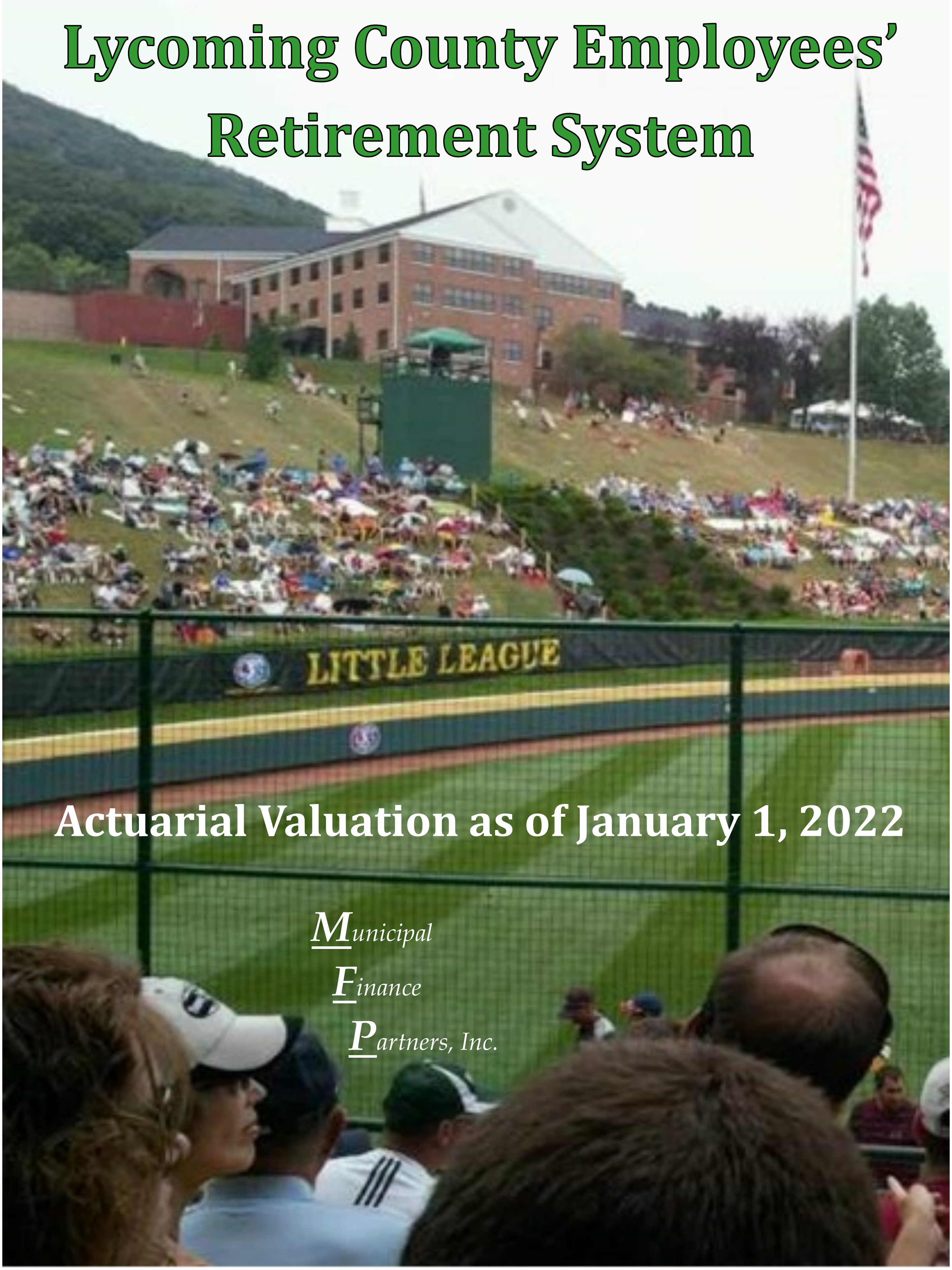
Lycoming County Employees' Retirement System



Actuarial Valuation as of January 1, 2022

Municipal
Finance
Partners, Inc.

Lycoming County Employees' Retirement System

Actuarial Valuation for Funding Purposes as of January 1, 2022

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Executive Summary

This report was prepared to determine the plan's Actuarially Determined Employer Contribution (ADEC). The ADEC is the amount recommended to be contributed each year towards the goal of funding each plan member's benefits during his working career. The plan's financial disclosures under GASB Statements 67 and 68 are contained in a separate report.

The Primary Objective of Pension Funding

Defined benefit pension plans, such as the Lycoming County Employees' Retirement System are a promise to provide future income to plan members. These benefits are based upon the service, compensation and member contributions during a member's career.

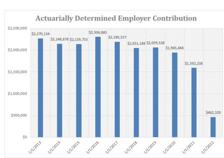
In order to fulfill that promise, the County must raise the revenue to make contributions to the pension plan to fund the benefits to which members are entitled.

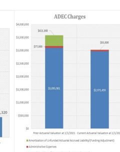
The principal of *intergenerational equity* can be defined here as the obligation to fund plan members' future retirement benefits during their working career. In government plans, this can be expressed as a goal of having the pensions for the government entity's employees funded by current taxpayers and not by future generations of taxpayers.

In order to meet this goal, retirement plans have actuarial valuations performed periodically to determine the annual contributions required to fund plan benefits during employees' working careers. An actuarial valuation projects future benefits and determines funding levels based on a set of actuarial assumptions and methods.

Pages 5-7 of this report show the development of the plan's Actuarially Determined Employer Contribution, or ADEC for 2022. The ADEC has decreased sharply, from $1,592,238 for 2021 to $462,320 for 2022 as the plan has fully funded it's actuarial accrued liability, aided by actuarial gains experienced during 2021. The County contributed $1,698,647 towards the 2021 ADEC.

The first chart below shows the history of the ADEC over recent years. The next charts show the impact of the actuarial gains on the ADEC.





Changes in Contributions

The actuarial valuation is basically a snapshot that compares plan assets and liabilities as of the valuation date. We can track changes in the ADEC to changes in the following items, which will be discussed below:

1. Plan assets and investment performance
2. Demographic (i.e., membership) experience
3. Plan benefits
4. Actuarial assumptions and methods

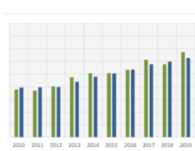
Asset and Investment Performance

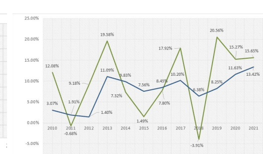
These charts show the pension fund's market and actuarial values over the last several years and the investment returns over that period.

The pension fund earned 15.65% in 2021 on a market value basis. The fund's market value increased from $150,661,400 at December 31, 2020 to $167,927,615 at December 31, 2021.

The actuarial value of assets, by comparison, is $147,627,822 at January 1, 2022 as most of the 2019-2021 investment gains are being deferred to future years. On an actuarial basis, the fund earned 13.42% in 2021, compared to the 7.0% investment return assumption. The actuarial value of assts recognize a gain of $8,528,636, or 5.8% of assets, compared to its expected returns.

Details on the pension fund investments and activity can be found in pages 8 and 9 of this report. The charts below show the history of asset values and asset returns.





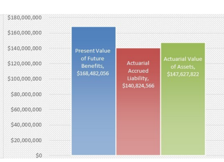
Demographic Experience

The plan's liabilities are determined based on the actuarial values of expected plan benefit payments. As such, the information regarding the plan members (i.e., the *plan demographics)* is a vital component to the actuarial valuation. When demographic information changes in unexpected ways (such as salary increases that are greater or less than expected, or unexpected numbers of terminations or retirements occur), the liabilities will diverge from what is expected. These fluctuations are recognized as actuarial gains and losses which, when amortized, become part the ADEC.

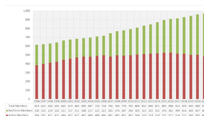
For this actuarial valuation, the plan experienced an actuarial gain of $8,694,507, the net of investment gains of $8,528,636, experience losses of $342,276 and a funding deviation of $508,147. The experience losses are the net result of losses from retiree elections and more active retirements and terminations than expected, nearly all of which were offset by gains due to salary increases that were less than expected and more retiree deaths than expected.

The funding deviation is the sum of voluntary member contributions, which also increase the plan's liabilities, and the County Contribution that was over $100,000 greater than the ADEC.

The first chart below shows the makeup of the actuarial present value of all plan benefits as of the valuation date. The second chart is the *actuarial balance sheet*, that shows that the current plan assets are greater than the actuarial accrued liability (i.e., past normal costs) under the *Entry Age Normal Actuarial Cost Method* but less than the actuarial present value of all future plan benefits.



This chart below shows that total plan membership continued to increased despite a decrease in the number of active members. The changes in plan membership during 2021 are detailed on page 10.



Plan Benefit Provisions

The provisions of the plan as of the valuation date are based on the plan document and the provisions of Act 96 of 1971, the County Pension Law, as well as what benefits are allowed under state and federal law.

