CHEIRON *Classic Values, Innovative Advice*

Sussex County Employee Pension Plan

Actuarial Valuation Report as of July 1, 2021

Produced by Cheiron

October 2021

www.cheiron.us 1.877.CHEIRON (243.4766)

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LETTER OF TRANSMITTAL

October 25, 2021

Pension Fund Committee
Sussex County
2 The Circle
P.O. Box 589
Georgetown, Delaware 19947

Dear Members of the Pension Fund Committee:

At your request, we have conducted an actuarial valuation of the Sussex County Employee Pension Plan as of July 1, 2021. The valuation is organized as follows:

- In Section I **Executive Summary,** we describe the purpose of an actuarial valuation and summarize the key results found in this valuation.
- The **Main Body** of the report presents details on the Plan's:
    - Section II - Identification and Assessment of Risk
    - Section III - Assets
    - Section IV - Liabilities
    - Section V - Contributions

In the **Appendices,** we conclude our report with detailed information describing the Plan's membership (Appendix A), actuarial assumptions and methods employed (Appendix B), a summary of pertinent plan provisions (Appendix C), and a glossary of terms (Appendix D).

The results of this report rely on future Plan experience conforming to the underlying assumptions. To the extent that actual Plan experience deviates from the underlying assumptions, the results will vary accordingly.

The purpose of this report is to present the annual actuarial valuation of the Sussex County Employee Pension Plan. This report is for the use of Sussex County and its auditors in preparing financial reports in accordance with applicable law and accounting requirements. The report does not include calculations under GASB Statements No. 67 and No. 68 which are provided in a separate report.

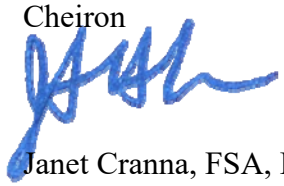
In preparing our report, we relied without audit, on information supplied by the Sussex County staff. This information includes, but is not limited to, plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standards of Practice No. 23.

Pension Fund Committee
Sussex County
October 25, 2021

This report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice as set out by the Actuarial Standards Board as well as applicable laws and regulations. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys and our firm does not provide any legal services or advice.

This actuarial report was prepared exclusively for the Sussex County Employee Pension Plan for the purposes described herein. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any other user.

Sincerely,
Cheiron



Janet Cranna, FSA, EA, FCA, MAAA
Principal Consulting Actuary

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Consulting Actuary

SECTION I – EXECUTIVE SUMMARY

The primary purpose of the actuarial valuation and this report is to measure, describe and identify as of the valuation date:

- The financial condition of the Plan,
- Expected trends in the financial progress of the Plan, and
- The County's contributions for Fiscal Year ending 2022.

In the balance of this Executive Summary, we present the basis upon which this year's valuation was completed, the key findings of this valuation including a summary of all key financial results, a review of the historical trends, and the projected financial outlook for the Plan.

Valuation Basis

This July 1, 2021 valuation represents Cheiron's sixth valuation performed for the Sussex County Employee Pension Plan.

Key Findings of this Valuation

The key results of the July 1, 2021 actuarial valuation are as follows:

- The actuarially determined County contribution decreased from $2.72 million payable as of July 1, 2020 to $1.95 million payable as of July 1, 2021.
- The unfunded actuarial liability (UAL) decreased from $(1.31) million on July 1, 2020 to $(7.87) million on July 1, 2021. Because the UAL is negative, the Plan has a surplus of assets in relation to the liabilities.
- The Plan's funding ratio, the ratio of actuarial asset value over liabilities, increased from 101.1% as of July 1, 2020 to 106.2% as of July 1, 2021.
- The main factors in the increase of the Plan's funded status was the $5.00 million County contribution ($2.28 million in excess of the actuarially determined County contribution). and an actuarial experience gain of $4.24 million as described below.
    - During the year ended June 30, 2020, the Plan's assets gained 25.40% (net of investment expenses) on a market value basis, but due to smoothing the prior years' investment gains and losses, the return on the actuarial asset value was 10.34% (as compared to 7.00% assumed for the period). This resulted in an actuarial gain on investments of $4.11 million.
    - On the liability side, the Plan experienced an actuarial experience gain of $0.13 million. This is primarily due to more non-vested terminations than expected.

SECTION I – EXECUTIVE SUMMARY

Following is Table I-1 which summarizes all the key results of the valuation with respect to the Plan's membership, assets and liabilities, and contributions. The results are presented and compared for both the current and prior year.

Table I-1
Sussex County Employee Pension Plan
Summary of Principle Results

Valuation as of:	July 1, 2020	July 1, 2021	% change
Participant Counts			
Actives	506	503	(0.59%)
Terminated Vested	104	104	0.00%
Retirees	232	243	4.74%
Disabled	12	12	0.00%
Beneficiaries	41	46	12.20%
Total	895	908	1.45%
Total Payroll	$ 25,943,699	$ 26,440,763	1.92%
Average Salary	51,272	52,566	2.52%
Total Benefits in Pay Status	$ 5,025,146	$ 5,417,643	7.81%
Average Annual Benefit	17,632	17,999	2.08%
Assets and Liabilities			
Actuarial Liability (AL)	$ 121,843,941	$ 127,820,118	4.90%
Actuarial Value of Assets (AVA)	123,158,537	135,686,339	10.17%
Unfunded Actuarial Liability (UAL)	$ (1,314,596)	$ (7,866,221)	498.38%
Funded Ratio (AVA basis)	101.1%	106.2%	
Market Value of Assets (MVA)	$ 120,459,235	$ 150,840,125	25.22%
Funded Ratio (MVA basis)	98.9%	118.0%	
Contributions	**Fiscal Year 2021**	**Fiscal Year 2022**	
Employer Normal Cost	$ 2,578,700	$ 2,602,569	0.93%
UAL Amortization Payment*	0	(840,619)	N/A
Administrative Expense	141,686	185,498	30.92%
Total Contribution for County**	$ 2,720,386	$ 1,947,448	(28.41%)
Actuarially Determined Contribution as a Percentage of Payroll	10.49%	7.37%	

* Payment based on amortization of UAL (not less than $0 in 2021).
** Contributions are payable at the beginning of the fiscal year.

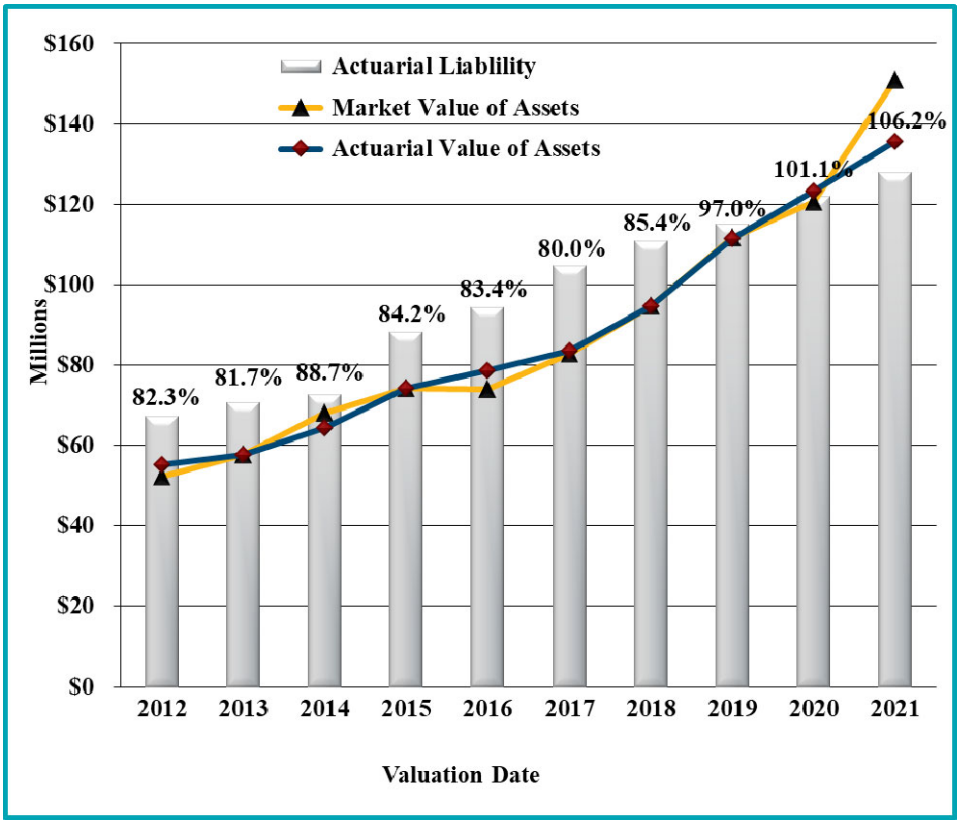
Historical Trends

It is important to take a step back from the latest results and view them in the context of the Plan's recent history. Below we present a series of charts which display key factors in the valuations over the last ten years. The results prior to July 1, 2016 in the historic trend charts are those produced by the County's former actuary.

Assets and Liabilities

The gray bars represent the Actuarial Liability (AL). The gold line is the Market Value of Assets (MVA), and the blue line is the Actuarial Value of Assets (AVA). The Plan's funded ratio (ratio of AVA to AL) is shown above the gray bars.

The Plan's funded ratio has fluctuated between 2012 and 2017. In 2014, the funded ratio increased 7.0% primarily due to investment and demographic gains. In 2015, the funded ratio decreased 4.5% primarily due to investment losses and a change in actuarial assumptions. In addition, the AVA was set equal to the MVA in 2015, with smoothing to develop the AVA begun again in 2016. In 2017, the funding ratio decreased 3.4% primarily due to a change in actuarial assumptions and plan changes. Since 2017, the funded ratio increased a total of 26.2%, primarily due to County contributions being higher than expected. In addition, in 2019, there was a change in actuarial assumptions which resulted in a slight increase in the funded ratio.

