy) based on the Market Value of those funds. The 401(h) account for Police and Fire is combined. The allocation between Police and Fire is based on the percentage of the medical subsidy market value of assets, as reported by the System.

SECTION D

PARTICIPANT DATA

Active Members by Valuation Division

Valuation Group	Active Members	Valuation Payroll	Average		
			Age	Service*	Pay
Employees:					
Male	9,556	$ 515,500,964	48.8	11.4	$53,945
Female	14,922	664,017,334	49.4	10.9	44,499
Total	24,478	1,179,518,298	49.2	11.1	48,187
Teachers:					
Male	3,806	246,370,876	46.0	14.2	64,732
Female	13,811	827,076,122	46.1	13.3	59,885
Total	17,617	1,073,446,998	46.1	13.5	60,932
Police:					
Male	3,604	257,142,577	39.1	11.2	71,349
Female	547	33,861,127	38.9	9.3	61,903
Total	4,151	291,003,704	39.1	11.0	70,104
Fire:					
Male	1,600	121,064,749	41.3	13.2	75,665
Female	40	2,577,783	41.3	12.2	64,445
Total	1,640	123,642,532	41.3	13.2	75,392
Total:					
Male	18,566	1,140,079,166	45.7	12.1	61,407
Female	29,320	1,527,532,366	47.6	12.0	52,099
Grand Total	47,886	$2,667,611,532	46.9	12.1	$55,708

** One month of service was added to the reported service for all active participants in consideration of potential subsidized service purchases in the future.*

Valuation Group	Active Members	Valuation Payroll
Employees:		
State	9,813	$ 536,482,267
Political Subdivisions	14,665	643,036,031
Subtotal	24,478	1,179,518,298
Teachers:	17,617	1,073,446,998
Police:		
State	1,039	76,213,301
Political Subdivisions	3,112	214,790,403
Subtotal	4,151	291,003,704
Fire:		
State	65	3,879,292
Political Subdivisions	1,575	$119,763,240
Subtotal	1,640	123,642,532
Total	47,886	$ 2,667,611,532

Summary of Membership Data by Category

	June 30	
	2017	**2016**
Active Members		
Number	47,886	48,069
Average age (years)	46.9	46.9
Average service* (years)	12.1	12.1
Average salary	$55,708	$54,118
Total payroll supplied, annualized	$ 2,667,611,532	$ 2,601,403,606
Vested Inactive Members		
Number	2,281	1,785
Average age (years)	52	52
Non-Vested Inactive Members		
Number	10,477	9,528
Service Retirees		
Number	31,186	28,403
Average age (years)	70.0	70.0
Total annual benefits	$ 639,679,378	$ 608,332,888
Average annual benefit	$ 20,512	$ 21,418
Disability Retirees		
Number	1,600	1,600
Average age (years)	64.0	63.7
Total annual benefits	$ 31,739,977	$ 31,124,304
Average annual benefit	$ 19,837	$ 19,453
Beneficiaries		
Number	2,908	2,773
Average age (years)	73.9	73.9
Total annual benefits	$ 41,692,950	$ 38,818,283
Average annual benefit	$ 14,337	$ 13,999
Total Covered Lives	96,338	92,158

** For 2017, one month of service was added to the reported service for all active participants in consideration of potential subsidized service purchases in the future.*

SECTION E

GLOSSARY

Glossary

Actuarial Accrued Liability (AAL)	The difference between the Actuarial Present Value of Future Benefits, and the Actuarial Present Value of Future Normal Costs.
Actuarial Assumptions	Assumptions about future plan experience that affect costs or liabilities, such as: mortality, withdrawal, disablement, and retirement; future increases in salary; future rates of investment earnings; future investment and administrative expenses; characteristics of members not specified in the data, such as marital status; characteristics of future members; future elections made by members; and other items.
Actuarial Cost Method	A procedure for allocating the Actuarial Present Value of Future Benefits between the Actuarial Present Value of future Normal Costs and the Actuarial Accrued Liability.
Actuarial Equivalent	Of equal Actuarial Present Value, determined as of a given date and based on a given set of Actuarial Assumptions.
Actuarial Present Value (APV)	The amount of funds required to provide a payment or series of payments in the future. It is determined by discounting the future payments with an assumed interest rate and with the assumed probability each payment will be made.
Actuarial Present Value of Future Benefits (APVFB)	The Actuarial Present Value of amounts which are expected to be paid at various future times to active members, retired members, beneficiaries receiving benefits, and inactive, nonretired members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.
Actuarial Valuation	The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan.
Actuarial Value of Assets	The value of the assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets or a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the Annual Required Contribution (ARC).