As required under Act 96, the plan provides a *County Annuity*, based on the members' salary history and service with the County, plus a *Member Annuity* based on the members' contributions with interest at retirement. Active members currently are required to contribute 8% of their plan compensation to the plan and may contribute up to an additional 10% of compensation on a voluntary, after-tax basis. Other benefits are payable upon a member's death, disability or termination of employment prior to retirement.

The actuarial valuation reflects a cost-of-living increase granted to eligible pensioners, effective January 1, 2022.

There have been no other changes in plan benefits since the prior actuarial valuation.

The plan's provisions are described in detail on pages 11-13 of this report.

Actuarial Assumptions and Methods

Once we have established the plan provisions and determined the benefits that each member would be entitled to at his retirement, termination, etc., we can project plan benefit distributions for future years, based upon a set of actuarial assumptions. Actuarial assumptions are used to project potential future events, such as salary increases, retirements, terminations and deaths. The valuation interest rate is used to discount future expected liabilities to the valuation date.

Then, when we have calculated the actuarial liabilities at the valuation date, we use an *Actuarial Cost Method* to determine how those liabilities (net of current plan assets) will be funded in the future.

For this actuarial valuation, we are using the *Entry Age Normal Actuarial Cost Method* which determines a set of annual costs (the *Normal Cost*) to fund the member's pension from his plan entry date to his expected retirement date. These normal costs are equal as a percentage of expected payroll; i.e., they increase each year at the rate of assumed increase in salary.

Under the Entry Age method, the actuarial value of past normal costs at the valuation date, called the *actuarial accrued liability*, is compared to the plan assets and any shortfall is amortized over future years. The Actuarially Determined Employer Contribution is calculated as the sum of each year's normal costs, plus expected administrative expenses and the amortization payment, less any expected member contributions and any funding adjustment when assets exceed liabilities.

The method used to determine the actuarial value of assets is also a part of the plan's funding method. This valuation uses a method that recognizes market value gains and losses over a five-year period.

There have been no changes in the actuarial assumptions or methods for this actuarial valuation. A full description of the actuarial assumptions and methods can be found on pages 14 and 15.

Funded Status

A plan's funded status can be measured in a number of ways, such as:

- The level of contributions required to actuarially fund promised plan benefits, as discussed above, or.
- Comparing plan assets to plan liabilities (i.e., the funding percentage).

The plan's funding percentage increased from 99.5% at January 1 2021 to 104.8% at January 1, 2022 primarily due to actuarial gains. On a market value of assets basis, the funding percentage is 119.2%. The actuarial accrued liability is fully funded, based on the market and actuarial values of assets.

The recent history of the funded percentage is shown in this chart.

A Discussion of Risk

The projections that make up an actuarial valuation are expected values which, are based on the average, or mean, of the distribution of potential results. Actual results will vary over time.

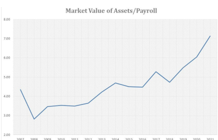
These variances, or deviations from the mean, represent the potential risks (and rewards) inherent in the operation of a pension plan.

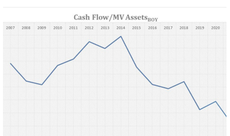
Below are five basic types of risk that are characteristic to pension plans and how we work to manage them:

- *Investment Risk* is the potential that investment returns will differ from expectations and is the largest risk a plan faces. We moderate this risk by using actuarial asset smoothing and amortizing gains and losses over future years.
- *Asset/Liability Match Risk* is the potential that changes in assets and liabilities do not match. As financial instruments, pension liabilities behave like bonds; their market value rising and falling as interest rates fall and rise. Equity investments achieve larger returns as a risk premium. This risk could be defeased by investing solely in fixed income investments that match the duration of the liabilities, but at the cost of dramatically lower fund returns, leading to significantly higher contributions.
- *Interest Rate Risk* works in two ways: Higher yields will benefit new investments in bonds, while decreasing the value of bonds currently held. It is important to understand the cause of the change; for example, if interest rates rise due to inflationary pressures, the plan's equity investments will generally rise, offsetting the drop in fixed income investments.
- *Longevity and Demographic Risk* is the potential for losses (and gains) on the liability side of the pension balance sheet when plan member experience differs from the demographic assumptions used to predict it. This risk can be mitigated by updating mortality assumptions as new tables are released, reviewing the impact of deviations from expectations and changing assumptions when these reviews and/or experience studies indicate.
- *Contribution Risk* is the potential that contributions will deviate from actuarial requirements or recommendations. For plans not governed by a statutory contribution requirement, such as Pennsylvania County and State plans, this is what we call a *moral hazard*.

There are many ways we can measure risk, and one of them is to measure the maturity of the plan members. As a plan's membership retires or gets close to retirement, plan asset levels must grow to fund their benefits, increasing investment risk. In addition, net cash flow (contributions less benefit payments and expenses) decrease and can go negative, increasing the importance of investment returns in supporting the fund.

The charts below show the changes in these maturity measures over recent years.





Following the actuarial certification below and the ADEC determination, the remainder of the report contains a summary of the 2021 pension fund activity, plan investments at year-end, a summary of plan membership activity, a summary of the substantive plan provisions, a description of the actuarial assumptions and methods used to determine the plan funding requirements and the allocation of Plan Reserves.

Actuarial Certification

The calculations within this report have been prepared for the purpose of determining the plan's funding requirements on an ongoing plan basis.

Determinations for purposes other than meeting the plan determining the plan's funding requirements may differ significantly from the results in this report. Additional determinations are needed for other purposes, such as the County's financial statements or gauging benefit security upon plan termination.

The actuarial valuation is a projection of liabilities based on the plan provisions, financial information, participant data and actuarial assumptions and methods as described within the report. The actuarial valuation is not an exact statement of the Plan's ultimate benefits and liabilities.

The actuarial valuation is based on actuarial assumptions as to future economic and demographic experience. Future results may differ significantly from the results of the actuarial valuation. Analysis of the sensitivity of the valuation results to future experience was beyond the scope of this assignment.

To the best of my knowledge, this report is complete and accurate, based upon the data furnished to us. The financial data regarding the pension fund was provided by Lycoming County and Wilmington Trust Corporation. The participant and beneficiary data was provided by Lycoming County.

The participant census and plan asset information used to prepare the January 1, 2022 actuarial valuation were as of January 1, 2022.

The actuarial assumptions and methods used to prepare the actuarial valuation were arrived at by consensus among the members of the County Retirement Board and the actuary. I certify that all costs and liabilities herein have been determined on the basis of actuarial assumptions and methods (described on pages 14 and 15), each of which is reasonable and which, in combination, offer my best estimate of anticipated experience under the plan, taking into account the plan's past experience and reasonable expectations of future events.

I, Charles B. Friedlander, am President & Chief Actuary for Municipal Finance Partners, Inc. I am a Member of the American Academy of Actuaries, a Fellow of the Society of Actuaries, a Fellow of the Conference of Consulting Actuaries and an Enrolled Actuary under ERISA, and I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

I am available to discuss this report and can be contacted at:

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Charles B Friedlander

Charles B. Friedlander, F.S.A.
President & Chief Actuary
Enrolled Actuary No. 20-04194

November 4, 2022
Date

Determination of the Actuarially Determined Employer Contribution (ADEC)

These pages contains the development of the plan's Actuarially Determined Employer Contribution (ADEC) for the current plan year.

The table below shows the development of the plan's Normal Cost, Unfunded Actuarial Accrued Liability and Actuarially Determined Employer Contribution (ADEC) under the Entry Age Normal Actuarial Cost Method.

Normal Cost		
Retirement Benefits	$2,283,961	
Death Benefits	66,164	
Withdrawal Benefits	621,334	
Total Normal Cost		$2,971,459

Present Value of Future Benefits		
Active Members		
Retirement Benefits	$67,157,394	
Death Benefits	1,751,717	
Withdrawal Benefits	7,085,573	
Total Active Members		$75,994,684
Vested Former Members		5,887,168
Retired Members		86,600,204
Total Present Value of Future Benefits		$168,482,056
Present Value of Future Normal Costs		(27,657,490)
Actuarial Accrued Liability		$140,824,566
Actuarial Value of Assets		(147,627,822)
Unfunded Actuarial Accrued Liability		($6,803,256)

Actuarially Determined Employer Contribution (ADEC)	
Normal Cost	$2,971,459
Administrative Expenses	55,000
Amortization of Unfunded Actuarial Accrued Liability/(Funding Adjustment)	(680,326)
Expected Member Contributions	(1,883,813)
Actuarially Determined Employer Contribution (ADEC) (not less than $0)	$462,320

The table below shows changes in the plan's unfunded actuarial accrued liability since the prior actuarial valuation.