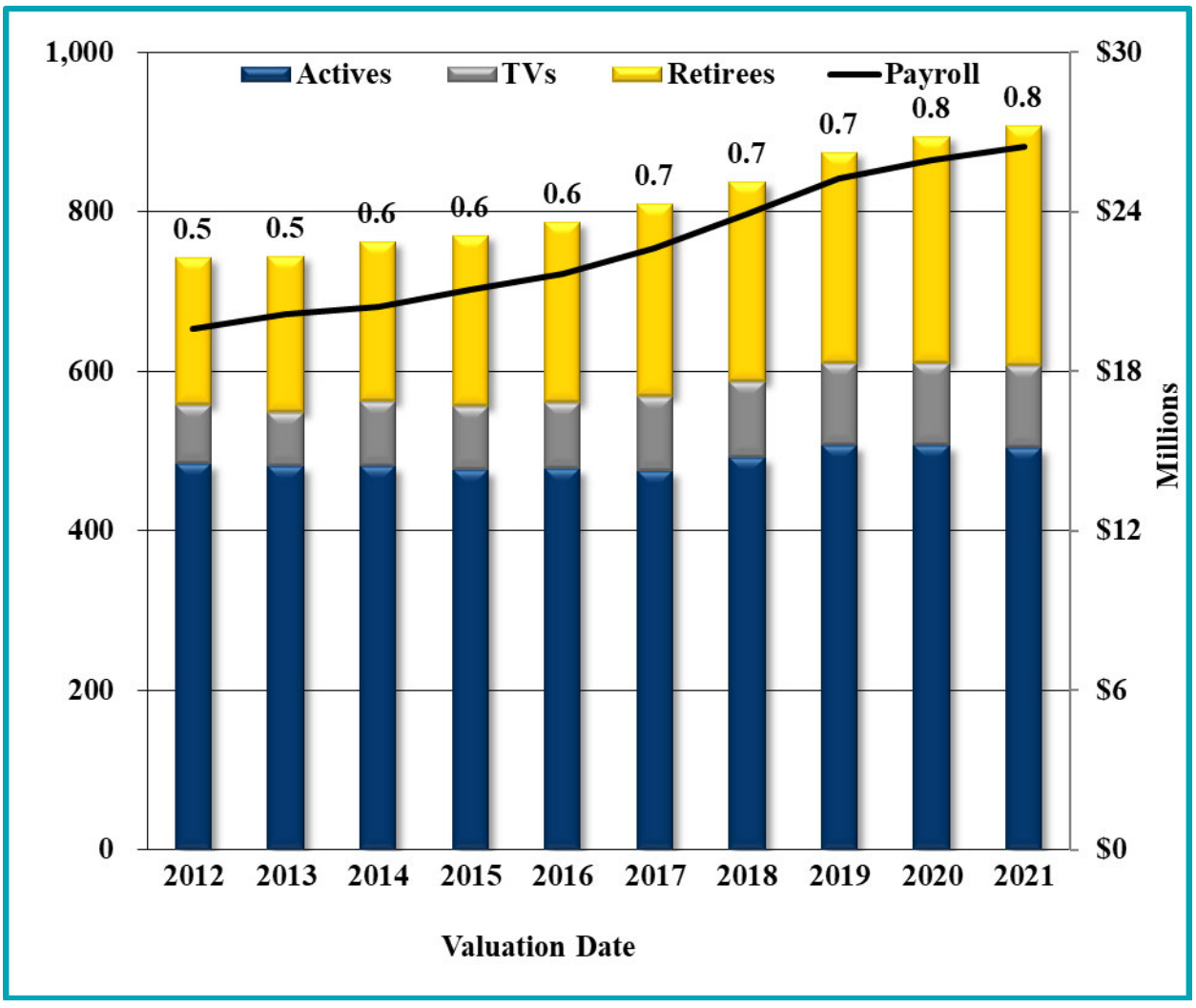


SECTION I – EXECUTIVE SUMMARY

Participant Trends

The chart below shows the membership counts of the Plan at successive valuations. The black line in the chart that shows the payroll over the period is read using the right-hand scale. The numbers which appear above each bar represent the ratio of the number of inactive (retirees and terminated vested) members to active members at each valuation date.

The ratio, also referred to as the support ratio, has been increasing since 2012. An increasing ratio is a sign of plan maturity and should continue to be monitored. As a plan becomes more mature, the assets backing the retiree benefits become large relative to the contribution base, i.e. the active participant payroll. As assets grow relative to the pensionable payroll, any experience gain or loss can have a significant impact, resulting in volatile costs from year-to-year even with the application of smoothing methods.

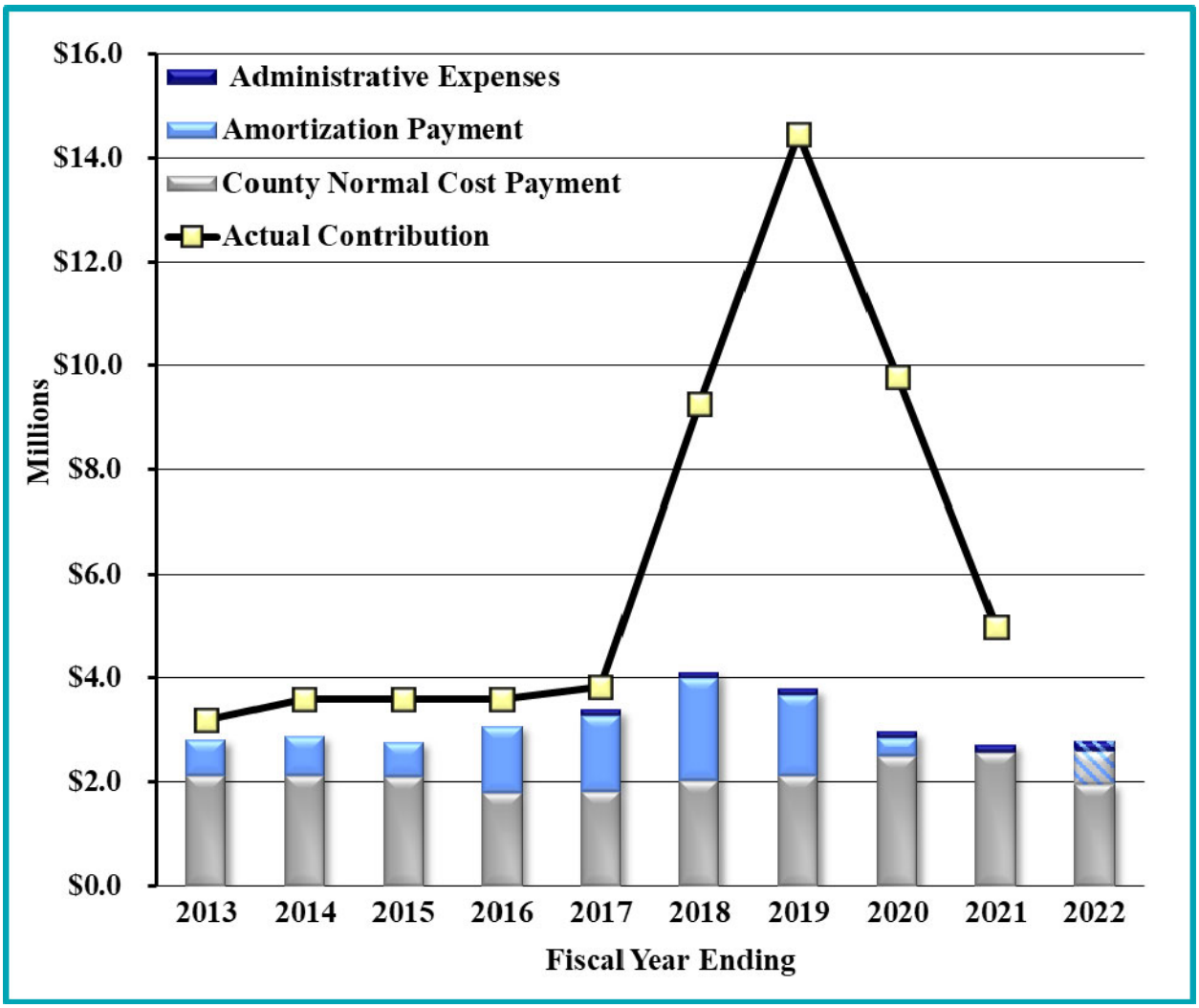


SECTION I – EXECUTIVE SUMMARY

Contributions

The Actuarially Determined Contribution (ADC) (normal cost plus amortization of the Unfunded Actuarial Liability plus administrative expenses) is represented by the gray, light blue, and dark blue bars, respectively. The black line shows the actual contributions paid by the County.

The ADC had gradually been increasing since FY 2013. However, in FY 2018 through FY 2021, the County paid a combined $24.93 million in excess of the ADC, resulting in a decrease in the ADC for FY 2019 through FY 2022. Note the negative amortization payment in FY 2022 is used to reduce the ADC. Finally, in FY 2017 and later, the ADC includes an explicit administrative expense assumption which was adopted by the County. It is worth noting that the County has consistently paid more than the ADC.



Future Expected Financial Trends

The analysis of projected financial trends is perhaps the most important component of the valuation. The charts presented in this section show the expected progress of the County's funded status over the next 20 years, measured in terms of the expected employer contribution rates, the total dollar amounts of contributions, and the funded ratio, assuming that the Plan is ongoing.

It is important to note that the experience will not conform exactly to the assumptions every year. As a result, in addition to the baseline projection of 7.00% investment returns, we provided additional stress testing based on varying returns in the future which are shown in section II.

Finally, the projections shown in this report assume there will be no future gains or losses on the liability, and the County pays the actuarially determined contribution each year. These projections also assume that all of the valuation assumptions are exactly met, including the long-term rate of return assumed for each scenario, with covered payroll increasing by the inflation assumption of 2.50% per year in all scenarios.

