Hampden County Regional
Retirement System

January 1, 2022 Preliminary Actuarial Valuation Results

August 3, 2022

Lisa VanDermark, FSA, MAAA, EA

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Participant information

The tables below summarize the data used in this year's valuation compared to the prior valuation:

Active participants

As of December 31,	2019	2021	Change
Active participants	2,784	2,824	1.4%
Average age	47.7	46.4	-1.3
Average years of service	10.7	9.7	-1.0
Average projected compensation	$44,981	$46,344	3.0%

Inactive participants

In this year's valuation, there were 95 participants with a vested right to a deferred or immediate vested benefit. In addition, there were 617 participants entitled to a return of their employee contributions.

Retired participants and beneficiaries

As of December 31,	2019	2021	Change
Retirees	1,625	1,765	8.6%
Beneficiaries	169	187	10.7%
Average age	72.8	72.7	-0.1
Average amount	$1,950	$2,076	6.5%

Financial information

- The rate of return on the market value of assets was 19.12% and 11.57% for the plan years ending December 31, 2021 and December 31, 2020, respectively. The rate of return on the actuarial value of assets (which gradually recognizes market fluctuations) was 12.95% and 9.23% for the same periods. This resulted in an actuarial gain when measured against the assumed rate of return of 7.15%
- The actuarial value of assets as of December 31, 2021 was $485.7 million, or 90.00% of the market value of assets of $539.7 million
  - As of December 31, 2019, the actuarial value of assets was $398.2 million, or 97.02% of the market value of assets of $410.4 million
- The actuarial value of assets does not reflect an unrecognized investment gain as of December 31, 2021 of $54.0 million. This investment gain will be recognized in the determination of the actuarial value of assets for funding purposes in the next few years, to the extent it is not offset by recognition of investment losses derived from future experience
  - This implies that earning the assumed rate of investment return (net of expenses) on a market value basis will result in investment gains on the actuarial value of assets in the next few years
  - The projected unfunded actuarial accrued liabilities in the funding schedules do not reflect the recognition of deferred investment gains

Experience analysis

- The unfunded liability, before consideration of assumption and/or plan changes, is $384.9 million. The development of the unfunded liability since the prior valuation is shown below

	(In millions)
January 1, 2020 unfunded actuarial accrued liability	$418.9
January 1, 2022 projected unfunded actuarial accrued liability	426.3
Changes in unfunded actuarial accrued liability:	
• Net (gain)/loss from investments	(33.3)
• Net (gain)/loss from administrative expenses	(0.2)
• Net (gain)/loss from other experience	(7.9)
Net experience (gain)/loss	(41.4)
January 1, 2022 unfunded actuarial accrued liability (before assumption and/or plan changes)	384.9

After reviewing the experience since the last valuation, we have identified the following assumption changes for the Board to consider

- Updating the administrative expense assumption
- Updating the mortality assumption
- Decreasing the investment return assumption

Assumptions review

Administrative expenses

Based on information on expenses provided by the staff of the Retirement System, we recommend increasing the assumption for administrative expenses from $950,000 for calendar 2020 to $1,000,000 for calendar 2022

Mortality assumption

The current mortality assumption is

- Healthy: RP-2014 Blue Collar Employee and Healthy Annuitant Mortality Tables set forward one year for females and projected generationally with Scale MP-2017
- Disabled: RP-2014 Blue Collar Healthy Annuitant Mortality Table set forward one year and projected generationally with Scale MP-2017

We recommend revising the mortality assumption to update the mortality projection scale from the MP-2017 scale to the MP-2021 scale and to remove the age set forward for healthy females

This change in the mortality assumption would increase the unfunded liability by approximately $3.0 million and increase the normal cost by approximately $56,000

Investment return

- The PRIT Fund's investment advisor has calculated the following expected rates of return:
  - 30-year time horizon: 6.9%
  - 10-year time horizon: 5.7%
- Based on the current target asset allocation, Segal Marco Advisors' capital market expectations as of December 31, 2021 and a building block approach, we calculate the following expected geometric rates of return:
  - 20-year time horizon: 6.86%
  - 15-year time horizon: 6.64%
  - 10-year time horizon: 6.33%
- Based on this information, we are proposing a reduction in the investment return assumption, which was 7.15% as of January 1, 2020
  - Lowering the investment return assumption to 7.00% would increase the unfunded liability by approximately $13.8 million and would increase the employer normal cost by approximately $0.6 million
  - Lowering the investment return assumption to 6.90% would increase the unfunded liability by approximately $23.2 million and would increase the employer normal cost by approximately $1.1 million

Summary of preliminary valuation results

The table below summarizes the results of the January 1, 2022 actuarial valuation at a 7.00% investment return assumption and alternatively a 6.90% investment return assumption (reflecting the proposed assumptions presented with respect to administrative expenses and mortality) and the prior actuarial valuation