Unfunded Actuarial Accrued Liability at 1/1/2021		$742,288
Normal Cost	$3,095,901	
Administrative Expense	54,592	
Interest on Above Items	270,551	
Total		3,421,044
Employer Contributions	($1,698,647)	
Member Contributions	(2,481,280)	
Interest on Contributions	(139,610)	
Total		(4,319,537)
Adjustment for Funding Deviation		508,147
Modification to Actuarial Assumptions		0
Modification to Active Member Benefits		0
Modification to Retired Member Benefits		1,539,309
Actuarial (Gain) or Loss		
Investment (Gain) or Loss	($8,528,636)	
Experience (Gain) or Loss	342,276	
Adjustment for Funding Deviation	(508,147)	
Total		(8,694,507)
Unfunded Actuarial Accrued Liability at 1/1/2022		($6,803,256)

The valuation uses an asset smoothing method to even out the year-to-year fluctuations in the investment markets. Under the method being used for this valuation, the investment gains or losses (i.e., actual vs. expected performance) are recognized over a five-year period. The actuarial value of assets determined under this method is limited to 20% above or below the market value of assets.

	2018	2019	2020	2021
Market Value at January 1	$122,665,342	$115,130,876	$134,591,490	$150,661,400
Contributions	4,325,116	3,714,274	4,728,551	4,179,927
Benefit Payments and Expenses	(7,126,033)	(7,593,803)	(8,838,612)	(10,049,638)
Expected Investment Income	8,488,542	7,923,378	9,277,552	10,340,858
Expected Value at 12/31	$128,352,967	$119,174,725	$139,758,981	$155,132,547
Market Value at 12/31	$115,130,876	$134,591,490	$150,661,400	$167,927,615
Gain or (Loss)[1]	($13,222,091)	$15,416,765	$10,902,419	$12,795,068
Recognition Percentage Deferred	20%	40%	60%	80%
Gain or (Loss) to be Recognized in Future Years	($2,644,418)	$6,166,706	$6,541,451	$10,236,054

Market Value of Assets at 12/31/2021	$167,927,615
Total (Gain) or Loss to be Recognized in Future Years	(20,299,793)
Actuarial Value of Assets at 1/1/2022	$147,627,822 [2]
Investment Return on Actuarial Value of Assets	13.42%

[1] Market Value less Expected Value

[2] Limited to between 80% and 120% of Market Value

Pension Fund and Member Information

The table below shows the pension fund activity for 2021. The following pages show how the pension fund was invested at December 31, 2021 and plan membership activity during 2021.

Market Value of Assets as of 1/1/2021				$150,661,399.85
Employer Contributions			$1,698,647.00	
Service Purchases			32,525.10	
Member Contributions			2,448,754.99	
Interest Income				
Interest Received	$226,553.46			
Accrued Income at 1/1/2021	(48,030.22)			
Accrued Income at 12/31/2021	46,444.14			
Total Interest Income		$224,967.38		
Dividends				
Dividends Received	$1,542,110.42			
Dividends Receivable at 1/1/2021	(32,453.32)			
Dividends Receivable at 12/31/2021	38,472.66			
Total Dividends		1,548,129.76		
Gains and (Losses) on Investments				
Realized Gain or (Loss)	$9,230,671.99			
Unrealized Gain or (Loss)	12,795,684.81			
Net Gains and (Losses) on Investments		22,026,356.80		
Investment Expenses		(663,526.90)		
Net Investment Income			23,135,927.04	
Total Receipts				27,315,854.13
Monthly Benefit Payments			($8,125,030.75)	
Refund of Member Contributions			(1,870,016.03)	
Lump Sum Death Benefits			0.00	
Administrative Expenses			(54,592.00)	
Total Disbursements				(10,049,638.78)
Market Value of Assets at 12/31/2021				$167,927,615.20
Investment Return Percentage				15.65%

The table below shows how the pension fund was invested as of December 31, 2021.

Cash and Short Term Investments	$7,460,310.66	
U.S. Treasury/Government	5,140,888.16	
Corporate Bonds	4,946,657.62	
Common Stocks	26,584,751.68	
Equity Funds	53,130,885.47	
International Equity Funds	6,830,071.47	
Real Estate Funds	15,801,809.32	
Private Equity Funds	48,033,022.57	
Total Assets in Fund		$167,928,396.95
Prepaid Benefits		244.05
Employer Contributions Receivable		0.00
Accrued Income		84,916.80
Total Assets		$168,013,557.80
Benefits Payable	($37,103.07)	
Administrative Expenses Payable	(16,531.99)	
Cash Due to Brokers	(32,307.54)	
Total Liabilities		(85,942.60)
Net Assets Held in Trust for Pension Benefits		$167,927,615.20

The changes in the plan membership during 2021 are shown below.

Active Members

Active Members as of 1/1/2021		503
New Members		95
Returned to Active		1
Members No Longer Active:		
Deceased	0	
Retired	(29)	
Terminated with Full Vesting	(16)	
Terminated without Vesting	(68)	
Total		(113)
Active Members as of 1/1/2022		486

Terminated Members

Terminated Former Members as of 1/1/2021	61
Terminated with a Vested Pension	16
Terminated without Vesting	68
Returned to Active	0
Retired	(2)
Correction	0
Paid Refund of Member Contributions--vested, forfeited County annuity	(6)
Paid Refund of Member Contributions--nonvested	(70)
Terminated Former Members as of 1/1/2022	67

Retired Members

Retired Members as of 1/1/2021	396
New Retirees	31
Spouse Beneficiaries of Deceased Retirees	5
Deceased Retirees	(15)
Returned to Active	0
Retired Members as of 1/1/2022	417

Summary of Plan Provisions

The following is a summary of the provisions of the pension plan document; actual benefits are determined by the plan document and Act 96 of 1971, the County Pension Law.

Membership

An employee enters the plan on the day he becomes a full-time employee of the County.

Normal Retirement Benefit

In a defined benefit pension plan, the normal retirement benefit is the basis of all plan benefits. The normal retirement benefit is the sum of two pieces: the member annuity, which is based on the member's accumulated deductions; and the county annuity, which is calculated based on the member's compensation and service. The pension that a member earns under the benefit formula is payable monthly beginning on his normal retirement date and continuing for the remainder of his lifetime. At the member's death, any excess of the member's accumulated deductions at retirement over the total benefit payments received will be refunded to the member's beneficiary(ies). This is the Normal Form of Payment under the plan. Additional payment options, as described below, will be available at retirement.

A member's Normal Retirement Date is the first day of the month after a member turns age 55 and completes 20 years of service, or age 60, if earlier.

The member's Normal Retirement Benefit is the sum of the County Annuity plus the Member Annuity.

The County Annuity portion of the member's Normal Retirement Benefit is calculated as percentage of the member's average compensation multiplied by the member's years of service. The percentage is generally determined by the year of employment according to the table below; however, some members have elected to join a higher class by making contributions at the higher level.

Class	Percentage	Effective Date
1/100	1.000%	1/1/1950
1/80	1.250%	1/1/1968
1/70	1.429%	1/1/1983

Average compensation is calculated as the average of total compensation over the 3 year period that produces the highest average.

Compensation consists of total earnings, including pick-up contributions and excluding refunds for expenses, contingency and accountable expense allowances, severance payments and payments for unused sick or vacation leave.

The Member Annuity portion of the member's Normal Retirement Benefit is calculated as the amount of monthly pension that can be purchased by the member's accumulated deductions. The conversion of the accumulated deduction to a monthly annuity is based upon factors contained in the Summary Plan Description.

Accrued Pension

A member's earned or accrued pension prior to his normal retirement date is equal to the County Annuity calculated under the normal retirement benefit formula, using compensation and service to the date of determination, plus the Member Annuity based upon the member's accumulated deductions at the date of the determination.

Early Retirement Benefit

If a member retires after voluntary termination after completion of 20 years of service, or after involuntary termination after 8 years of service, he will be eligible for a reduced pension consisting of his accrued County Annuity, reduced actuarially for payment prior to retirement, plus his Member Annuity, equal to his accumulated deductions at the date of retirement, converted to a monthly pension based upon factors contained in the Summary Plan Description.

Pensions payable prior to normal retirement age are reduced actuarially to reflect the value of the additional benefit payments before normal retirement.

Special Early Retirement Benefits

The retirement board may allow members who have reached age 55 and have 10 or more years of service, or who have 30 or more years of service, regardless of age, to retire under a special early retirement provision, if they elect to do so within a specified period not to exceed 12 months. Members retiring under this provision will receive their Member Annuity plus their accrued County Annuity. The County Annuity will be based upon the member's compensation to their early retirement date and service to their early retirement date, plus additional service of 10% to 30% of the service they earned, with the total service rounded to the next highest full year.

No more than one special early retirement period may be offered by the Retirement Board within a five-year period.

Late Retirement Benefit

If a member continues to work beyond his normal retirement date, he will be eligible to receive his accrued pension payable at his late retirement date.