Glossary

Amortization Method	A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the rate at which total covered payroll of all active members is assumed to increase.
Amortization Payment	That portion of the plan contribution or ARC which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.
Amortization Period	The period used in calculating the Amortization Payment.
Annual Required Contribution (ARC)	The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation. The ARC consists of the Employer Normal Cost and Amortization Payment.
Closed Amortization Period	A specific number of years that is reduced by one each year, and declines to zero with the passage of time. For example if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc.
Employer Normal Cost	The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.
Equivalent Single Amortization Period	For plans that do not establish separate amortization bases (separate components of the UAAL), this is the same as the Amortization Period. For plans that do establish separate amortization bases, this is the period over which the UAAL would be amortized if all amortization bases were combined upon the current UAAL payment.
Experience Gain/Loss	A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two actuarial valuations. To the extent that actual experience differs from that assumed, Unfunded Actuarial Accrued Liabilities emerge which may be larger or smaller than projected. Gains are due to favorable experience, e.g., the assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, losses are the result of unfavorable experience, i.e., actual results that produce Unfunded Actuarial Accrued Liabilities which are larger than projected.

Glossary

Funded Ratio	The ratio of the Actuarial Value of Assets to the Actuarial Accrued Liability.
GASB	Governmental Accounting Standards Board.
Normal Cost	The annual cost assigned, under the Actuarial Cost Method, to the current plan year.
Open Amortization Period	An open amortization period is one which is used to determine the amortization payment but which does not change over time. In other words, if the initial period is set as 30 years, the same 30-year period is used in determining the amortization period each year. In theory, if an open amortization period is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never completely disappear, but will become smaller each year, either as a dollar amount or in relation to covered payroll.
Unfunded Actuarial Accrued Liability	The difference between the Actuarial Accrued Liability and Actuarial Value of Assets.
Solvency Rate	The minimum contribution necessary to prevent insolvency (a fund balance less than $0) during or after the biennium in which contributions are being calculated. If fund balances are projected to be less than $0 prior to the beginning of the biennium (due to the lag between the valuation date and contribution certification), then the solvency rate is the minimum contribution necessary to bring the balance back to $0 by the end of the biennium. After the fund balance reaches $0, the solvency rate is becomes the pay-as-you-go rate.
Valuation Date	The date as of which the Actuarial Present Value of Future Benefits are determined. The benefits expected to be paid in the future are discounted to this date.

SECTION F

FUNDING POLICY

New Hampshire Retirement System
Actuarial Funding Policy
(Adopted: March 11, 2014)

FUNDING OBJECTIVES

The main financial objective of the New Hampshire Retirement System (NHRS) is to receive employer and member contributions to fund the long-term costs of benefits provided by statute to plan members and beneficiaries. From the perspective of the members and beneficiaries, a funding policy based on actuarially determined contributions is one which will pay all benefits provided by statute when due. From the perspective of the contributing plan sponsors and taxpayers, the actuarially determined contributions have the additional objectives of keeping contribution rates relatively stable as a percentage of active member payroll and equitably allocating the costs over the active members' period of active service. For pension funding, the payment of benefits is supported in part by income earned on investment assets. This funding policy meets those criteria. It is stipulated by state law and implemented through the application of Board adopted governance policies.

Statutory Pension Funding Policy for NHRS

The statute that establishes the pension funding policy for NHRS is RSA 100-A:16.

RSA 100-A:16 Excerpts:

> **100-A:16 Method of Financing** – All of the assets of the Retirement System shall be credited, according to the purpose for which they are held, between 2 funds, namely, the member annuity savings fund and the state annuity accumulation fund. Each of the funds shall be subdivided on account of the various member classifications. In making the determinations required under this section for financing the Retirement System, the Board of Trustees shall use the entry age normal funding methodology. The Board of Trustees shall direct the System's actuary to prepare biennial valuations of the System's assets and liabilities commencing with the valuation prepared as of June 30, 2007. Such biennial valuation shall be the basis for determining the annual contribution requirements of the System until the next following biennial valuation.
>
> …
> II(b) The contributions of each employer for benefits under the retirement system on account of group II members shall consist of a percentage of the earnable compensation of its members to be known as the "normal contribution,'' and an additional amount to be known as the "accrued liability contribution;'' provided that beginning with state fiscal year 2013 and for each state fiscal year thereafter, any employer shall pay the full amount of such total contributions. The rate percent of such normal contribution, including contributions on behalf of group II members whose group II creditable service is in excess of 40 years, in each instance shall be fixed on the basis of the liabilities of the system with respect to the particular members of the various member classifications as shown by actuarial valuations,
>
> ...