	2022				2020	
	6.90% Investment Return Assumption		7.00% Investment Return Assumption		7.15% Investment Return Assumption	
	Amount	% of Projected Payroll	Amount	% of Projected Payroll	Amount	% of Projected Payroll
1. Total normal cost	$21,050,283	16.08%	$20,608,490	15.75%	$19,150,797	15.29%
2. Administrative expenses	1,000,000	0.76%	1,000,000	0.76%	950,000	0.76%
3. Expected employee contributions	-12,750,745	-9.74%	-12,750,745	-9.74%	-12,054,292	-9.63%
4. Employer normal cost: **(1) + (2) + (3)**	$9,299,538	7.11%	$8,857,745	6.77%	$8,046,505	6.43%
5. Actuarial accrued liability	$896,823,081		$887,453,103		$817,118,011	
6. Actuarial value of assets (AVA)	485,717,894		485,717,894		398,205,608	
7. Unfunded actuarial accrued liability: **(5) - (6)**	$411,105,187		$401,735,209		$418,912,403	
8. Funded percentage based on AVA	54.16%		54.73%		48.73%	
9. Funded percentage based on MVA	60.18%		60.81%		50.23%	
10. Projected payroll	$130,874,871		$130,874,871		$125,225,926	

Funding schedules

Funding schedule adopted with the prior valuation

With the prior valuation, the Board approved a funding schedule based on a 7.15% investment return assumption that fully funded the System by June 30, 2036

(1) Fiscal Year Ended June 30	(2) Employer Normal Cost	(3) Amortization of Unfunded Actuarial Accrued Liability	(4) Actuarially Determined Contribution (ADC): (2) + (3)	(5) Unfunded Actuarial Accrued Liability at Beginning of Fiscal Year	(6) Percent Increase in ADC Over Prior Year
2021	$8,318,602	$25,598,826	$33,917,428	$433,629,986	- -
2022	8,619,620	28,011,202	36,630,822	437,674,885	8.00%
2023	8,931,464	30,629,824	39,561,288	439,468,377	8.00%
2024	9,254,523	33,471,668	42,726,191	438,632,277	8.00%
2025	9,589,198	36,555,088	46,144,286	434,743,481	8.00%
2026	9,935,904	39,899,925	49,835,829	427,329,303	8.00%
2027	10,295,071	43,527,624	53,822,695	415,862,364	8.00%
2028	10,667,146	47,461,365	58,128,511	399,754,994	8.00%
2029	11,052,590	51,726,202	62,778,792	378,353,091	8.00%
2030	11,451,880	56,349,215	67,801,095	350,929,398	8.00%
2031	11,865,512	58,478,124	70,343,636	316,676,141	3.75%
2032	12,293,998	60,687,524	72,981,522	277,731,695	3.75%
2033	12,737,869	62,980,460	75,718,329	233,675,871	3.75%
2034	13,197,675	65,360,091	78,557,766	184,055,229	3.75%
2035	13,673,984	67,829,698	81,503,682	128,380,580	3.75%
2036	14,167,388	67,275,844	81,443,232	66,124,304	-0.07%
2037	14,678,495	0	14,678,495	0	-81.98%

Notes:
Fiscal 2021 Actuarially Determined Contribution set equal to budgeted amount
Actuarially Determined Contributions are assumed to be paid on July 1 and December 31
Item (2) reflects 3.25% growth in payroll, plus an additional 0.15% adjustment to total normal cost to reflect the effects of mortality improvement due to generational mortality assumption
Projected normal cost does not reflect the impact of pension reform for future hires
Projected unfunded actuarial accrued liability does not reflect the recognition of deferred investment gains/losses

Preliminary funding schedules for 2022

- We have prepared the following funding schedules for the Board's consideration:

	Investment Return Assumption	Rate of Appropriation Increases	Fully Funded by June 30,
Funding Schedule 1	7.00%	8.00% through 2030 then 3.75%	2036
Funding Schedule 2	6.90%	8.00% through 2030 then 3.75%	2036

- In each schedule:
  - The fiscal 2023 appropriation is equal to the budgeted amount determined with the prior valuation
  - The appropriation is assumed to be paid on July 1st and December 31st
  - Employer normal cost is projected based on a 3.25% growth in payroll and a 0.15% adjustment to total normal cost to reflect the effect of morality improvements due to the generational mortality assumption
  - Projected normal cost does not reflect the future impact of pension reform for future hires
  - The projected unfunded actuarial accrued liability does not reflect the recognition of deferred investment gains/losses