Optional Forms of Benefit Payment

At retirement, members can elect to receive their pension in the following different payment forms:

- "No Option" or Normal Form – A monthly pension payable for the member's lifetime, with a refund payable to the member's beneficiary(ies) after his death equal to the excess, if any, of the member's accumulated deductions over the total retirement benefits paid.
- Option One – A monthly pension payable for the member's lifetime, with a refund payable to the member's beneficiary(ies) after his death equal to the excess, if any, of the actuarial present value of the member's pension over the total retirement benefits paid.
- Option Two – A monthly pension payable for the member's lifetime, with payments equal to the member's original retirement pension (i.e., net of any cost-of-living increases) continuing to the member's primary beneficiary for the remainder of the primary beneficiary's life.
- Option Three – A monthly pension payable for the member's lifetime, with payments equal to 50% of the member's original retirement pension (i.e., net of any cost-of-living increases) continuing to the member's primary beneficiary for the remainder of the primary beneficiary's life.
- Option Four – A refund of the member's accumulated deductions, plus a monthly pension based on the member's County Annuity under one of the options described above.

Benefits payable in a form of payment other than the Normal Form will be actuarially adjusted, based on factors in the Summary Plan Description, to reflect the potential additional payments.

Cost-of-Living Increases

The Retirement Board shall consider granting cost-of-living increases to current retirees at least once every three years. Cost-of-living increases were granted 14 times between January 1972 and January 1989. More recent history of cost-of-living increases is as follows:

Effective Date of Increase	Percentage Change in CPI
January 1, 1998	80%
January 1, 1999	80%
January 1, 2000	80%
January 1, 2001	80%
January 1, 2002	80%
January 1, 2003	80%
January 1, 2004	80%
January 1, 2005	80%
January 1, 2006	80%
January 1, 2007	80%
January 1, 2008	80%
January 1, 2009	80%
January 1, 2010	No Increase
January 1, 2011	80%
January 1, 2012	80%
January 1, 2013	80%
January 1, 2014	80%
January 1, 2015	80%
January 1, 2016	No Increase
January 1, 2017	No Increase
January 1, 2018	Flat 2% increase, limited to 100% of CPI
January 1, 2019	Flat 2% increase, limited to 100% of CPI
January 1, 2021	Flat 2% increase, limited to 100% of CPI

Disability Benefit

If a member is disabled prior to retirement and after completion of 5 or more years of service, he will receive a disability retirement pension equal to 25% of his average compensation at the time of disability.

The disability pension includes the member's accumulated contributions. If the participant dies before receiving benefit payments equal to his accumulated deductions at retirement, the excess will be paid to his beneficiary (ies). Disability benefits will end if the member recovers from the disability.

Death Benefit

If a member dies after the earlier of age 60 or completion of 10 years of service, his beneficiary(ies) will receive a lump sum payment equal to the member's accumulated deductions, plus the actuarial equivalent of the accrued County Annuity at the time of death, based upon the factors in the Summary Plan Description. Members may elect instead to have any death benefits paid to a designated beneficiary as a lifetime annuity.

If a member dies and is not eligible for a monthly death benefit described above, his beneficiary(ies) will receive a refund of his accumulated deductions.

Termination of Employment Benefits

If a member terminates employment prior to retirement eligibility, but after completing 5 or more years of service, he will be eligible for a benefit from the plan equal to his accrued pension at the date of his termination if he elects to leave his accumulated deductions in the plan. The benefit will be payable at age 60, or age 55 if the member has completed 20 or more years of service. Any vested benefit will be forfeited upon the withdrawal of accumulated contributions from the plan.

If a member terminates employment prior to completing 5 years of service, he will receive a refund of his accumulated deductions.

Contributions

Members in the 1/70th class are required to contribute 8.0% of compensation to the plan as pick-up (pre-tax) contributions; members in the 1/80th class are required to contribute 7.0% of compensation to the plan as pick-up (pre-tax) contributions. In addition, members may make voluntary, after-tax contributions up to an additional 10.0% of compensation. The member's accumulated deductions are equal to the member's contributions plus interest credited annually at a rate of between 4.0% and 5.5%, as specified annually by the Retirement Board.

Service

Service is credited for all years, months and days worked for the County, plus additional periods of military service and part-time service purchased by the member.

Actuarial Assumptions and Methods

The following is a summary of the actuarial assumptions and methods used for this actuarial valuation.

Interest Rate
7.0% per year

The valuation interest rate represents the expected long-term investment return on pension fund assets. This rate is used to discount expected future benefit payments to the valuation date to determine the present value of plan liabilities and to calculate required plan funding levels

Salary Increases
4.0% per year

Mortality
Assumed rates of employee mortality are based on the Pub-2020 Table, General Employees, projected using Scale MP-2019.

Turnover
Select and Ultimate (i.e., service based) Withdrawal is assumed. The Ultimate Rates, for members with 6 or more years of service are from Table T-4 of the *Actuary's Pension Handbook*. The following is a list of the annual rates of withdrawal (employee turnover) at selected ages under the Ultimate table:

Age	Rate of Turnover
20	10.0000%
25	9.7500%
30	9.4022%
35	8.8436%
40	7.9543%
45	6.7120%
50	4,8722%
55	1.7020%

For members with less than 7 years of service, the rate of withdrawal is a percentage of the ultimate rate, as specified in the table below:

Years of Service	Percentage of Ultimate Rate
0-1	300%
1-2	275%
2-3	250%
3-4	225%
4-5	200%
5-6	175%
6 or more	100%

Disability
None assumed.

Retirement
Rates of retirement for members eligible for early or normal retirement are as follows:

Age	Rate of Retirement
55-59	7%
60-61	8%
62-64	15%
65	34%
66-70	23%
71-79	21%
80+	100%

Member Elections
A percentage of terminating plan members is assumed to elect to receive a refund of their accumulated deductions, forfeiting their County Annuity. 100% of members under age 30 are assumed to elect a refund. For members age 30 or over, the percentage of members assumed to elect a refund is 100% less 3 1/3% of their age at termination minus 30. Sample percentages are shown below:

Age	% Electing Refund
30	100.0%
35	83.3%
40	66.7%
45	50.0%
50	33.3%
55	16.7%

70% of retiring members are assumed to elect to annuitize their member contributions, 30% are assumed to elect a refund of member contributions at retirement.

Administrative Expenses
Expected administrative (non-investment) expenses are assumed to be paid from the County's general fund and not from plan assets; however, administrative expense may from year to year be paid from the pension fund unless it is determined by the actuary that such payment will impair the actuarial soundness of the fund. Investment expenses are assumed to be funded by earnings in excess of the valuation interest rate.

Actuarial Value of Assets
The valuation uses an asset smoothing method to even out the year-to-year fluctuations in the investment markets. Under the method being used for this valuation, the investment gains or losses (i.e., actual vs. expected performance) are recognized over a five-year period. The actuarial value of assets determined under this method is limited to 20% above or below the market value of assets.

Funding Method

The actuarial cost method is the way that unfunded plan costs are allocated over future years, including the current year. This actuarial valuation uses the Entry Age Normal Actuarial Cost Method. Under this method, the normal cost and actuarial accrued liability are determined on an individual basis. The unfunded actuarial accrued liability is determined as the excess of the actuarial accrued liability over the actuarial value of assets. If the actuarial accrued liability exceeds the actuarial value of plan assets, the unfunded actuarial accrued liability is amortized over future years as part of the annual contribution requirement. The amortization amounts are determined based on the source of each piece of the unfunded actuarial accrued liability (e.g., actuarial gains and losses, plan amendments, changes in assumptions, etc.). If the actuarial value of assets exceeds the actuarial accrued liability, 10% of this excess is used to reduce the plan's financial requirement.