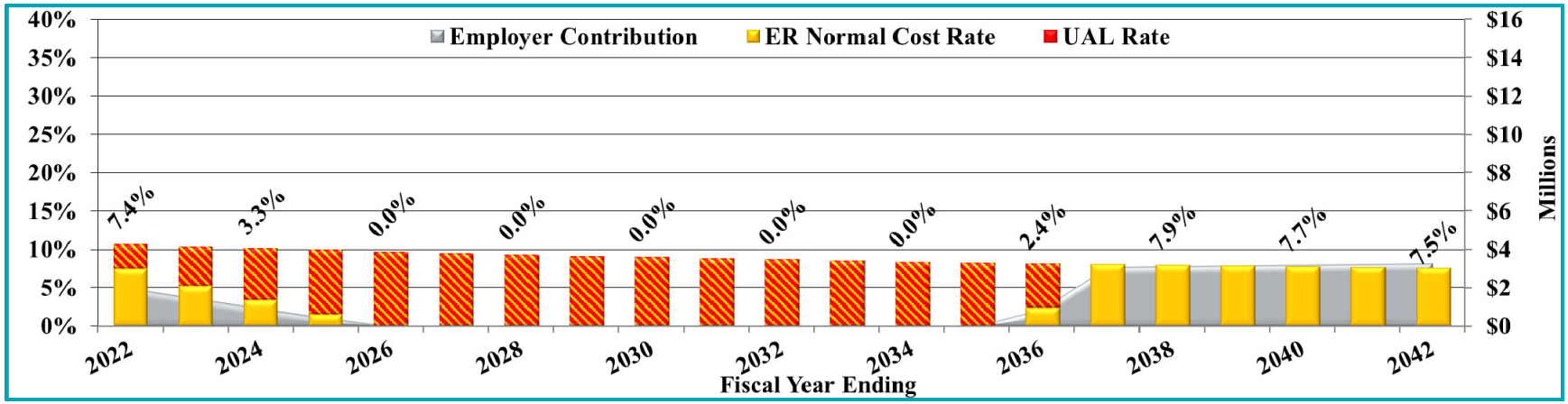
SECTION I – EXECUTIVE SUMMARY

Contribution Rate Projections

The first chart shows the County's projected actuarially determined employer contribution rates (red/gold bars) and the projected dollar amount of employer contributions (the gray shaded area) over the 20-year period shown, based on the investment rate of return and all other valuation assumptions being exactly met. The contribution rates are read using the left-hand axis and the dollars are read using the right-hand axis.

Baseline returns of 7.00% per year

The chart below shows that if all actuarial assumptions, including the investment rate of return assumption, are exactly met, the actuarially determined employer contribution rate will decline from 7.4% to 0.0% of pay and the total dollar contribution decreases from $1.9 million to $0.0 million by Fiscal Year Ending (FYE) 2026 due to the surplus of assets in relation to the liabilities. The employer normal cost rate is reduced by the UAL rate since the Plan's funded ratio is over 100%. Beginning with FYE 2037, when the funded ratio reaches 100%, the employer contribution rate increases to the employer normal cost rate (including administrative expenses) which is $3.1 million or 8.0% of pay in FYE 2037. The expected decrease in the employer (ER) normal cost rate over the projection period is due to participants hired prior to January 1, 2014 (who contribute 0% of pay) or hired between January 1, 2014 and December 31, 2020 (who contribute 3% of pay in excess of $6,000) being replaced by new participants (who will contribute 5% of pay in excess of $6,000).

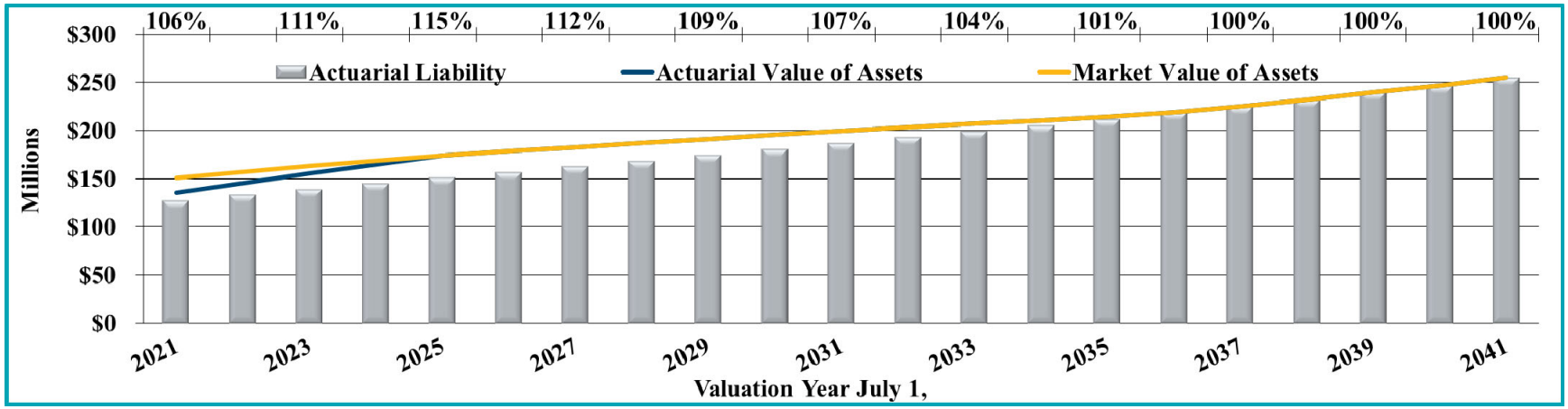


Asset and Liability Projections

This next projection chart compares the market value of assets (gold line) and the actuarial or smoothed value of assets (blue line) to the Plan's actuarial liabilities (gray bars). In addition, at the top of the chart, we show the Plan's funded ratio on an actuarial value of assets basis (ratio of actuarial value of assets to actuarial liabilities). The years shown in the chart signify the valuation date as of July 1 of the labelled year.

Baseline returns of 7.00% per year

The chart below shows that if all actuarial assumptions, including the investment rate of return assumption, are exactly met, the Plan's funded ratio on an actuarial value of assets basis, shown along the top of the chart, is projected to remain at least 100% funded over the 20-year period. Note, after the 5-year asset smoothing period, both asset numbers are the same for the remainder of the projection period as there are no future investment gains or losses in the baseline projection.



SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

Actuarial valuations are based on a set of assumptions about future economic and demographic experience. These assumptions represent a reasonable estimate of future experience, but actual future experience will undoubtedly be different and may be significantly different. This section of the report is intended to identify the primary risks to the Plan, provide some background information about those risks, and provide an assessment of those risks.

Identification of Risks

As we have discussed with the Committee, the fundamental risk to the Plan is that the contributions needed to pay the benefits become unaffordable. While there are a number of factors that could lead to contribution amounts becoming unaffordable, we believe the primary risks are:

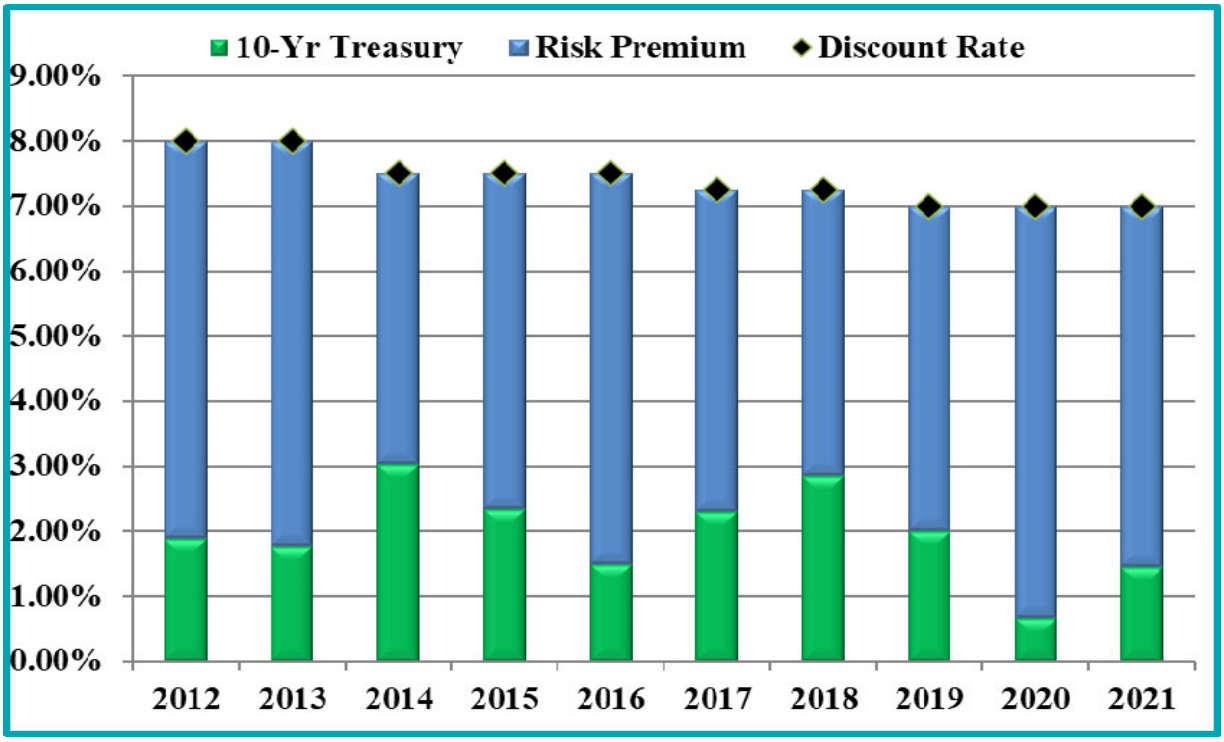
- Investment risk,
- Interest rate risk,
- Longevity and other demographic risks; and
- Assumption change risk.

Other risks that we have not identified may also turn out to be important.

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

Investment Risk is the potential for investment returns to be different than expected. Lower investment returns than anticipated will increase the Unfunded Actuarial Liability necessitating higher contributions in the future unless there are other gains that offset these investment losses. The potential volatility of future investment returns is determined by the Plan's asset allocation and the affordability of the investment risk is determined by the amount of assets invested relative to the size of the plan sponsor or other contribution base.

Interest rate risk is the potential for interest rates to be different than expected. For public plans, short term fluctuations in interest rates have little or no effect as the plan's liability is usually measured based on the expected return on assets. Longer-term trends in interest rates however can have a powerful effect. The chart below shows the yield on a 10-year Treasury security compared to the Plan's assumed rate of return. The difference is a simple measure of the amount of investment risk taken. As interest rates have declined, plans faced a choice: maintain the same level of risk and reduce the expected rate of return; maintain the same expected rate of return and take on more investment risk; or some combination of the two strategies. The County has reduced their discount rate from 8.00% to 7.00% over the period shown.