Funding Schedule 1

7.00% investment return assumption

Appropriations increase 8.00% per year through 2030 then 3.75% per year

Fully funded by June 30, 2036

(1) Fiscal Year Ended June 30	(2) Employer Normal Cost	(3) Amortization of Unfunded Actuarial Accrued Liability	(4) Actuarially Determined Contribution (ADC): (2)+(3)	(5) Total Unfunded Actuarial Accrued Liability at Beginning of Fiscal Year	(6) Percent Increase in Actuarially Determined Contribution
2023	$9,154,068	$30,407,220	$39,561,288	$415,558,131	- -
2024	9,484,561	33,241,630	42,726,191	412,657,177	8.00%
2025	9,826,917	36,317,369	46,144,286	406,571,206	8.00%
2026	10,181,561	39,654,268	49,835,829	396,823,375	8.00%
2027	10,548,933	43,273,762	53,822,695	382,882,599	8.00%
2028	10,929,485	47,199,026	58,128,511	364,158,067	8.00%
2029	11,323,690	51,455,102	62,778,792	339,993,230	8.00%
2030	11,732,034	56,069,061	67,801,095	309,659,235	8.00%
2031	12,155,022	58,188,614	70,343,636	272,347,729	3.75%
2032	12,593,177	60,388,345	72,981,522	230,194,534	3.75%
2033	13,047,038	62,671,291	75,718,329	182,776,381	3.75%
2034	13,517,170	65,040,596	78,557,766	129,637,175	3.75%
2035	14,004,149	67,499,533	81,503,682	70,285,589	3.75%
2036	14,508,581	4,263,976	18,772,557	4,192,459	-76.97%
2037	15,031,085	0	15,031,085	0	-19.93%

Funding Schedule 2

6.90% investment return assumption

Appropriations increase 8.00% per year through 2030 then 3.75% per year

Fully funded by June 30, 2036

(1) Fiscal Year Ended June 30	(2) Employer Normal Cost	(3) Amortization of Unfunded Actuarial Accrued Liability	(4) Actuarially Determined Contribution (ADC): (2)+(3)	(5) Total Unfunded Actuarial Accrued Liability at Beginning of Fiscal Year	(6) Percent Increase in ADC Over Prior Year
2023	$9,608,394	$29,952,894	$39,561,288	$425,051,750	- -
2024	9,954,352	32,771,839	42,726,191	422,890,364	8.00%
2025	10,312,700	35,831,586	46,144,286	417,616,240	8.00%
2026	10,683,881	39,151,948	49,835,829	408,761,440	8.00%
2027	11,068,351	42,754,344	53,822,695	395,804,910	8.00%
2028	11,466,583	46,661,928	58,128,511	378,167,122	8.00%
2029	11,879,070	50,899,722	62,778,792	355,204,221	8.00%
2030	12,306,319	55,494,776	67,801,095	326,201,620	8.00%
2031	12,748,856	57,594,780	70,343,636	290,366,985	3.75%
2032	13,207,224	59,774,298	72,981,522	249,851,993	3.75%
2033	13,681,988	62,036,341	75,718,329	204,250,104	3.75%
2034	14,173,733	64,384,033	78,557,766	153,123,563	3.75%
2035	14,683,062	66,820,620	81,503,682	96,001,124	3.75%
2036	15,210,601	32,920,198	48,130,799	32,375,614	-40.95%
2037	15,757,001	0	15,757,001	0	-67.26%

Caveats and questions

- It is important to note that this actuarial valuation is based on plan assets as of December 31, 2021. Due to the COVID-19 pandemic, market conditions have changed significantly since the onset of the Public Health Emergency. The Plan's funded status does not reflect short-term fluctuations of the market, but rather is based on the market values on the last day of the plan year. Moreover, this actuarial valuation does not include any possible short-term or long-term impacts on mortality of the covered population that may emerge after December 31, 2021. While it is impossible to determine how the pandemic will affect market conditions and other demographic experience of the Plan in future valuations, Segal is available to prepare projections of potential outcomes upon request.
- Projections, by their nature, are not a guarantee of future results. The projections are intended to serve as estimates of future outcomes, based on the information available to us and the assumptions described herein. Emerging results may differ significantly if the actual experience proves to be different from these assumptions.
- A discussion of the risks inherent in the measurement of pension plan obligations and other required disclosure information will be included in the January 1, 2022 Actuarial Valuation and Review.

Disclosures

- This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the Retirement System. The census information and financial information on which this actuarial valuation was based was prepared by the staff of the Retirement System.
- The actuarial assumptions and plan provisions used for this valuation are as described in Section 4 of the January 1, 2020 Actuarial Valuation and Review dated December 28, 2020, except for the changes noted previously. The financial information used in this valuation is as of December 31, 2021.
- The measurements shown in this actuarial valuation may not be applicable for other purposes. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or 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 and changes in plan provisions or applicable law.
- An actuarial valuation is a measurement at a specific date - it is not a prediction of a plan's future financial condition. We have not been retained to perform an analysis of the potential range of financial measurements, except where otherwise noted.
- Segal valuation results are based on proprietary actuarial modeling software. The actuarial valuation models generate a comprehensive set of liability and cost calculations that are presented to meet regulatory, legislative and client requirements. Deterministic cost projections are based on a proprietary forecasting model. Our Actuarial Technology and Systems unit, comprised of both actuaries and programmers, is responsible for the initial development and maintenance of these models. The models have a modular structure that allows for a high degree of accuracy, flexibility and user control. The client team programs the assumptions and the plan provisions, validates the models, and reviews test lives and results, under the supervision of the responsible actuary.

- The actuarial calculations were directed under the supervision of Lisa VanDermark, FSA, MAAA, EA. She is a member of the American Academy of Actuaries and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of her knowledge, the information supplied in this actuarial valuation is complete and accurate. The assumptions used in this actuarial valuation were selected by the Board based upon our analysis and recommendations. In her opinion, the assumptions are reasonable and take into account the experience of the Hampden County Regional Retirement System and reasonable expectations.