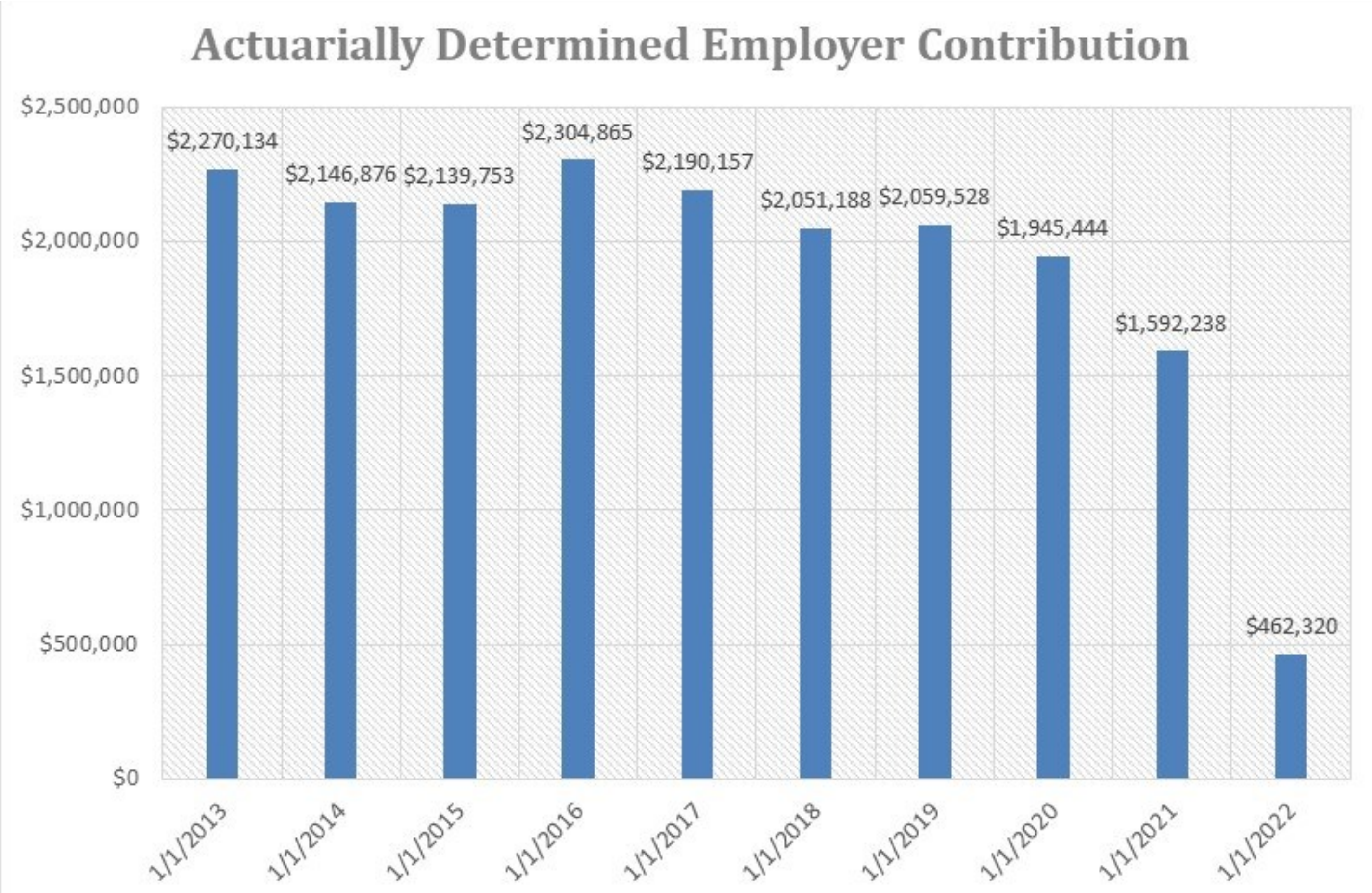
Changes in Actuarial Assumptions

None.

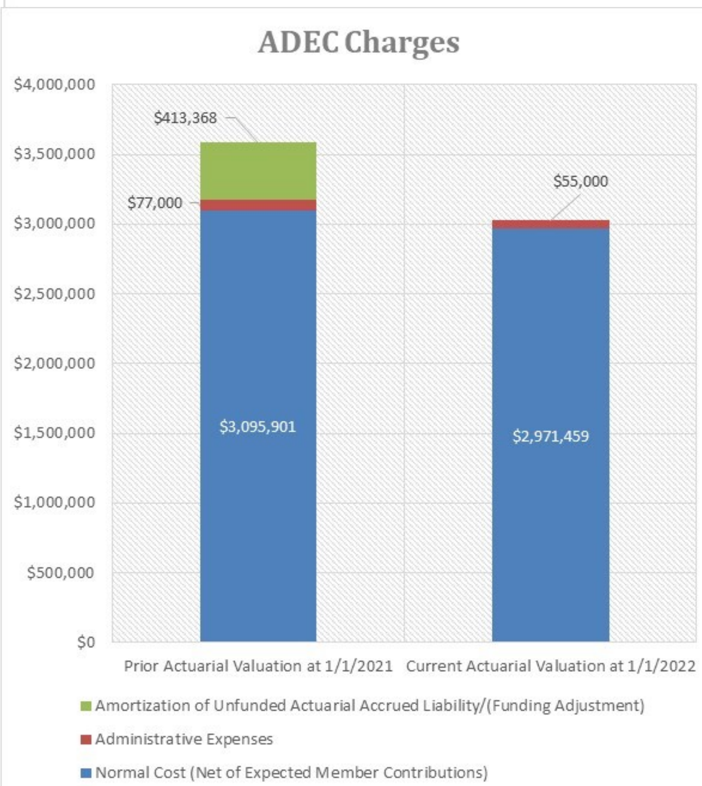
Plan Reserves

Under the Plan's reserving method, the market value of assets is allocated among the Member Annuity Reserve Account, the County Annuity Reserve Account and the Retired Members Reserve Account. The Retired Members Reserve Account is equal to the Actuarial Present Value of Retiree Benefits as of the Valuation Date. The Member Annuity Reserve Account is equal to the Accumulated Member Deductions with interest as of the Valuation Date. The County Annuity Reserve Account, which is used to fund the County-Provided benefits for active and vested former members, is set equal to the Total Reserves, less the Member Annuity and Retired Member reserves.

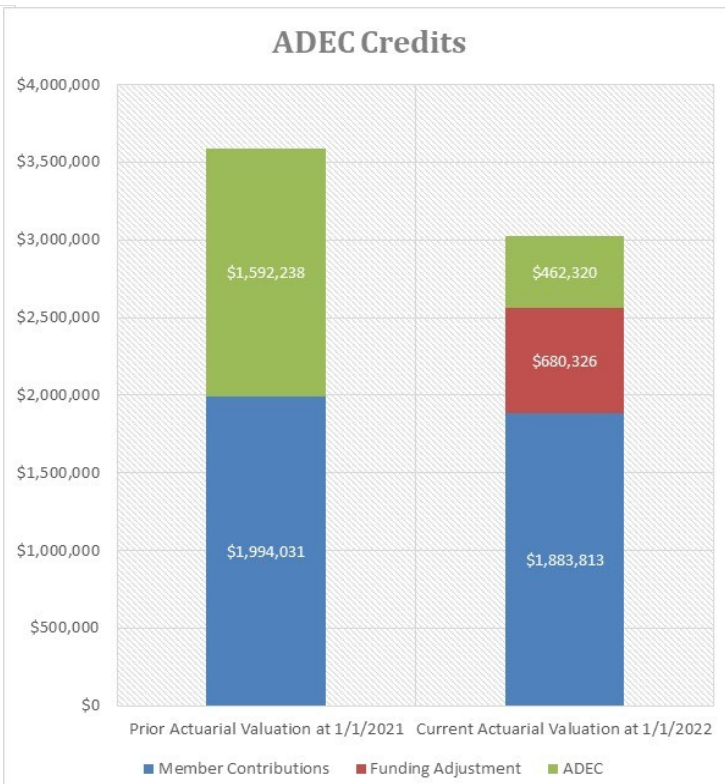
	Reserve Account			
	Member Annuity	County Annuity	Retired Members	Total
Market Value of Assets at 1/1/2021	$27,421,859.29	$45,195,209.56	$78,044,331.00	$150,661,399.85
Member Contributions	2,481,280.09			2,481,280.09
County Contributions		1,698,647.00		1,698,647.00
Investment Income		23,799,453.94		23,799,453.94
Investment Expenses		(663,526.90)		(663,526.90)
Member Contributions Refunded	(1,870,016.03)			(1,870,016.03)
Retirement and Death Benefit Payments			(8,125,030.75)	(8,125,030.75)
Retiree and Death Benefit Transfers	(2,753,248.30)	(5,308,631.71)	8,061,880.01	0.00
Cost-of-Living Funding Adjustment		(1,539,309.00)	1,539,309.00	0.00
Change in Actuarial Assumptions		0.00	0.00	0.00
Administrative Expenses		(54,592.00)		(54,592.00)
Balance Before Interest	$25,279,875.05	$63,127,250.89	$79,520,489.26	$167,927,615.20
Interest Allocated in 2021	933,676.29	(4,054,186.52)	3,120,510.23	0.00
Balance Before Actuarial Adjustments	$26,213,551.34	$59,073,064.37	$82,640,999.49	$167,927,615.20
Actuarial Adjustments	0.00	(3,959,204.51)	3,959,204.51	0.00
Market Value of Assets at 1/1/2022	$26,213,551.34	$55,113,859.86	$86,600,204.00	$167,927,615.20