Longevity and other demographic risks are the potential for mortality or other demographic experience to be different than expected. Generally, longevity and other demographic risks emerge slowly over time and are often dwarfed by other changes, particularly those due to investment returns.

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

Assumption change risk is the potential for the environment to change such that future valuation assumptions are different than the current assumptions. For example, declines in interest rates over the last three decades resulted in higher investment returns for fixed income investments, but lower expected future returns necessitating either a change in investment policy, a reduction in discount rate, or some combination of the two. Assumption change risk is an extension of the other risks identified, but rather than capturing the risk as it is experienced, it captures the cost of recognizing a change in environment when the current assumption is no longer reasonable.

The chart below shows the components of changes in the Unfunded Actuarial Liability (UAL) for the Plan over the last ten years, including investment gains and losses on the Actuarial Value of Assets, liability gains and losses, assumption and plan changes, and paying down the UAL. The net UAL change is shown by the dark blue line. Table II-1 below the chart summarizes the changes in the UAL over the last ten years.

Historical Changes in UAL 2012-2021

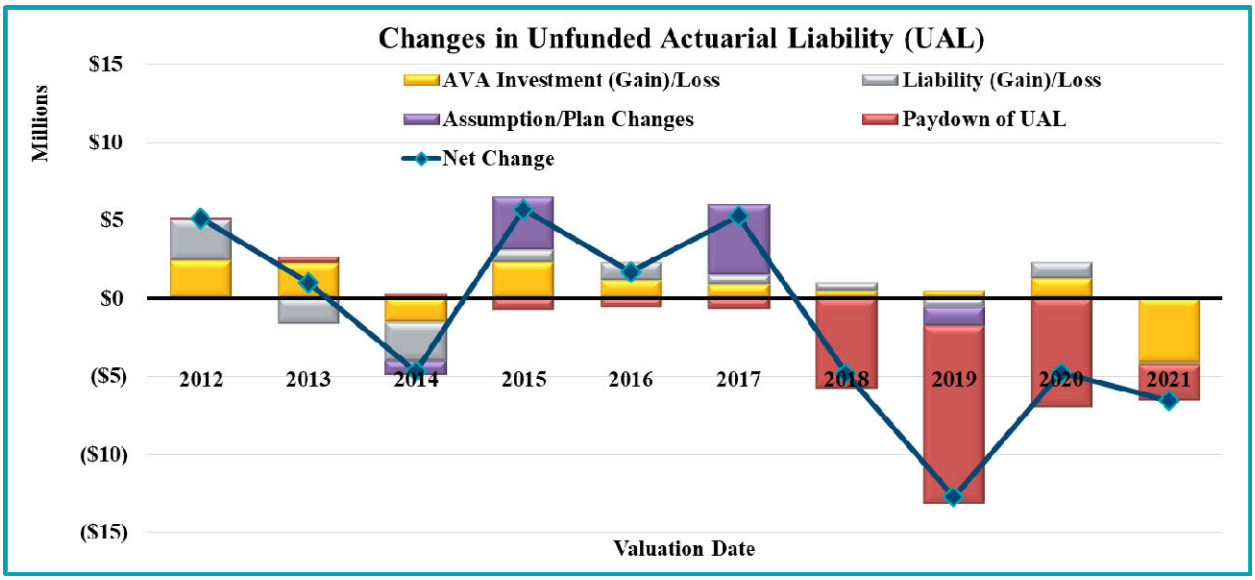


Table II-1
Changes in Unfunded Actuarial Liability (UAL)
($ millions)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Discount Rate	**8.00%**	**8.00%**	**7.50%**	**7.50%**	**7.50%**	**7.25%**	**7.25%**	**7.00%**	**7.00%**	**7.00%**	
Source											
AVA Investment (G)/L	$ 2.43	$ 2.27	$ (1.54)	$ 2.30	$ 1.18	$ 0.88	$ 0.45	$ 0.46	$ 1.30	$ (4.11)	**$ 5.62**
Liability (G)/L	2.61	(1.63)	(2.45)	0.81	1.14	0.65	0.55	(0.53)	0.99	(0.13)	**2.01**
Assumptions/Plan Changes[1]	0.00	0.00	(0.89)	3.38	0.00	4.51	0.00	(1.23)	0.00	0.00	**5.77**
Paydown of UAL[2]	0.12	0.38	0.23	(0.77)	(0.60)	(0.75)	(5.81)	(11.43)	(7.04)	(2.31)	**(27.98)**
Total UAL Change	**5.16**	**1.02**	**(4.65)**	**5.72**	**1.72**	**5.29**	**(4.81)**	**(12.73)**	**(4.75)**	**(6.55)**	**$(14.58)**

[1] *Plan changes include $1.26 million increase in 2017.*

[2] *UAL change due to benefit accruals and payments, contributions, timing, and interest.*

On a smoothed asset basis, the investment gains and losses (gold bars) from 2012 to 2021 reflect primarily investment losses which are spread over the five successive years. Over the 10-year period, investment losses have added approximately $5.62 million to the UAL.

On the liability side (gray bars), the Plan has experienced offsetting gains and losses, increasing the UAL by approximately $2.01 million over the 10-year period.

Assumption and plan changes (purple bars) over the last ten years have increased the UAL by approximately $5.77 million. The only plan change during the period occurred in 2017 which increased the UAL by approximately $1.26 million. The significant assumption changes have included reductions in the discount rate from 8.00% to 7.00% over the 10-year period, change in the mortality assumption in 2015, and other assumption changes resulting from the experience studies in 2014 and 2019. It is important to note that investment return changes reflect a downward revision to the estimate of future investment earnings, and ultimately costs will be determined by actual investment earnings. With the continued low-interest rate environment, we are continuing to see investment consultants reduce their capital market assumptions. As a result, future expectations of investment returns may continue to decline necessitating further reductions in the discount rate.

Each year the UAL is expected to decrease as the County makes contributions towards the UAL, assuming no future investment and liability gains and losses. Net changes due to paying down the UAL (red bars), which reflects benefit accruals and payments, contributions, and timing, have decreased the UAL by approximately $27.98 million over the last ten years. In the last three years, the significant decrease in the UAL has been primarily driven by the County making contributions significantly higher than the ADC.

Plan Maturity Measures

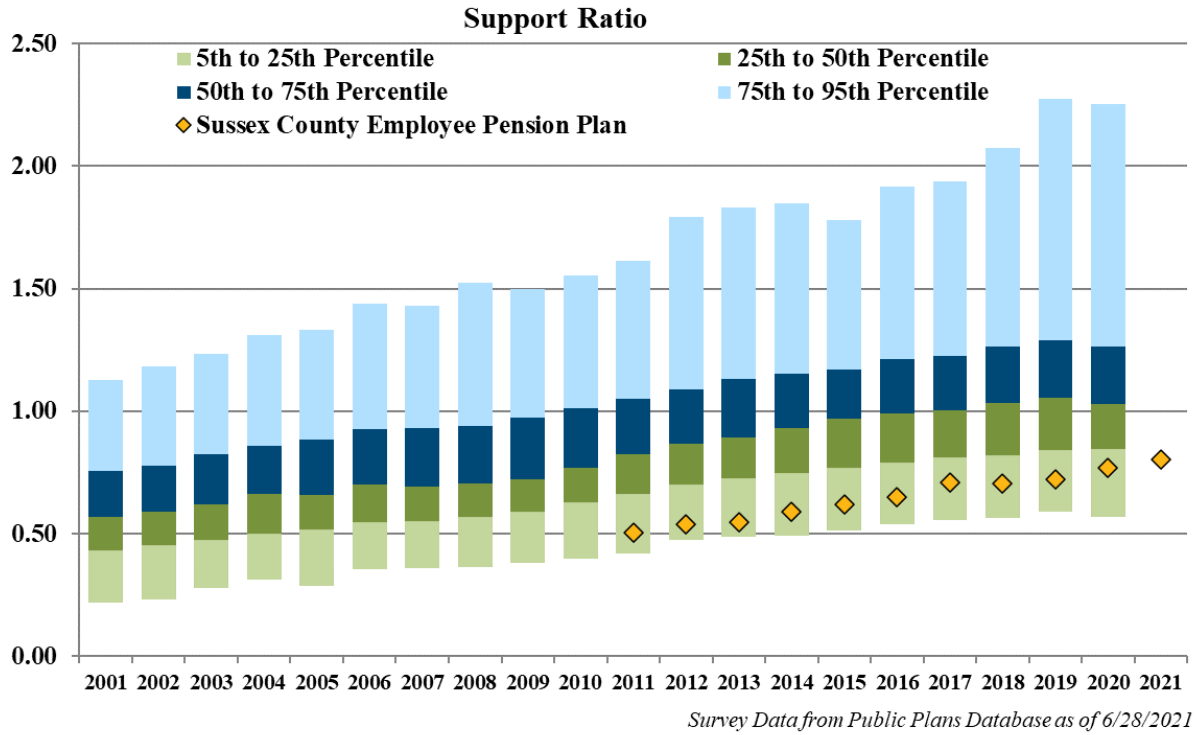
The future financial condition of a mature pension plan is more sensitive to each of the risks identified above than a less mature plan. Before assessing each of these risks, it is important to understand the maturity of this Plan compared to other plans and how the maturity has changed over time.

Plan maturity can be measured in a variety of ways, but they all get at one basic dynamic - the larger the plan is compared to the contribution or revenue base that supports it; the more sensitive the plan will be to risk. The measures below have been selected as the most important in understanding the primary risks identified for this Plan.

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

Inactives per Active (Support Ratio)

One simple measure of plan maturity is the ratio of the number of inactive members (those receiving benefits or entitled to a deferred benefit) to the number of active members. The revenue base supporting the plan is usually proportional to the number of active members, so a relatively high number of inactives compared to actives indicate a larger plan relative to its revenue base as well.