II(c) The contributions of each employer for benefits under the retirement system on account of group I members shall consist of a percentage of the earnable compensation of its members to be known as the "normal contribution,'' and an additional amount to be known as the "accrued liability contribution;'' provided that beginning with state fiscal year 2013 and for each state fiscal year thereafter, any employer shall pay both normal and accrued liability contributions. The rate percent of such normal contribution in each instance shall be fixed on the basis of the liabilities of the system with respect to the particular members of the various member classifications as shown by actuarial valuation,

...

II(e) Immediately following the actuarial valuation prepared as of June 30 of each fiscal year, the Board shall have an actuary determine the amount of the unfunded accrued liability for each member classification as the amount of the total liabilities of the state annuity accumulation fund on account of such classification which is not dischargeable by the total of the funds in hand to the credit of the state annuity accumulation fund on account of such classification, and the aforesaid normal contributions to be made on account of the members in such classification during the remainder of their active service. The amount so determined with respect to each member classification shall be known as the "unfunded accrued liability'' with respect to such classification. On the basis of each such unfunded accrued liability, the board shall have an actuary determine the level annual contribution required to discharge such amount over a period of 30 years or the maximum period allowed by standards adopted by the Government Accounting Standards Board, whichever is less.

Board Established Policy Associated with Funding:

Actuarial Cost Method

The law stipulates under RSA 100-A:16 the use of the entry age normal actuarial cost method for each of the four member classifications. The purpose of this method is to determine the annual Normal Cost for each individual active member, payable from the date of employment to the date of retirement, that is:

(i) Sufficient to accumulate to the value of the member's benefit at the time of retirement, and
(ii) A constant percentage of the member's year by year projected covered pay.

The Actuarial Accrued Liability under this cost method is the accumulation of normal costs accrued prior to the actuarial valuation date. The Actuarial Accrued Liability represents the theoretical amount of assets required to fund benefits earned on members' past service. The Normal Cost represents the cost required to fund benefits accruing during the current year.

Under RSA 100-A:16, II (i), if the actuarially determined normal contribution rate as set forth in subparagraphs (b) and (c) on account of any of the various member classifications shall be negative in any fiscal year, then the excess amount resulting from the difference between zero and the negative actuarially determined normal contribution rate shall be used to reduce the member contribution rate for that member classification in that fiscal year.

Under RSA 100-A:16, II-a. (a) if within a member classification the employer rates have lowered to require them to be equal to the member rates, then for all subsequent years the employer rates and the members rates for such member classification shall continue to be equal whether the system liabilities increase or decrease.

Asset Valuation Method

The Actuarial Value of Assets is based on the market value with investment gains and losses smoothed over 5 years. The Actuarial Value of Assets will not consistently be above or below the Market Value and is expected to converge to the Market Value in a relatively short period of time. At any time it may be either greater or less than Market Value. During periods when investment performance exceeds the assumed rate, Actuarial Value of Assets will tend to be less than Market Value. During periods when investment performance is less than the assumed rate, Actuarial Value of Assets will tend to be greater than Market Value. If assumed rates are exactly realized for 4 consecutive years, the Actuarial Value will become equal to Market Value.

Actuarial Value is limited to a 20% corridor around the Market Value. This means that if the preliminary development of the Actuarial Value results in an amount that is greater than 120% of the Market Value (or less than 80% of the Market Value), the final Actuarial Value is limited to 120% (or 80%) of the Market Value. Any gains or losses on the Market Value outside of the 20% corridor are therefore recognized immediately.

Amortization Method

The law stipulates under RSA 100-A:16 an amortization period of 30 years or the maximum period allowed by standards adopted by the Government Accounting Standards Board (GASB), whichever is less. When this statute was enacted, the GASB accounting standards provided broad guidelines on plan funding. The GASB Statements Nos. 67 and 68 do not address plan funding and only address financial reporting. This Actuarial Funding Policy retains the original intent of the statute.

Beginning with the June 30, 2007 actuarial valuation which determined the employer contribution rates beginning with the fiscal year ending June 30, 2010, the 30-year period is a closed period ending June 30, 2039.

The amortization method is a level percentage of payroll, consistent with RSA 100-A:16 II (b) and (c).