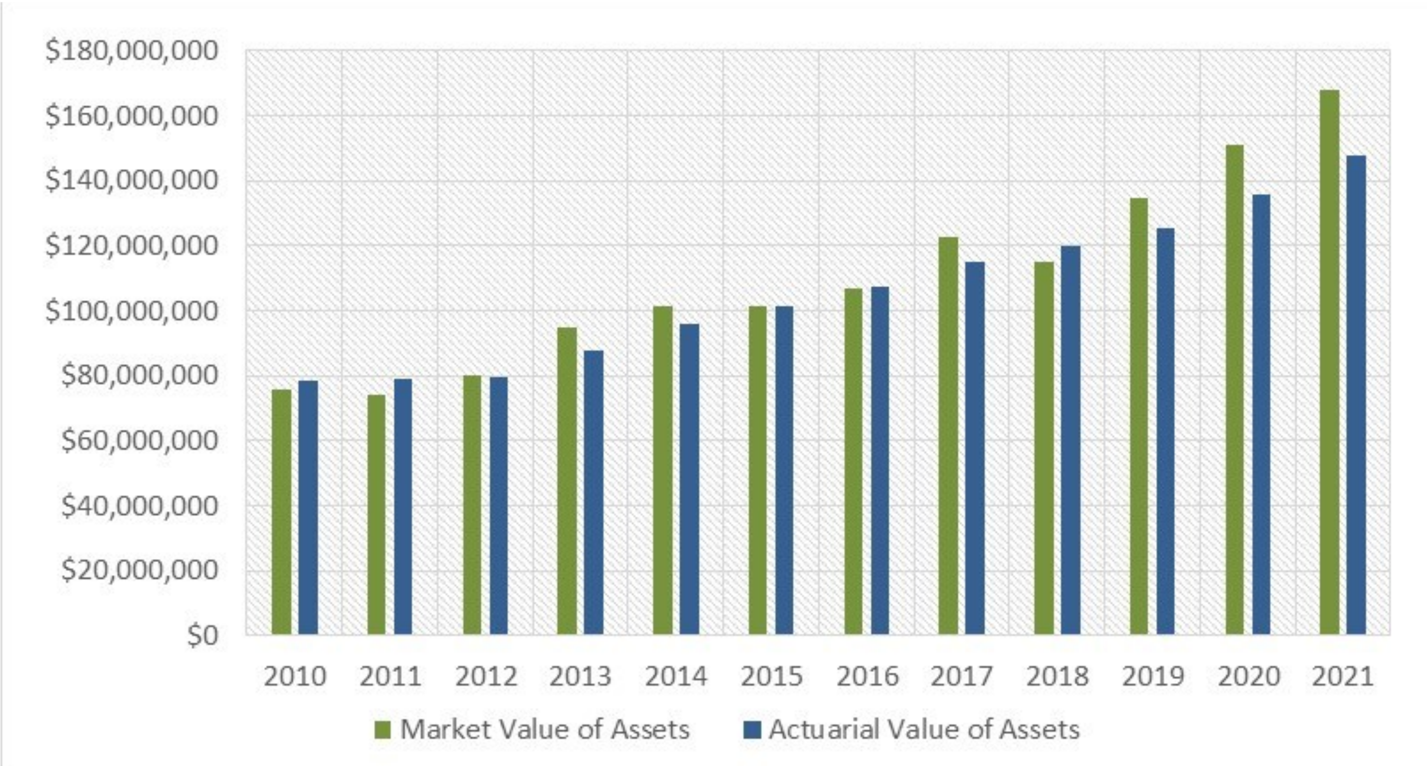
Actuarially Determined Employer Contribution
$2,500,000
$2,000,000
$1,500,000
$1,000,000
$500,000
$0
$2,270,134
$2,146,876
$2,139,753
$2,304,865
$2,190,157
$2,051,188
$2,059,528
$1,945,444
$1,592,238
$462,320
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022



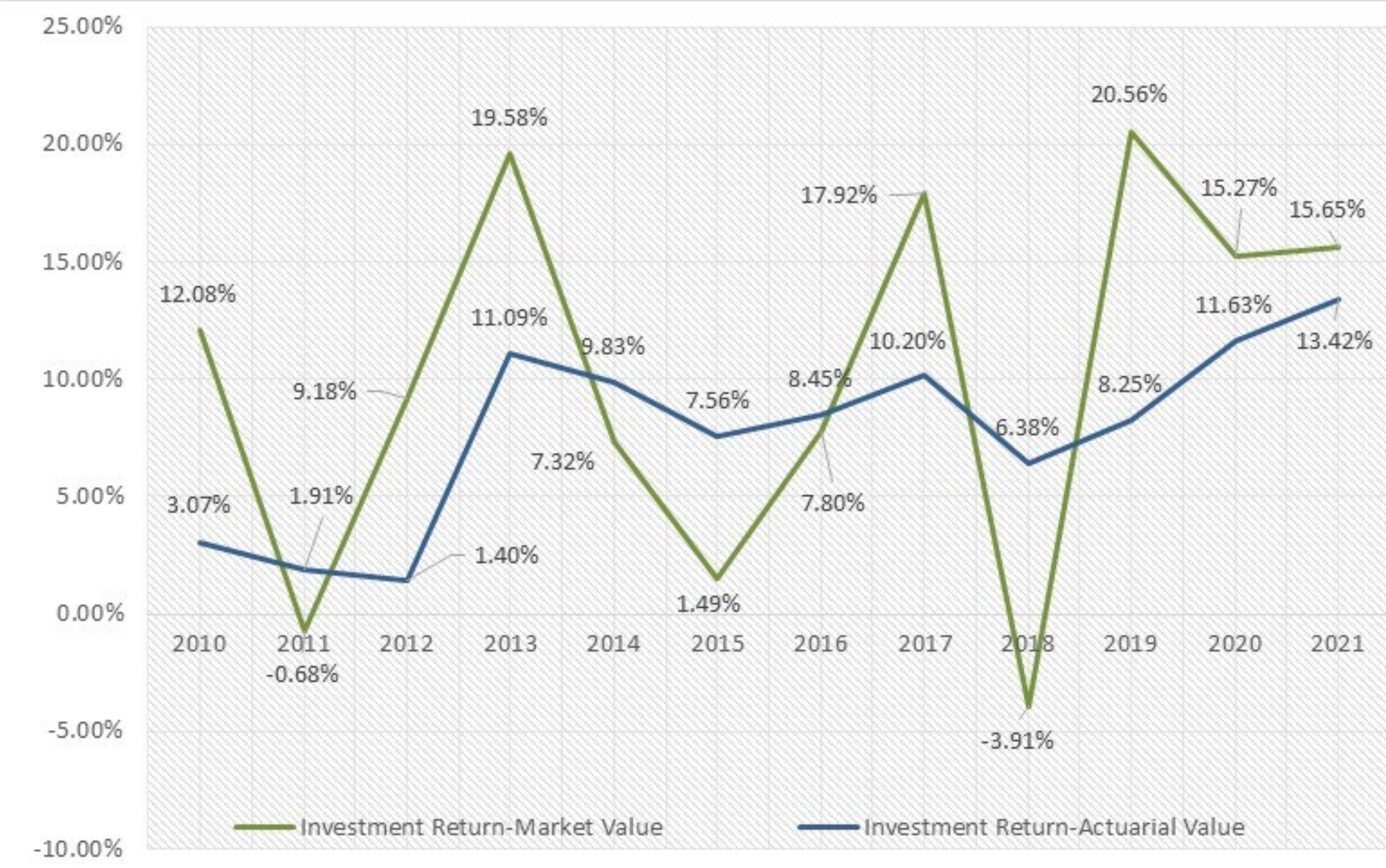
ADEC Charges
$4,000,000
$3,500,000
$3,000,000
$2,500,000
$2,000,000
$1,500,000
$1,000,000
$500,000
$0
$413,368
$77,000
$3,095,901
$55,000
$2,971,459
Prior Actuarial Valuation at 1/1/2021
Current Actuarial Valuation at 1/1/2022
Amortization of Unfunded Actuarial Accrued Liability/(Funding Adjustment)
Administrative Expenses
Normal Cost (Net of Expected Member Contributions)



ADEC Credits
$4,000,000
$3,500,000
$3,000,000
$2,500,000
$2,000,000
$1,500,000
$1,000,000
$500,000
$0
$1,592,238
$1,994,031
$462,320
$680,326
$1,883,813
Prior Actuarial Valuation at 1/1/2021
Current Actuarial Valuation at 1/1/2022
Member Contributions
Funding Adjustment
ADEC