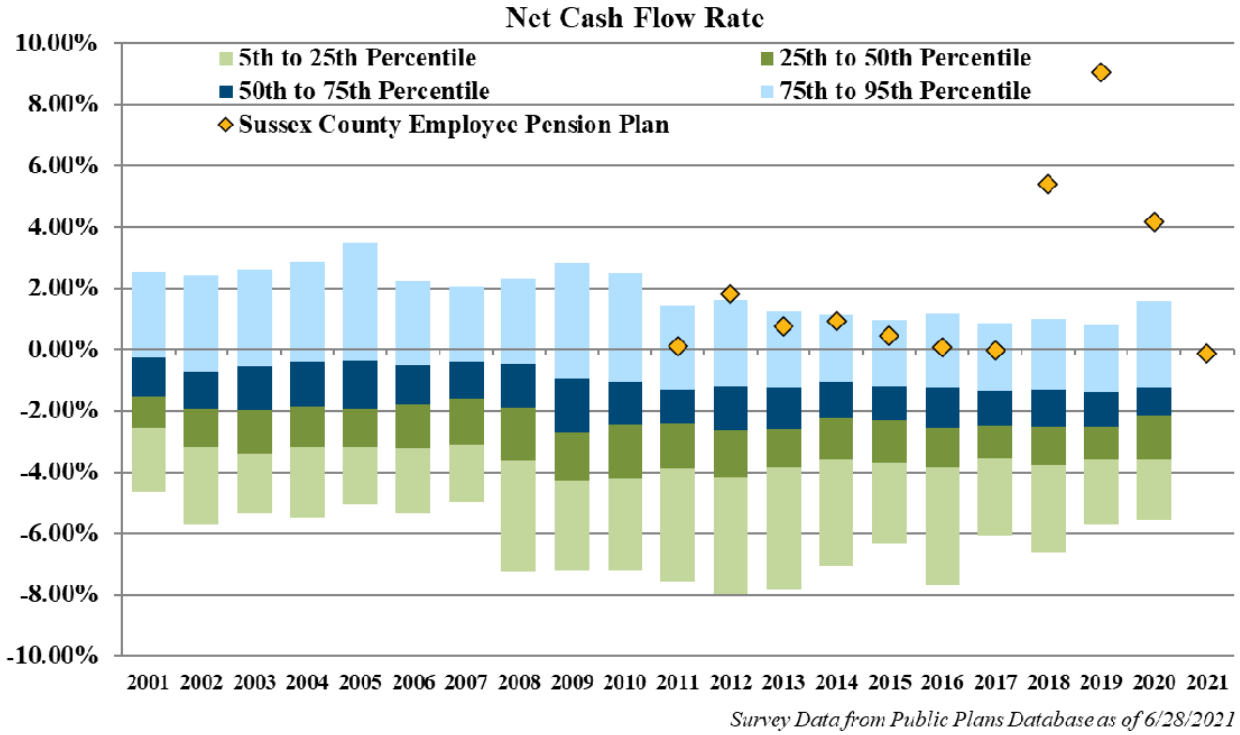
Survey Data from Public Plans Database as of 6/28/2021

The graph above shows the distribution from the 5th to 95th percentile of support ratios for the plans in the Public Plans Database. The gold diamond shows how the Sussex County Employee Pension Plan compares to the other plans. No information was available for years before 2010. While Sussex County's support ratio has increased since 2011, the support ratios for the plans as a whole have also increased over the period as they mature. Sussex County remains in the 5th to 25th percentile.

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

Net Cash Flow

The net cash flow of the plan as a percentage of the beginning of year assets indicates the sensitivity of the plan to short-term investment returns. Net cash flow is equal to contributions less benefit payments and administrative expenses. Mature plans can have large amounts of benefit payments compared to contributions, particularly if they are well funded. Investment losses in the short-term are compounded by the net withdrawal from the plan leaving a smaller asset base to try to recover from the investment losses. Large negative cash flows can also create liquidity issues.



The graph above shows how Sussex County Employee Pension Plan's net cash flow as a percent of assets has compared to the other public plans in the database. The Plan has consistently been amongst the 75th to 95th percentile. Due to the Plan's substantial contributions in 2018 to 2020, it ranked amongst the top 5 percentile of other public plans in the database over that period.

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

Deterministic Scenarios/Stress Testing

We developed several hypothetical scenarios to illustrate the impact actual investment returns may have on future funded status and contribution rates. The scenarios are balanced between positive and negative scenarios and are intended to illustrate the importance of both the return itself as well as the timing of such returns.

The graphs on the following pages show the projections under each of these theoretical scenarios: optimistic returns of 8.50% per year and pessimistic returns of 5.50% per year.

The top chart shows the County's projected actuarially determined employer contribution rates (red/gold bars) and the projected dollar amount of employer contributions (the gray shaded area) over the 20-year period shown. The contribution rates are read using the left-hand axis and the dollars are read using the right-hand axis.

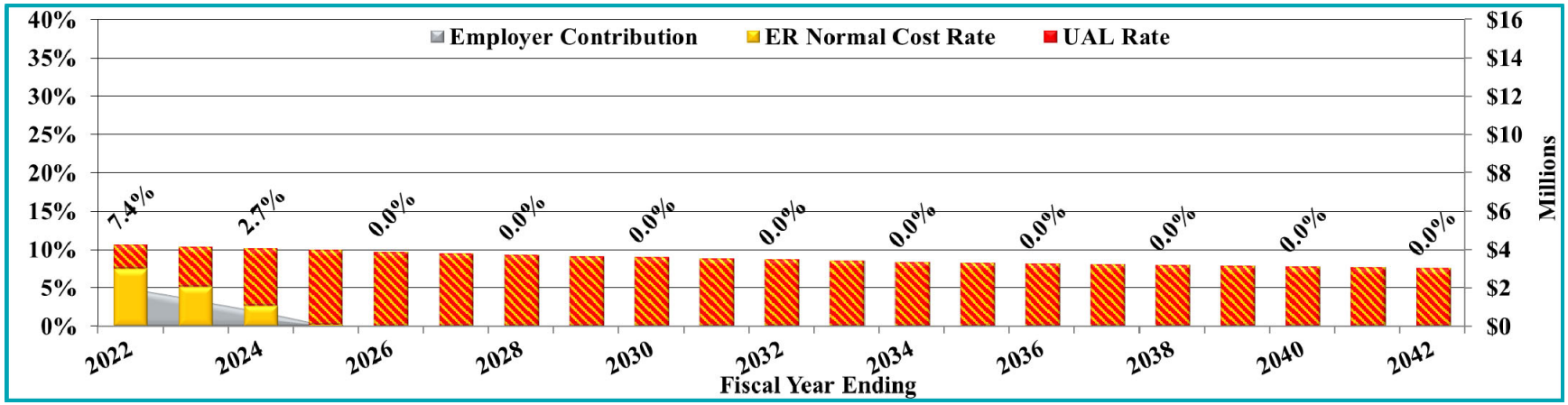
The bottom projection chart compares the market value of assets (gold line) and the actuarial or smoothed value of assets (blue line) to the Plan's actuarial liabilities (gray bars). In addition, at the top of each chart, we show the Plan's funded ratio on an actuarial value of assets basis (ratio of actuarial value of assets to actuarial liabilities).

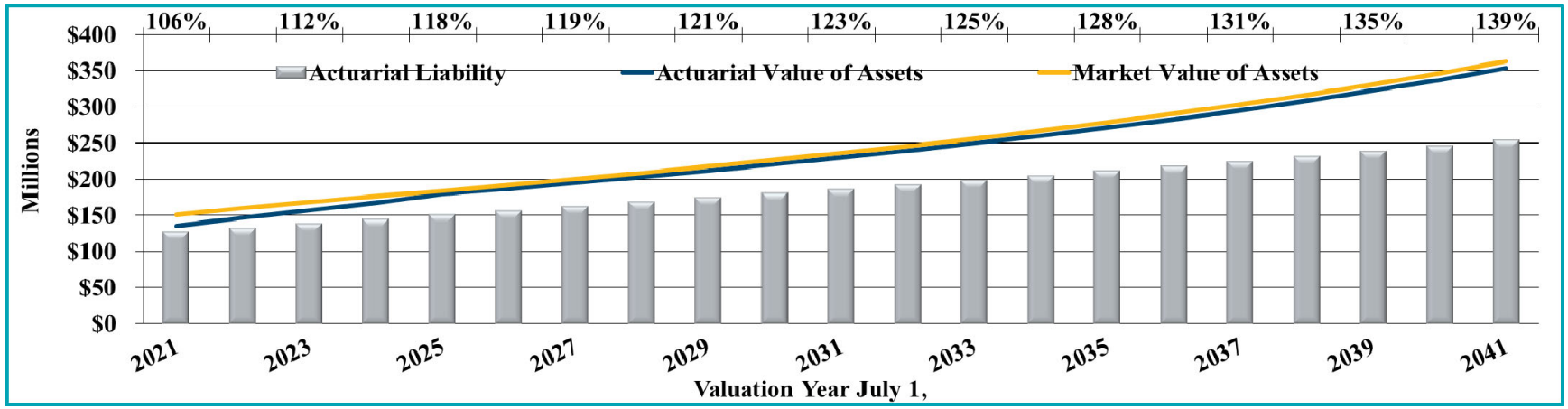
Under the baseline results, we assumed a 7.00% investment return assumption per year. The baseline projections are shown in the Board Summary.

SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

Optimistic returns of 8.50% per year

If the Plan earns 1.50% greater than the assumed investment rate of return in each year of the projection, the ADC rate will rapidly decrease and eventually reach 0.0% in FYE 2026. In FYE 2026, and all future years, the investment gains would cover all of the employer normal cost (including administrative expenses). In addition, the funded ratio is projected to increase to 139% by the end of the projection period.

