


Lycoming County  
Employees' Retirement  
System  
Actuarial Valuation as  
of January 1, 2021

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• Municipal Finance Partners, Inc.  
July 22, 2021

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## Agenda

2021 Actuarially Determined Employer Contribution (ADEC)	Fund Performance – Market v. Actuarial	Plan Membership
Actuarial Assumptions	Liabilities	GASB 67 & 68
A Discussion of Risk		Actuarial Equivalence

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## Charles B. Friedlander, F.S.A.

Consulting  
Actuary

President & Chief  
Actuary

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Education

Experience

Areas of Expertise

- Municipal Pensions
- OPEB Benefits

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## What I Do

Prepare actuarial valuation reports, including Act 293 reporting forms

Provide information to auditors for County's financial statements

Prepare benefit calculations and election forms upon termination and retirement

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# Funding Philosophy

Act 205 imposes funding requirements on all municipal pension plans, but not County plans

Despite these rules, plans can become underfunded (losses, benefit increases)

Without these rules, it can get even worse (see State pension plans, Illinois)

Concept of Intergenerational Equity: Each generation of taxpayers funds the services they receive, including pensions.

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# Disclaimers



Information in presentation is based on same plan provisions and actuarial assumptions and methods as 1/1/2020 actuarial valuation, except where noted, and census and trust information at 1/1/2021.



Please refer to 1/1/2020 actuarial valuation report for reference to these items and my qualifications to determine and present this information.

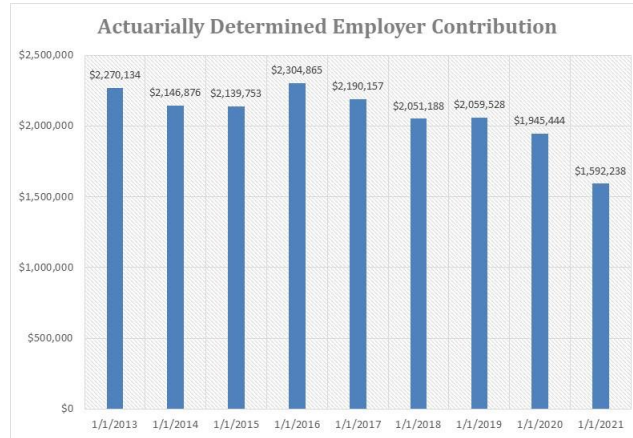
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## Actuarially Determined Employer Contribution (ADEC)

- ADEC decreased from \$1,945,444 for 2020 to \$1,592,238 for 2021



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## ADEC Calculation



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## Reasons for the ADEC

Investment return greater than expected  
(actuarial basis), \$5,739,893 gain (4.2% of  
Actuarial Value of Assets)

Experience Loss: \$1,225,682 (0.89% of  
Actuarial Accrued Liability)

\$653,447 Contribution Gain (Voluntary  
contributions; offset to experience  
gain/loss)

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## Experience Changes

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\$1.58M Loss from Retiree elections

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\$597,000 Gain from Salary increases < expected

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\$637,937 Gain Retiree deaths > expected

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\$156,000 Gain from Active Decrements > expected

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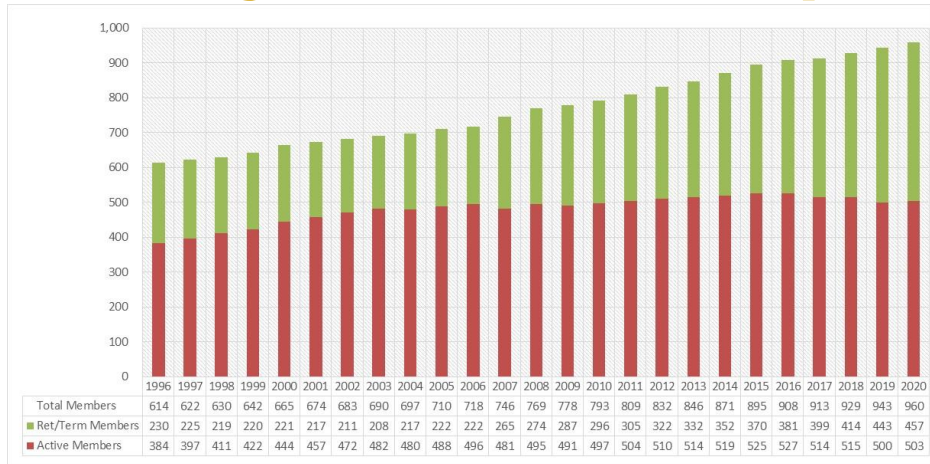
Other minor offsetting gains and losses

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## Changes in Plan Membership



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## Asset Performance

- Fund Earned 15.27% on a Market Value basis.
- Market Value increased from \$134,591,490 at 12/31/2019 to \$150,661,400 at 12/31/2020.
- Actuarial Value is \$135,677,641.
- Return on Actuarial Value was 11.63%
- Actuarial smoothing method recognizing portions of 2016, 2017, 2019 and 2020 investment gains as well as loss in 2018.
- Actuarial Asset gain was \$5,739,893.