Funding Target

The funding objective is to achieve 100% funding. For this purpose, 100% funding means that the Actuarial Value of Assets equals the Actuarial Accrued Liability. The amortization objective is to reach 100% funding by June 30, 2039.

Risk Management

The main financial objective of this funding policy is to fund the long-term costs of benefits provided by statute to plan members and beneficiaries. There are numerous risks that NHRS faces in trying to achieve this objective including funding risk, demographic risk, investment risk, and benefit risk. The Board policies for managing these risks are outlined in this section.

Funding Risk

Frequency of Actuarial Valuations

Regular valuations manage funding risk by allowing employer contribution rates to reflect actual experience as it emerges. Funding valuations are required by RSA 100-A:16, III, as of June 30 every other year on the odd years to determine employer contribution rates for the biennium beginning two years after the valuation date.

Interim funding valuations on June 30 of the even years are required for financial reporting. Funding calculations from interim valuations may be used as additional information for budgeting contributions in anticipation of the next rate setting valuation.

Demographic and Investment Risk

Process for Reviewing and Updating Actuarial Assumptions

The Board adopts actuarial assumptions based on recommendations of the actuary. Demographic and investment risks may be managed in part by having regular reviews of the actuarial assumptions. The law stipulates that the Board shall have the actuary make an actuarial investigation into the experience of the System at least every 5 years (RSA 100-A:14, IX) and shall adopt actuarial assumptions as necessary. If circumstances warrant, the Board may change assumptions more frequently based on the recommendation of the actuary.

The experience study report shall include, but not necessarily be limited to analysis of and recommendations regarding the following assumptions.

i. Pre-retirement withdrawal rates
ii. Retirement rates
iii. Disability rates
iv. Pay increase rates
v. Mortality rates both before and after retirement
vi. Investment returns considering both real return and inflation, which must be consistent with the investment policy

The actuary shall assume no change in the active member population unless there is compelling evidence to support the expectation of a significant increase or decrease in the workforce covered by the System.

The experience study report will serve as the basis for determinations by the Board regarding whether or not demographic or economic assumptions should be modified for future valuations.

In the interim years, the actuary shall issue a written opinion in regard to the reasonableness of the assumed rate of return that shall address any difference between the assumed rate of return and the expected rate of return as determined by the investment committee (RSA 100-A:15, VII.(c)(1)).

Responding to Favorable/Unfavorable Investment Experience

Investment risk is addressed in the System's Investment Manual. Annual investment experience other than assumed is reflected in the valuation asset method described above.

Asset Liability Studies

The Board adopts an asset allocation based on recommendations from the Independent Investment Committee (IIC), which relies upon the advice from the Director of Investments and the Investment Consultant to formulate its recommendations to the Board. The asset allocation approved by the Board will reflect the results of an Asset Liability Study performed at least once in every five-year period, or more often, as recommended by the IIC, System staff, and Investment Consultant.

Risk Measures

In order to quantify the risks outlined in this actuarial funding policy, the following metrics will be included in annual valuation reports. These metrics provide quantifiable measurements of risk and its movement over time:

i. Funded ratio (Actuarial Value of Assets divided by Actuarial Accrued Liability).
   - Measures progress towards the funding objective of the 100% target funded ratio.

ii. Actual Total Payroll versus expected Total Payroll for each member classification.
   - Measures the funding risk associated with receiving contributions as a level percent of payroll.

iii. Dollar standard deviation of investment return divided by Total Payroll
   - Measures the risk associated with negative asset returns relative impact on the funded status of the plan. A decrease in this measure indicates a decrease in investment risk.

iv. Total Unfunded Actuarial Accrued Liability (UAAL) divided by Total Payroll
   - Measures the risk associated with contribution decreases relative impact on the ability to fund the UAAL. A decrease in this measure indicates a decrease in contribution risk.

v. Total Actuarial Accrued Liability (AAL) divided by Total Payroll
   - Measures the risk associated with the ability to respond to liability experience through adjustments in contributions. A decrease in this measure indicates a decrease in experience risk. This also provides a long-term measure of the asset risk in situations where the System has a funded ratio below 100%.

vi. Total Actuarial Value of Assets divided by Total Payroll
   - Measures the risk associated with the ability to respond to asset experience through adjustments in contributions. A decrease in this measure indicates a decrease in asset risk.