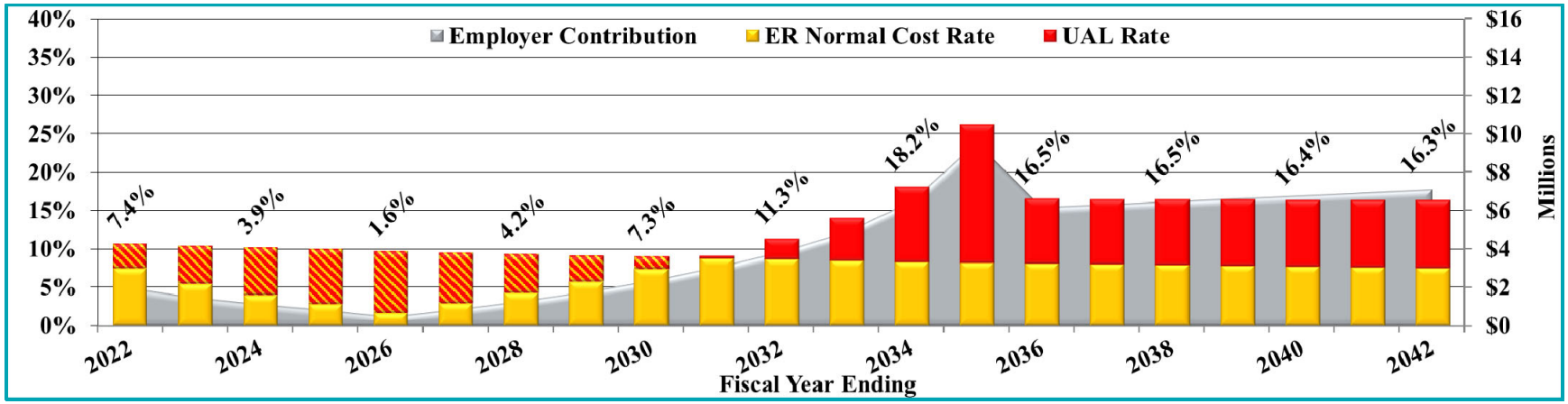


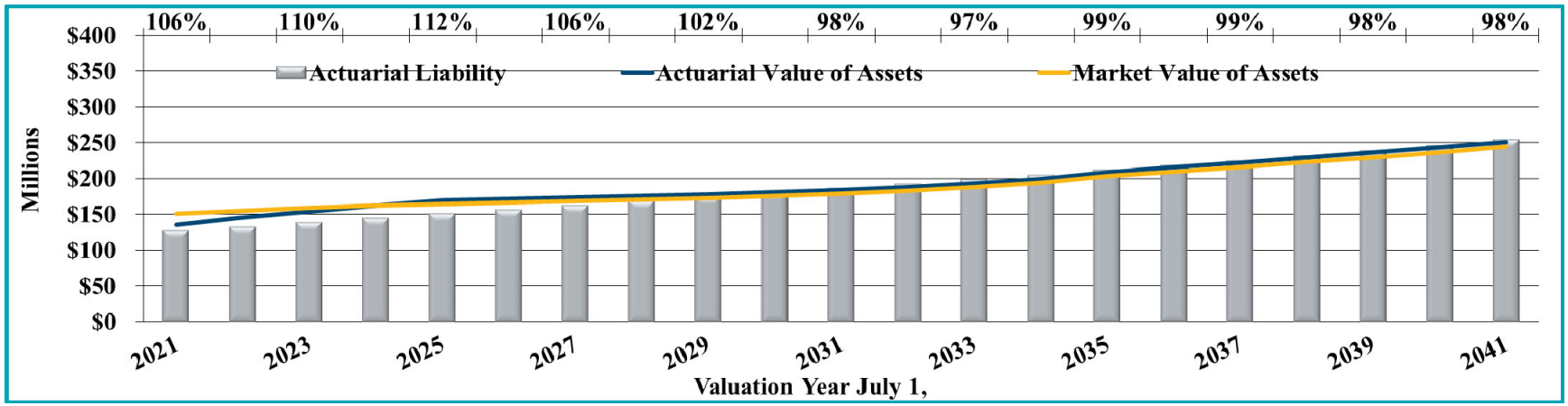


SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

Pessimistic returns of 5.50% per year

If the Plan earns 1.50% less than the assumed investment rate of return in each year of the projection, the ADC rate will increase in the final years of the 20-year closed period to about 26.2%, and the total dollar contribution increases to $9.6 million by FYE 2035. In FYE 2036, the initial 20-year closed layer UAL is fully paid off, and the entirety of the UAL rate shown is due to the immediate funding of asset losses in previous years. In addition, the funded ratio is projected to be 98% by the 2041 valuation. The funded ratio is close to the 100% reached in the baseline projection, but requires substantially higher contribution payments.





SECTION II – IDENTIFICATION AND ASSESSMENT OF RISK

The scenarios shown above represent deterministic projections. These types of projections show the financial impact on the Plan under a set of fixed returns. Alternatively, stochastic projections graph the probability of the key metrics such as funded status based on a large number of scenarios (e.g. 1,000) based on the expected long-term return and risk characteristics of the portfolio. Whereas we have not included a stochastic analysis in this report, we would be happy to share this analysis if requested.

More Detailed Assessment

A more detailed assessment is always valuable to enhance the understanding of the risks identified above. While more detail would provide some additional value, we do not believe it is necessary to perform an in-depth analysis every year. We recommend the Committee review the analysis provided above annually and consider a more detailed analysis periodically and when there is a substantial change in the financial position or maturity of the Plan.

SECTION III – ASSETS

Pension Plan assets play a key role in the financial operation of the Plan and in the decisions the County may make with respect to future deployment of those assets. The level of assets, the allocation of assets among asset classes, and the methodology used to measure assets will likely impact benefit levels, employer contributions, and the ultimate security of Participants' benefits.

In this section, we present detailed information on the Plan assets including:

- **Disclosure** of the Plan assets as of July 1, 2020 and July 1, 2021;
- Statement of the **changes** in market values during the year;
- Development of the **Actuarial Value of Assets**; and
- An assessment of **investment performance** to the investment return assumption.

Disclosure

There are two types of asset values disclosed in this valuation, the market value of assets and the actuarial value of assets. The market value represents a "snap-shot" or "cash-out" value which provides the principal basis for measuring financial performance from one year to the next. Market values, however, can fluctuate widely with corresponding swings in the marketplace. As a result, market values are usually not as suitable for long-range planning as are the actuarial value of assets which reflect smoothing of annual investment returns.

Table III-1 below discloses and compares each asset value as of June 30, 2020 and June 30, 2021.

Table III-1
Statement of Assets at Market Value as of June 30,

Assets	**2020**	**2021**	**% Change**
Cash	$ 1,702,634	$ 1,734,686	1.88%
U.S. Treasuries	9,318,893	10,284,245	10.36%
Government Agencies	711,905	1,272,754	78.78%
Corporate Obligations	8,753,446	31,646,545	261.53%
Mutual Funds	93,949,863	99,439,839	5.84%
Real Estate Investment Trusts	5,904,530	6,350,040	7.55%
Other Assets	169,271	169,694	0.25%
Total Assets	$ 120,510,542	$ 150,897,803	25.22%
Liabilities			
Accounts Payable	$ 51,307	$ 57,678	12.42%
Market Value of Assets	**$ 120,459,235**	**$ 150,840,125**	**25.22%**

SECTION III – ASSETS

Changes in Market Value

Table III-2 below shows the components of change between the market value of assets as of June 30, 2020 and June 30, 2021.

Table III-2
Changes in Market Values

Value of Assets -- June 30, 2020			**$**	**120,459,235**
Additions				
Payments from Members	$	251,807		
Employer Contributions		4,997,516		
Interest and Dividends		9,350,577		
Investment Return [Gain/(Loss)]		21,348,466		
Total Additions	**$**	**35,948,366**		
Deductions				
Investment Expenses	$	125,445		
Benefit Payments and Refunds		5,261,057		
Administrative Expenses		180,974		
Total Deductions	**$**	**5,567,476**		
Value of Assets -- June 30, 2021			**$**	**150,840,125**

SECTION III – ASSETS

Actuarial Value of Assets

The next table shows how the actuarial value of assets is developed. The actuarial value of assets represents a "smoothed" value developed by the actuary to reduce, or eliminate, erratic results which could develop from short-term fluctuations in the market value of assets.

The actuarial value of assets was set equal to the market value of assets as of June 30, 2015. Beginning with the plan year ending June 30, 2016, the actuarial value of assets is the current market value of assets, adjusted by a five-year smoothing of gains and losses on a market value basis. Additional details regarding this actuarial methodology are included in Appendix C of the report.

Table III-3
Development of Actuarial Value of Assets (AVA)

Market Value of Assets at June 30, 2020		$ 120,459,235
Employer Contributions		4,997,516
Employee Contributions		251,807
Benefit Payments and Refunds		(5,261,057)
Administrative Expenses		(180,974)
Expected Return at 7.00%		8,425,516
Expected Value at June 30, 2021		$ 128,692,043
Actual Value of Assets at June 30, 2021		150,840,125
Investment Gain/(Loss)		$ 22,148,082
	Total Gain/(Loss)	**Excluded Portion**
Exclude 20% of 2018 Gain/(Loss)	$ 706,417	$ 141,283
Exclude 40% of 2019 Gain/(Loss)	(459,648)	(183,859)
Exclude 60% of 2020 Gain/(Loss)	(4,203,506)	(2,522,104)
Exclude 80% of 2021 Gain/(Loss)	22,148,082	17,718,466
Total Excluded Gain/(Loss) for AVA Calculation		$ 15,153,786
Market Value of Assets at June 30, 2021		$ 150,840,125
Total Gain/(Loss) Excluded		15,153,786
Actuarial Value of Assets at June 30, 2021		$ 135,686,339

Investment Performance

The market value of assets gained 25.40% during the plan year ending June 30, 2021, which is higher than the assumed 7.00% return for the period ending June 30, 2021. A return of 10.34% was experienced on the actuarial value of assets, resulting in an actuarial gain for the year.

SECTION IV – LIABILITIES

In this section, we present detailed information on the Plan liabilities including:

- **Disclosure** of the Plan liabilities as of July 1, 2020 and July 1, 2021, and
- Statement of **changes** in these liabilities during the year.

Disclosure

Two types of liabilities are calculated and presented in this report. Each type is distinguished by the people ultimately using the figures and the purpose for which they are using them.

- **Present Value of Future Benefits:** Used for measuring all future Plan obligations, represents the amount of money needed today to fully fund all benefits of the Plan both earned as of the valuation date and those to be earned in the future by current Plan Participants, under the current Plan provisions.
- **Actuarial Liability:** Used for funding calculations, this liability is calculated as of the valuation date as the present value of benefits allocated to service prior to that date using the entry age normal funding method.