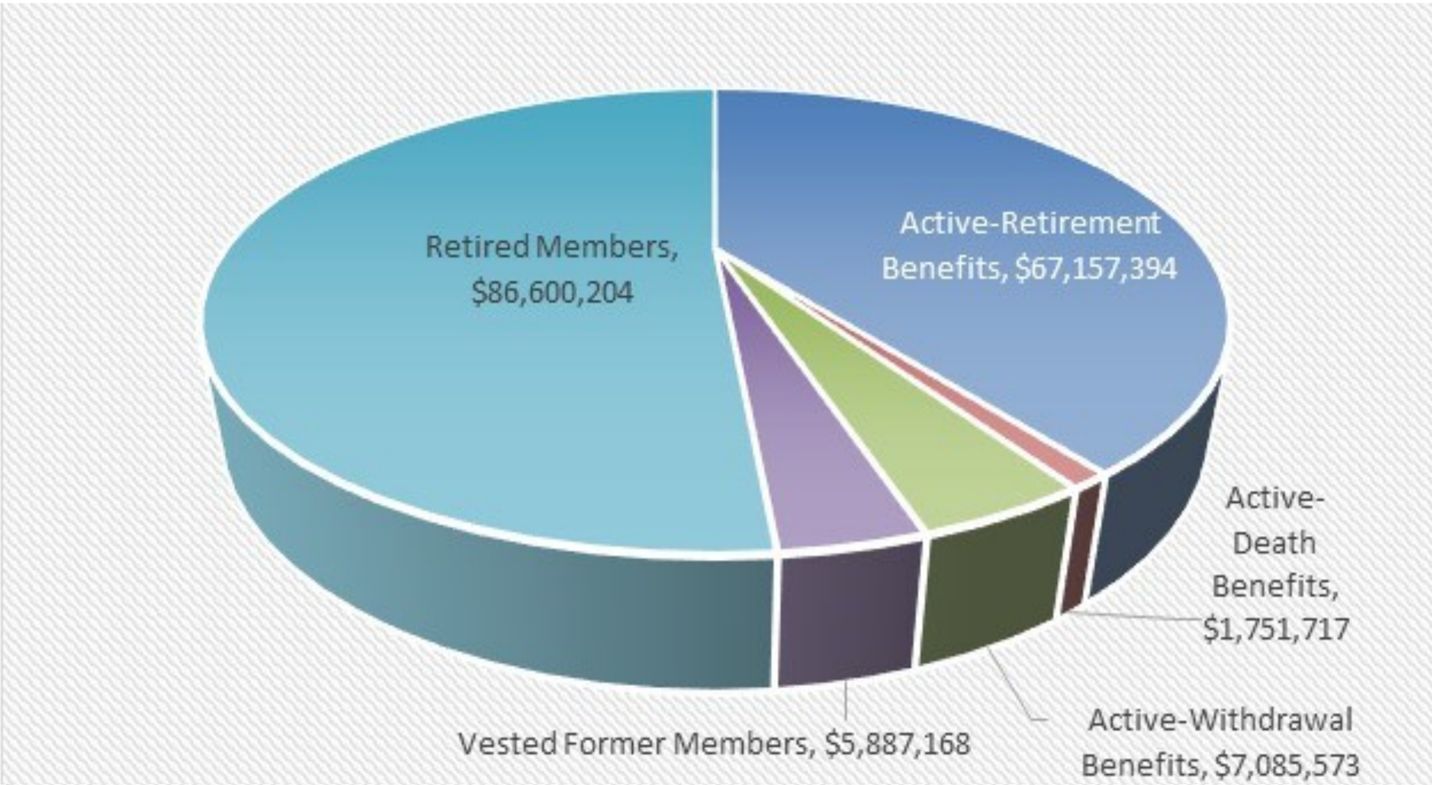
$180,000,000
$160,000,000
$140,000,000
$120,000,000
$100,000,000
$80,000,000
$60,000,000
$40,000,000
$20,000,000
$0
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Market Value of Assets
Actuarial Value of Assets

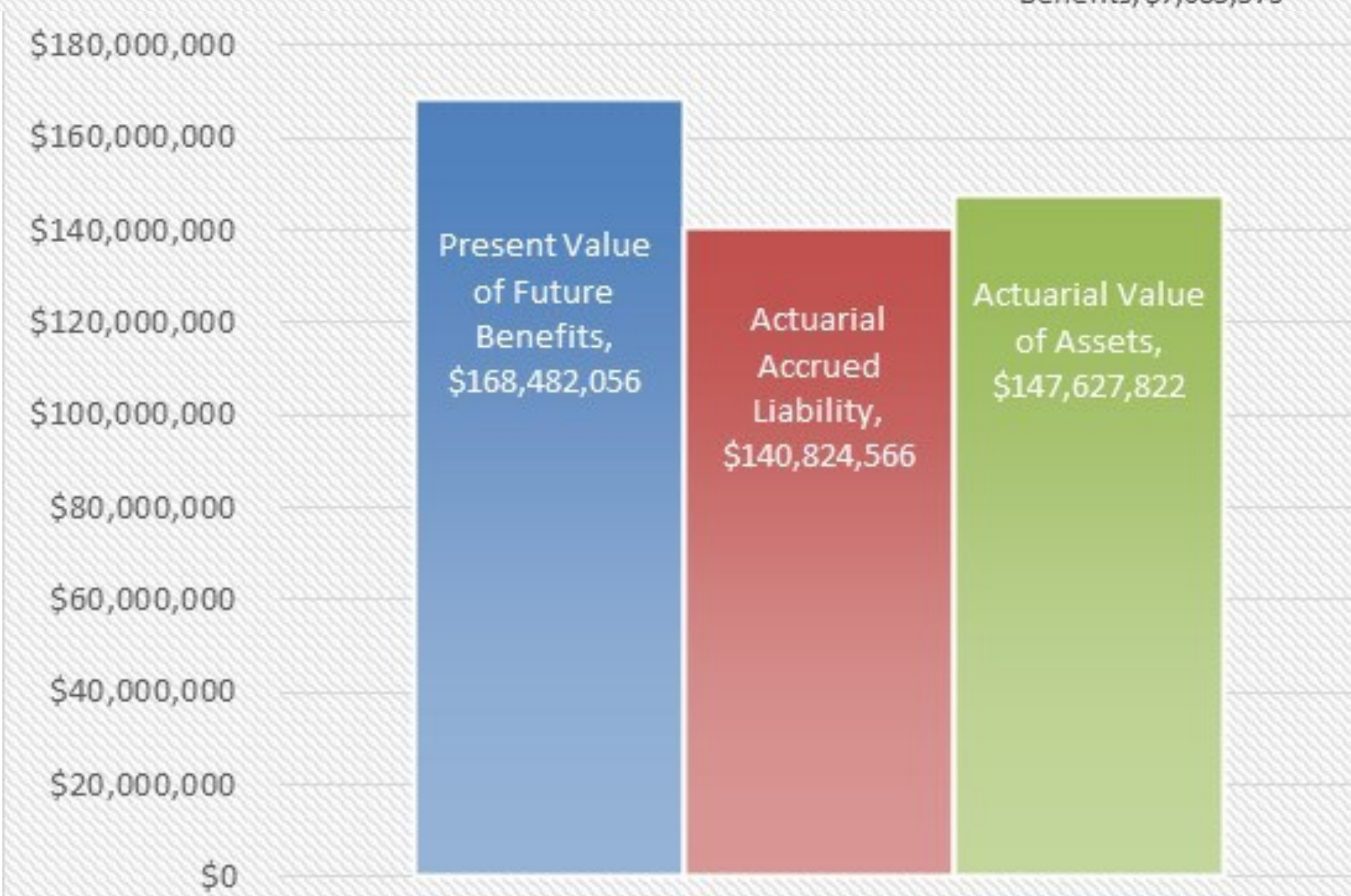


25.00%
20.00%
15.00%
10.00%
5.00%
0.00%
-5.00%
-10.00%
12.08%
3.07%
-0.68%
1.91%
9.18%
1.40%
19.58%
11.09%
9.83%
7.32%
7.56%
1.49%
8.45%
7.80%
17.92%
10.20%
6.38%
-3.91%
20.56%
8.25%
15.27%
11.63%
15.65%
13.42%
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Investment Return-Market Value
Investment Return-Actuarial Value

Lycoming County Employees' Retirement System

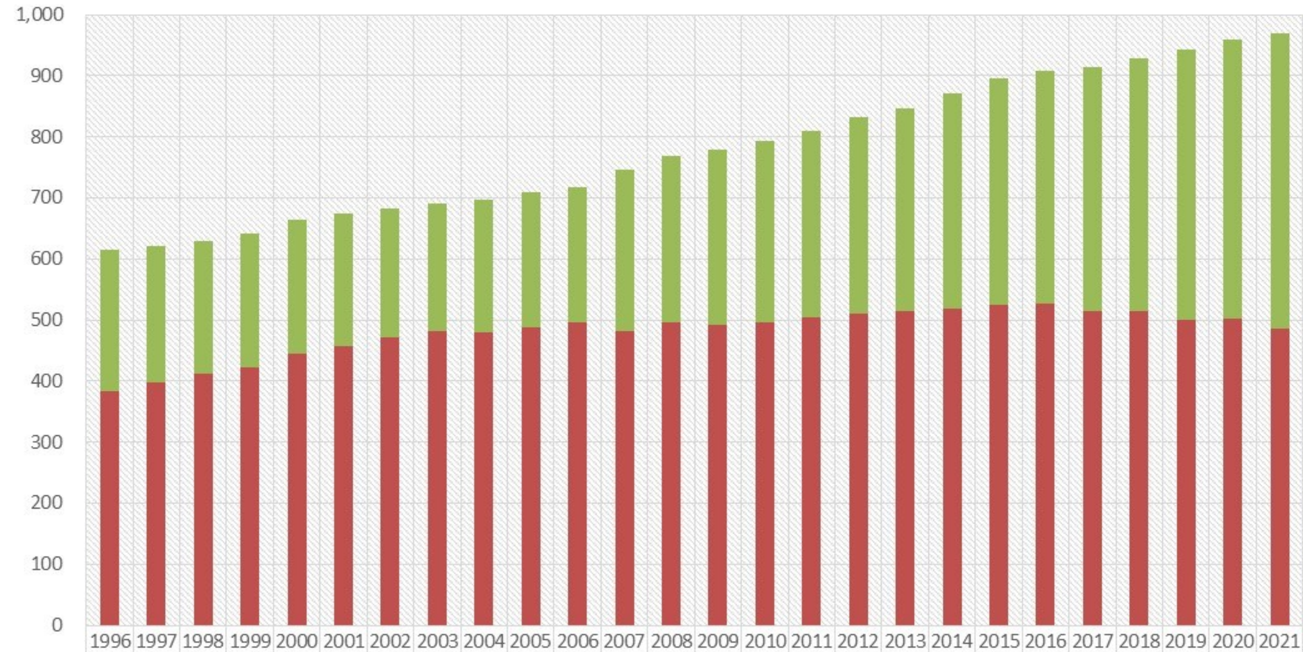
Actuarial Valuation for Funding Purposes as of January 1, 2022