Benefit Risk

Responding to Legislative Proposals and Changes

Benefit risk may be managed as follows:

1. The NHRS shall review legislative proposals and changes for the potential legal, administrative, IRC compliance, and funding impact on the System. If a legislative proposal has the potential for a meaningful impact on plan funding, the Board shall consult with the actuary to estimate the actuarial impact to the System.

2. Under RSA 100-A:15 VII (d), the NHRS may request or recommend legislative proposals to comply with other state or federal regulations, improve administration, or secure funding for benefits provided by statute.

The NHRS does not determine benefit eligibility or the level of benefits.

Statutory Medical Subsidy Funding Policy for NHRS

The statutes that establish the medical subsidy funding policy for NHRS are RSA 100-A:53, 53-b, 53-c, and 53-d.

RSA 100-A:53, 53-b, 53-c, and 53-d Excerpts:

Medical Subsidy Funding Policy

Medical Subsidy benefits provided through NHRS are funded on a pay-as-you-go basis. The medical subsidy benefits provided by statute are fixed amounts for a declining population and therefore pay-as-you-go is a reasonable funding method.

The four sections of the statute refer to four separate member classifications for funding Medical Subsidy benefits provided through the NHRS. These member classifications differ from the pension member classifications and are RSA 100-A:53, Group II; 100-A:53-b, Group I Teachers; 100-A:53-c, Group I Political Subdivision Employees; 100-A:53-d, Group I State Employees.

The comparable funding provisions of the four sections of the statute are as follows:

The benefits provided under RSA 100-A:52, 52-a, and 52-b shall be provided by a 401(h) subtrust of the New Hampshire Retirement System. Beginning July 1, 2009, the 401(h) subtrust shall be funded by allocating to the subtrust the lesser of:

(a) 25 percent of member classification employer contributions; or

(b) The percentage of employer contributions made for the member classification determined by the actuary to be the minimum rate necessary to maintain the benefits provided under RSA 100-A:52, 52-a, and 52-b.

All contributions made to the Retirement System to provide medical benefits under RSA 100-A:52, 52-a, and 52-b shall be maintained in a separate account, the 401(h) subtrust. All funds and accumulated interest shall not be used for or diverted to any purpose other than to provide said medical benefits. Similarly, none of the funds accumulated to provide the retirement benefits set forth in this chapter, may be used or diverted to provide medical benefits under RSA 100-A:52, 52-a, and 52-b. The funds, if any, providing medical benefits under RSA 100-A:52, 52-a, and 52-b may be invested pursuant to the provisions of RSA 100-A:15.

Board Established Policy Associated with Funding:

The law stipulates under RSA 100-A:53, 53-b, 53-c, and 53-d the minimum rate necessary to maintain benefits. For purposes of this determination, the contribution rate calculations are made with respect to the market value of assets for each member classification separately. Any shortfall in assets for a member classification is to be made up through funding in the nearest rate setting biennium.

Risk Management

There are fewer risks in a pay-as-you-go medical subsidy arrangement than for pension pre-funding.

Solvency Risk

The greatest risk facing the pay-as-you-go financing of the statutory medical subsidy benefits is maintaining solvency of the four IRC Section 401(h) subtrusts. The contribution rate setting based on the June 30th valuation in the odd years determines the rates for the biennium beginning two years after the valuation and ending four years after the valuation date.

In order to mitigate the financing risk, the Board has adopted a policy of determining the employer contribution rate such that the expected assets in each of the four subtrusts will exceed the expected benefit payments for the year by at least 20% each year. This is referred to as a 20% margin. The Board may review the sufficiency of the margin and make changes based upon the recommendation of the actuary.

Risk Measures

In order to quantify the risks outlined in this actuarial funding policy, the following metrics will be included in annual valuation reports. These metrics provide quantifiable measurements of risk and its movement over time:

i. 20-year projections of contributions and benefit payments.
   - Measures progress towards the funding objective of solvency with a 20% margin.

ii. Actual Total Payroll versus expected Total Payroll for each member classification.
   - Measures the funding risk associated with receiving contributions as a level percent of payroll.

Miscellaneous Matters Associated with Funding:

Overall Conformance with Professional Standards of Practice

By law, the actuary shall be a member of the American Academy of Actuaries and have at least 7 years of actuarial experience (RSA 100-A:1, XXIX). The work of the actuary in connection with this policy shall conform to Actuarial Standards of Practice for public employee retirement plans promulgated by the Actuarial Standards Board and shall satisfy the requirements of the Governmental Accounting Standards Board with respect to the development of information needed by the system and by employers for financial reporting purposes.