These liability amounts are not appropriate for measuring a settlement of the Plan's liabilities either by purchase of annuities or payment of lump sums.

SECTION IV – LIABILITIES

Table IV-1, which follows, discloses each of these liabilities for the current and prior valuations.

Table IV-1
Liabilities/Net (Surplus)/Unfunded

	July 1, 2020	July 1, 2021
Present Value of Future Benefits		
Actives	$ 84,320,761	$ 86,209,171
Terminated Vested	5,818,866	6,061,107
Retirees	51,679,059	55,473,270
Disabled	2,038,045	2,024,539
Beneficiaries	2,463,137	2,688,848
Present Value of Future Benefits (PVB)	**$ 146,319,868**	**$ 152,456,935**
Actuarial Liability		
Actives	$ 59,844,834	$ 61,572,354
Terminated Vested	5,818,866	6,061,107
Retirees	51,679,059	55,473,270
Disabled	2,038,045	2,024,539
Beneficiaries	2,463,137	2,688,848
Actuarial Liability (AL)	**$ 121,843,941**	**$ 127,820,118**
Actuarial Value of Assets (AVA)	$ 123,158,537	$ 135,686,339
Net (Surplus)/Unfunded (AL-AVA)	**$ (1,314,596)**	**$ (7,866,221)**

SECTION IV – LIABILITIES

Changes in Liabilities

Each of the Liabilities disclosed in the prior table are expected to change at each valuation. The components of that change, depending upon which liability is analyzed, can include:

- New hires since the last valuation
- Benefits accrued since the last valuation
- Plan amendments changing benefits
- Passage of time which adds interest to the prior liability
- Benefits paid to retirees since the last valuation
- Participants retiring, terminating, or dying at rates different than expected
- A change in actuarial or investment assumptions
- A change in the actuarial funding method

Unfunded liabilities will change because of all of the above, and also due to changes in Plan assets resulting from:

- Employer contributions different than expected
- Investment earnings different than expected
- A change in the method used to measure plan assets

In each valuation, we report on those elements of change which are of particular significance, potentially affecting the long-term financial outlook of the Plan. In the table that follows, we show the components of change in the actuarial liability between July 1, 2020 and July 1, 2021.

Table IV-2
Changes in Actuarial Liability

Liabilities as of July 1, 2020	$	121,843,941
Liabilities as of July 1, 2021	$	127,820,118
Liability Increase (Decrease)	$	5,976,177
Change Due to:		
Assumption Changes	$	0
Plan Changes		0
Experience (Gain)/Loss		(132,847)
Benefits Accumulated and Other Sources		6,109,024

SECTION V – CONTRIBUTIONS

In the process of evaluating the financial condition of any pension plan, the actuary analyzes the assets and liabilities to determine what level (if any) of contributions is needed to properly maintain the funding status of the Plan. Typically, the actuarial process will use a funding technique that will result in a pattern of contributions that are both stable and predictable.

Under the current funding policy, the employer funding requirement contains three components: the employer normal cost, an amortization of the unfunded actuarial liability (UAL), and a provision for anticipated administrative expenses.

For this Plan, the funding method employed is the **Entry Age Normal (EAN) Actuarial Funding Method**. Under this funding method, a normal cost rate is determined as a level percentage of pay for each active Participant. The normal cost rate multiplied by payroll equals the total normal cost for each Participant. The total anticipated member contributions for the year are then subtracted from the sum of the total normal cost to arrive at the employer normal cost. The difference between the Actuarial Liability and the Actuarial Value of Assets is the UAL. The UAL is amortized over a 20-year closed period that began July 1, 2015, using a level dollar amortization approach. Administrative expenses are assumed to be equal to last year's administrative expenses increased for inflation.

Table V-1 below presents and compares the employer contribution rates and contribution amounts for the Plan for this valuation and the prior one.

Table V-1
Employer Contributions

	Fiscal Year 2021	Fiscal Year 2022
Total Entry Age Normal Cost	$ 2,824,325	$ 2,889,714
Expected Employee Contributions	(245,625)	(287,145)
Employer (Net) Normal Cost	$ 2,578,700	$ 2,602,569
UAL Amortization Payment*	$ 0	$ (840,619)
Administrative Expenses	141,686	185,498
Actuarially Determined Contribution**	$ 2,720,386	$ 1,947,448
Valuation Payroll	$ 25,943,699	$ 26,440,763
Actuarially Determined Contribution as a Percentage of Payroll	10.49%	7.37%

* Payment based on amortization of UAL (not less than $0 in 2021).

** Contributions are payable at the beginning of the fiscal year.

SECTION V – CONTRIBUTIONS

Table V-2 shows the detailed calculation of the current year UAL amortization for the County.

Table V-2
Amortization Schedule as of July 1, 2021

	UAL Amount	Remaining Period	Amount (BOY)
UAL Amortization Payment	$ (7,866,221)	14.00	$ (840,619)

APPENDIX A – MEMBERSHIP INFORMATION

The data for this valuation was provided by the County. Cheiron did not audit any of the data, but we did perform an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23. The data for the active and inactive members is as of July 1, 2021.

The following pages contain a summary of the data provided:

- Reconciliation of active, terminated vested, and in pay members as of July 1, 2021
- Age/service distribution for active members as of July 1, 2021
- Counts and average benefit amount by age for retirees, disabled, beneficiaries, and terminated vested members as of July 1, 2021

APPENDIX A – MEMBERSHIP INFORMATION

Participant Status Reconciliation

		Actives	Terminated Vested	Retired	Disabled	Beneficiaries	Total
1.	**July 1, 2020 valuation**	**506**	**104**	**232**	**12**	**41**	**895**
2.	Additions						
	a. New entrants	42					42
	b. Rehires						0
	c. New QDROs					1	1
	d. Total	42				1	43
3.	Reductions						
	a. Terminated - not vested	(25)					(25)
	b. Deaths without beneficiary			(2)		(3)	(5)
	c. Total	(25)		(2)		(3)	(30)
4.	Changes in status						
	a. Terminated Vested	(5)	5				0
	b. Retired	(14)	(5)	19			0
	c. Died with beneficiary	(1)		(6)		7	0
	d. Data corrections						0
	e. Total	(20)		13		7	0
5.	**July 1, 2021 valuation**	**503**	**104**	**243**	**12**	**46**	**908**

APPENDIX A – MEMBERSHIP INFORMATION

Age/Service Distribution of Active Members
Active Members as of July 1, 2021

	Completed Years of Credited Service										
Age	Under 1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Up	Total
Under 25	9	5	0	0	0	0	0	0	0	0	14
25-29	7	36	4	0	0	0	0	0	0	0	47
30-34	1	20	19	3	0	0	0	0	0	0	43
35-39	6	21	16	9	18	0	0	0	0	0	70
40-44	3	11	6	7	11	9	0	0	0	0	47
45-49	2	10	9	6	18	7	7	0	0	0	59
50-54	6	12	4	8	12	11	11	6	1	0	71
55-59	5	13	11	10	16	12	11	5	0	1	84
60-64	2	6	3	12	7	2	6	0	1	2	41
65-69	0	5	5	4	4	1	0	0	0	0	19
70 & Up	1	0	1	2	2	0	0	0	2	0	8
Total	**42**	**139**	**78**	**61**	**88**	**42**	**35**	**11**	**4**	**3**	**503**

Average Age = 46.6 Average Service = 11.6

APPENDIX A – MEMBERSHIP INFORMATION

Schedule of Benefit Recipients by Age and Status
Pensioners and Beneficiaries Receiving Benefits as of July 1, 2021

Age	Retirees		Disabled		Beneficiaries		Total	
	Number	Annual Benefit	Number	Annual Benefit	Number	Annual Benefit	Number	Annual Benefit
Under 55	8	$ 309,749	4	$ 42,200	5	$ 21,201	17	$ 373,150
55-59	8	251,829	0	0	5	18,330	13	270,159
60-64	33	733,639	1	18,710	5	47,223	39	799,572
65-69	74	1,696,698	4	69,465	9	71,805	87	1,837,968
70-74	61	1,132,544	2	27,478	5	26,799	68	1,186,821
75-79	29	484,504	1	10,372	6	30,377	36	525,253
80-84	18	243,125	0	0	3	29,675	21	272,800
85 & Up	12	107,512	0	0	8	44,408	20	151,920
Total	**243**	**$ 4,959,600**	**12**	**$ 168,225**	**46**	**$ 289,818**	**301**	**$ 5,417,643**

APPENDIX A – MEMBERSHIP INFORMATION

Schedule of Deferred Benefit Recipients by Age
Participants Entitled to Future Benefits as of July 1, 2021

Age	Terminated Vested Number		Terminated Vested Annual Benefit
Under 35	5	$	38,566
35-39	9		84,968
40-44	15		126,165
45-49	17		198,548
50-54	29		241,972
55-59	23		224,775
60 & Up	6		40,421
Total	**104**	**$**	**955,415**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

A. Actuarial Assumptions

1. Mortality Rates:

RP-2014 Total (Employee and Healthy Annuitant) Mortality Table projected generationally using Scale MP-2018.

2. Termination Rates:

Service	Termination Rates (%)
0	10.0
1	9.0
2	8.0
3	7.0
4	12.0
5-9	3.0
10	10.0
11-14	5.0
15-24	1.0
25-29	0.5
30+	0.0

3. Retirement Rates:

The following retirement rates have been used for Non-Elected and Elected Officials.

Age	< 30 Years of Service (%)	30+ Years of Service (%)
<55	0	15
56-59	0	8
60	20	8
61	20	40
62	20	30
63	25	30
64	10	10
65	25	50
66-67	10	10
68	15	10
69	15	100
70+	100	100

The following retirement rates have been used for Paramedics and Dispatchers.

Age	< 25 Years of Service (%)	25-29 Years of Service (%)	30+ Years of Service (%)
<55	0	30	100
55-59	0	50	100
60-64	50	50	100
65+	100	100	100

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

4. Disability Rates:

None.