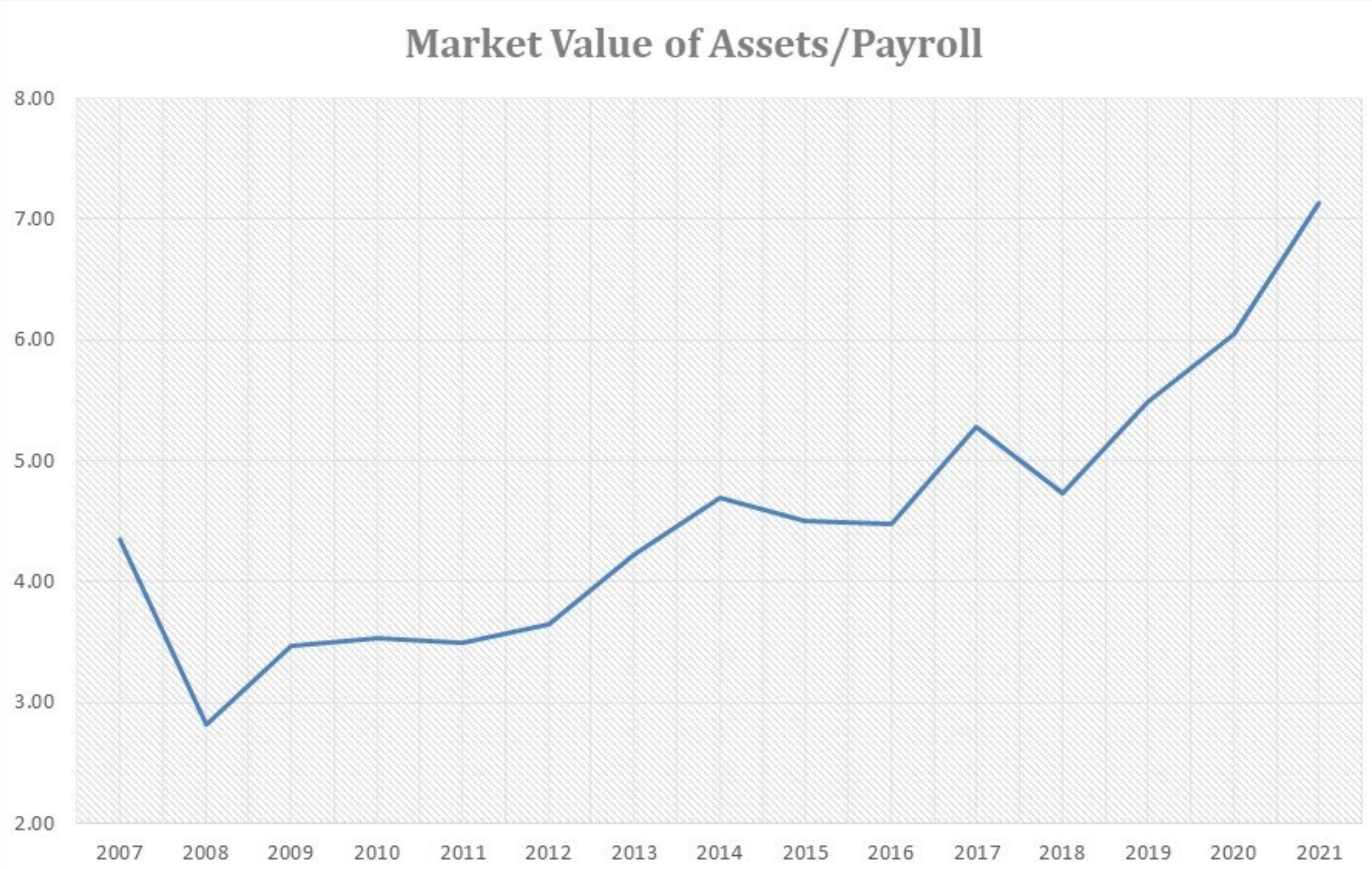


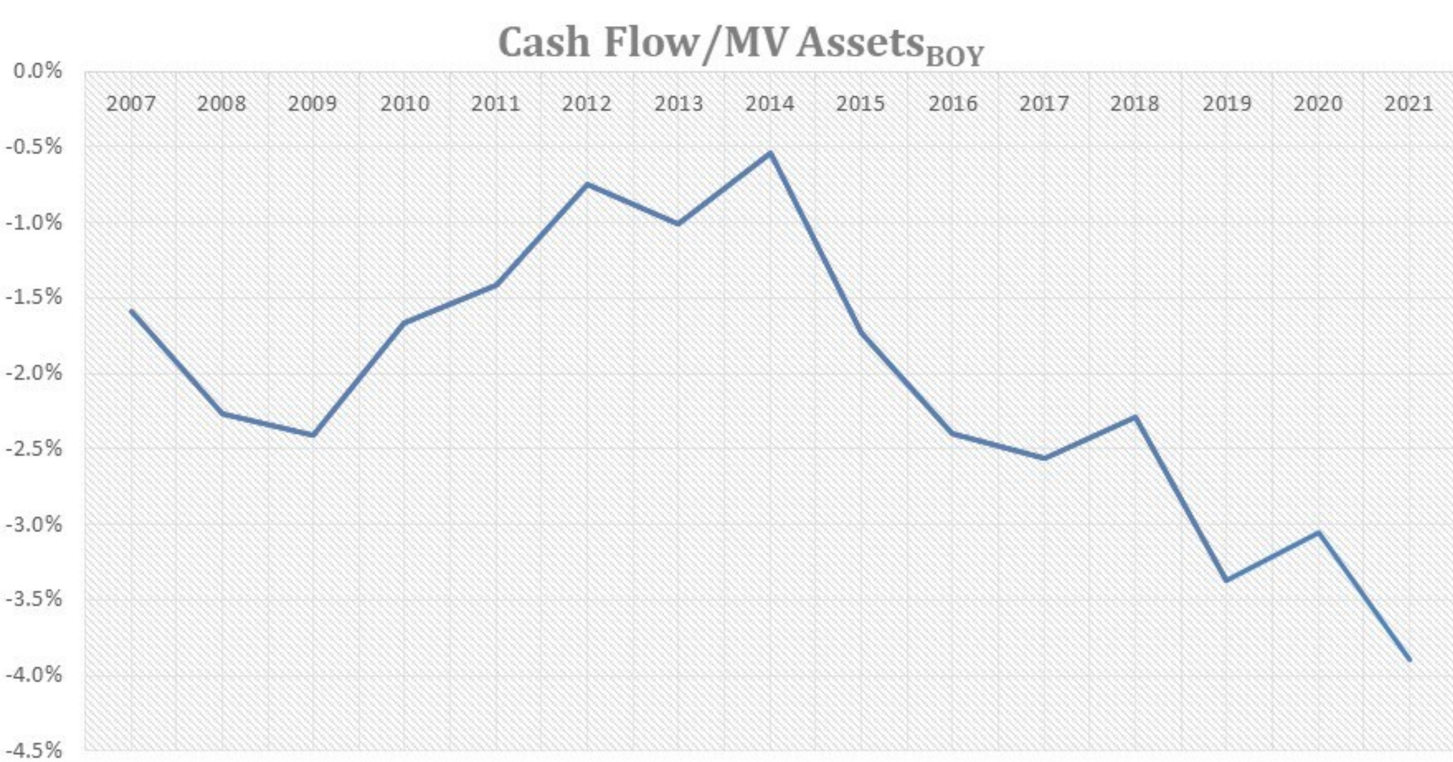
Lycoming County Employees' Retirement System

Actuarial Valuation for Funding Purposes as of January 1, 2022



	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total Members	614	622	630	642	665	674	683	690	697	710	718	746	769	778	793	809	832	846	871	895	908	913	929	943	960	970
Ret/Term Members	230	225	219	220	221	217	211	208	217	222	222	265	274	287	296	305	322	332	352	370	381	399	414	443	457	484
Active Members	384	397	411	422	444	457	472	482	480	488	496	481	495	491	497	504	510	514	519	525	527	514	515	500	503	486


Market Value of Assets/Payroll
8.00
7.00
6.00
5.00
4.00
3.00
2.00
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021


Cash Flow/MV Assets$_{BOY}$
0.0%
-0.5%
-1.0%
-1.5%
-2.0%
-2.5%
-3.0%
-3.5%
-4.0%
-4.5%
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021