5. Retirement Age for Inactive Vested Participants

Age 62.

6. Percent Married

65% of the population is assumed to be married.

7. Age of Spouse

Females (or males) are three years younger (or older) than their spouses.

8. Net Investment Return

7.00%.

9. Salary Increases

Service	Salary Increase (%)
0 – 4	5.00
5 – 9	4.50
10 – 24	4.00
25+	3.50

10. Inflation Rate

2.5% per year.

11. Cost-of-Living Adjustment

1.00% per year.

12. Plan Administrative Expenses

All administrative expenses are paid from the fund. An amount is added to the actuarially determined contribution equal to the prior year's administrative expenses increased by the assumed inflation rate.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

13. Modeling

Cheiron utilizes ProVal, an actuarial valuation software leased from Winklevoss Technologies for the intended purpose of calculating liabilities and projected benefit payments. We have examined the reasonableness of the input data and assumptions, reviewed sample calculations for accuracy, reconciled the actuarial gain loss, and find the aggregate results reasonable and appropriate. We are not aware of any material inconsistencies, unreasonable output resulting from the aggregation of assumptions, material limitations or known weaknesses that would affect this actuarial valuation.

The deterministic projections are based on our propriety model P-Scan developed by our firm that utilize the results shown in this valuation report. The projections assume continuation of the plan provisions and actuarial assumptions in effect as of the valuation date and do not reflect the impact of any changes in benefits or actuarial assumptions that may be adopted after the valuation date. While the assumptions individually are reasonable for the underlying valuation that supports the projections, specifically for projection purposes, they are also considered reasonable in the aggregate.

14. Changes in Actuarial Assumptions since Last Valuation

None.

15. Rationale for Assumptions

The actuarial assumptions were adopted by the County in February 2019 based on recommendations from Cheiron following an experience study performed for the period July 1, 2015 through June 30, 2018.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

B. Actuarial Methods

1. Actuarial Value of Assets

Effective June 30, 2015, the actuarial value of assets was set to equal the market value of assets. The deferral of investment gains and losses only applies after June 30, 2015.

The actuarial value of assets has been calculated by taking the market value of assets less 80% of the investment gain (loss) during the preceding year, less 60% of the investment gain (loss) during the second preceding year, less 40% of the investment gain (loss) during the third preceding year, and less 20% of the investment gain (loss) in the fourth preceding year.

The investment gain (loss) is calculated by taking the difference between the expected market value of assets based on an expected return of 7.50% for periods prior to July 1, 2017, 7.25% for periods from July 1, 2017 to June 30, 2019, and 7.00% for periods on or after July 1, 2019, and the actual market value of assets.

2. Actuarial Funding Method

The funding method for the valuation of liabilities used for this valuation is the Entry Age Normal (EAN) method. Under this funding method, a normal cost rate is determined as a level percentage of pay for each active Participant. The normal cost rate multiplied by payroll equals the total normal cost for each Participant. The normal cost contributions (Employer and Participant) will pay for projected benefits at retirement for each active Participant.

The actuarial liability is the difference between the present value of future benefits and the present value of future normal costs. The difference between this actuarial liability and the actuarial value of assets is the unfunded actuarial liability (UAL).

The difference between the actuarial liability and the Plan assets is amortized to develop an additional cost/(savings) that is added to each year's employer normal cost. Under this funding method, actuarial gains and losses are directly reflected in the size of the unfunded actuarial liability. The amortization method is described below.

3. Amortization Method

The total unfunded actuarial liability/(surplus) of the Plan is amortized over a 20-year closed period that began July 1, 2015, using a level dollar amortization approach.

4. Changes in Actuarial Methods since Last Valuation

The amortization method was changed to allow the amortization payment to be negative when there is a negative unfunded actuarial liability.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

1. Effective Date

June 10, 1975. Last amended effective January 1, 2021.

2. Plan Year

July 1 through June 30.

3. Eligibility

All employees who receive a regular salary from Sussex County are covered from date of hire. Elected officials are also eligible.

4. Continuous Employment

Service without interruption, except allowable interruptions such as short term disability, approved leaves of absence, U.S. military service, involuntary severance not due to the employee's fault, or voluntary severance up to one year.

5. Years of Service for Benefit Accrual

Continuous Service plus leave time in U.S. military service up to four years. If hired prior to September 1, 1998, other State of Delaware service counts towards benefit accrual (but not vesting), but the retirement benefits from this Plan shall be reduced by any amount received from any other State or County Plan. One additional Year of Service for Benefit Accrual is credited to a Participant with two or more years of U.S. military service.

6. Average Monthly Earnings

The wages of the highest paid three years of Sussex County service divided by 36. For Dispatchers and Paramedics, wages for each year shall be computed by multiplying the employee's highest hourly rate for the year by 42 hours and then multiplying the product thereof by 52 weeks.

7. Retirement

Non-Elected and Elected Officials

Eligibility: Non-Elected - Age 62 with 8 Years of Service, 30 Years of Service, or Age 60 with 15 Years of Service

Elected Officials – Age 60 with 5 Years of Service or Age 55 with 10 Years of Service

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Monthly Amount: 1.6667% of Average Monthly Earnings multiplied by Years of Service.

For employees hired after July 1, 2000 and who retire before January 1, 2017, Years of Service for this purpose shall not exceed 30 years.

For employees hired after July 1, 2000 and who retire after December 31, 2016, Years of Service for this purpose shall not exceed 35 years.

Dispatchers and Paramedics

Eligibility: Age 62 with 8 Years of Service, 25 Years of Service, or Age 60 with 15 Years of Service

Monthly Amount: 2.0% of Average Monthly Earnings multiplied by Years of Service.

For employees hired after July 1, 2000 and who retire before January 1, 2017, Years of Service for this purpose shall not exceed 25 years.

For employees hired after July 1, 2000 and who retire after December 31, 2016, Years of Service for this purpose shall not exceed 30 years.

8. Disability Retirement

None, effective January 1, 2012.

9. Terminated Vested Pension

Eligibility: 8 Years of Service

Monthly Amount: Same as Retirement benefit. Benefit commences at age 62.

10. Refund of Contributions

Eligibility: Not eligible for Retirement or Terminated Vested Pension

Amount: 100% of accumulated contributions with 2% interest if hired on or after January 1, 2014.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

11. Pre- and Post-Retirement Death Benefit

Eligibility: 8 Years of Service

Monthly Amount: 50% of the Retirement benefit payable immediately to Eligible Survivor upon death of the Participant.

12. Participant Contributions

Employees hired on or after January 1, 2014 and before January 1, 2021 contribute 3.0% of annual base compensation in excess of $6,000.

Employees hired on or after January 1, 2021 contribute 5.0% of annual base compensation in excess of $6,000.

13. Eligible Survivor

The surviving spouse who had been married for at least one year, or if none, any minor child(ren), or if none, any surviving dependent parent(s).

14. Normal Form of Payment

Life Annuity with 50% continuance payable to Eligible Survivor upon death of participant.

15. Cost-of-Living Adjustment (COLA)

Reconsidered annually by the County Council and adopted when considered necessary.

16. Changes since Last Valuation

Employee contributions increased from 3% to 5% of annual base compensation in excess of $6,000 if hired on or after January 1, 2021. There was no increase in the actuarial liability as of July 1, 2021 since those participants impacted were all recent hires.

APPENDIX D – GLOSSARY OF TERMS

1. Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disability, and retirement; changes in compensation; inflation; rates of investment earnings, and asset appreciation or depreciation; and other relevant items.

2. Actuarial Cost Method

A procedure for determining the Actuarial Present Value of pension plan benefits and expenses and for developing an allocation of such value to each year of service, usually in the form of a Normal Cost and an Actuarial Liability.

3. Actuarial 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 Valuation dates, as determined in accordance with a particular Actuarial Cost Method.

4. Actuarial Liability

The portion of the Actuarial Present Value of Projected Benefits which will not be paid by future Normal Costs. It represents the value of the past Normal Costs with interest to the valuation date.

5. Actuarial Present Value (Present Value)

The value as of a given date of a future amount or series of payments. The Actuarial Present Value discounts the payments to the given date at the assumed investment return and includes the probability of the payment being made. As a simple example: assume you owe $100 to a friend one year from now. Also, assume there is a 1% probability of your friend dying over the next year, in which case you won't be obligated to pay him. If the assumed investment return is 10%, the actuarial present value is:

Amount		Probability of Payment		1/(1+Investment Return)		
$100	x	(1 - .01)	x	1/(1+.1)	=	$90

6. Actuarial Valuation

The determination, as of a specified date, of the Normal Cost, Actuarial Liability, Actuarial Value of Assets, and related Actuarial Present Values for a pension plan.

APPENDIX D – GLOSSARY OF TERMS

7. Actuarial Value of Assets

The value of cash, investments and other property belonging to a pension plan as used by the actuary for the purpose of an Actuarial Valuation. The purpose of an Actuarial Value of Assets is to smooth out fluctuations in market values. This way long-term costs are not distorted by short-term fluctuations in the market.

8. Actuarially Equivalent

Of equal Actuarial Present Value, determined as of a given date with each value based on the same set of Actuarial Assumptions.

9. Amortization Payment

The portion of the pension plan contribution which is designed to pay interest and principal on the Unfunded Actuarial Liability in order to pay for that liability in a given number of years.

10. Entry Age Normal Actuarial Cost Method

A method under which the Actuarial Present Value of the Projected Benefits of each individual included in an Actuarial Valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages.

11. Funded Percentage

The ratio of the Actuarial Value of Assets to the Actuarial Liabilities.

12. Investment Return Assumption

The assumed interest rate used for projecting dollar related values in the future.

13. Mortality Table

A set of percentages which estimate the probability of death at a particular point in time. Typically, the rates are annual and based on age and sex.

14. Normal Cost

That portion of the Actuarial Present Value of pension plan benefits and expenses, which is allocated to a valuation year by the Actuarial Cost Method.

APPENDIX D – GLOSSARY OF TERMS

15. Projected Benefits

Those pension plan benefit amounts which are expected to be paid in the future under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and increases in future compensation and service credits.

16. Unfunded Actuarial Liability

The excess of the Actuarial Liability over the Actuarial Value of Assets.