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## History of Fund Values

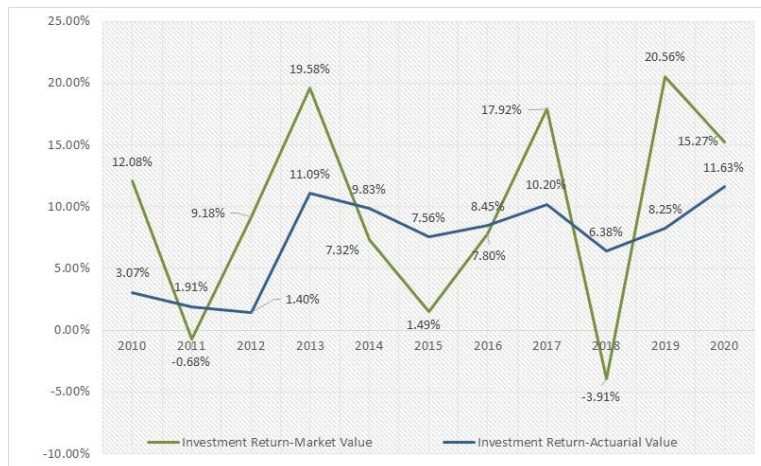


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## Asset Performance History

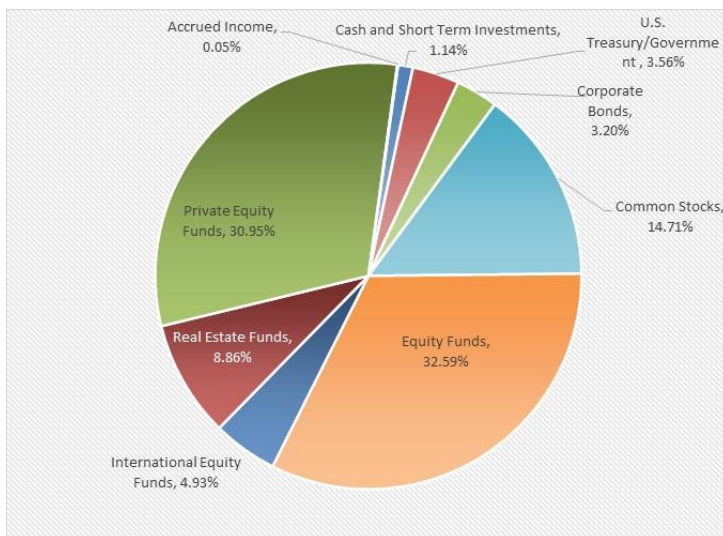


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## Fund Investment Allocation

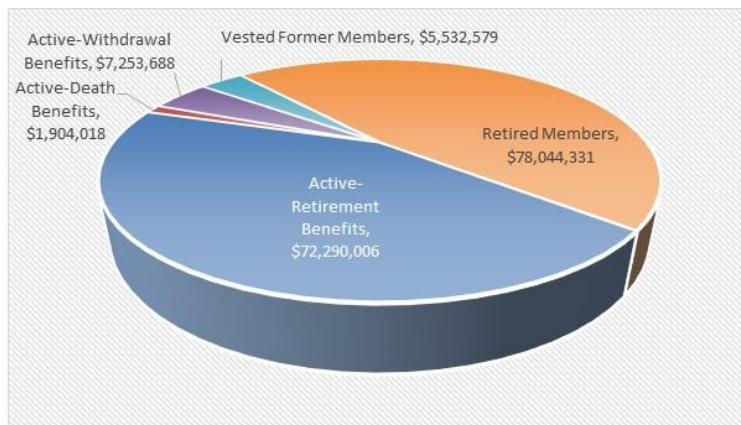


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## Actuarial Present Value of Future Benefits

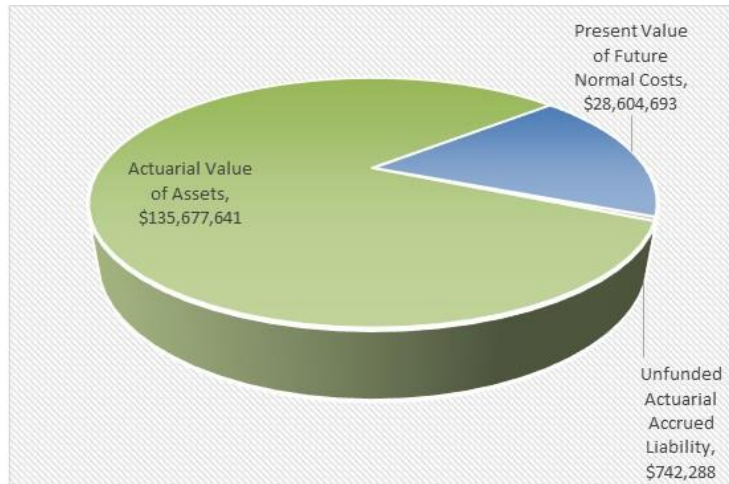


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## Actuarial Balance Sheet

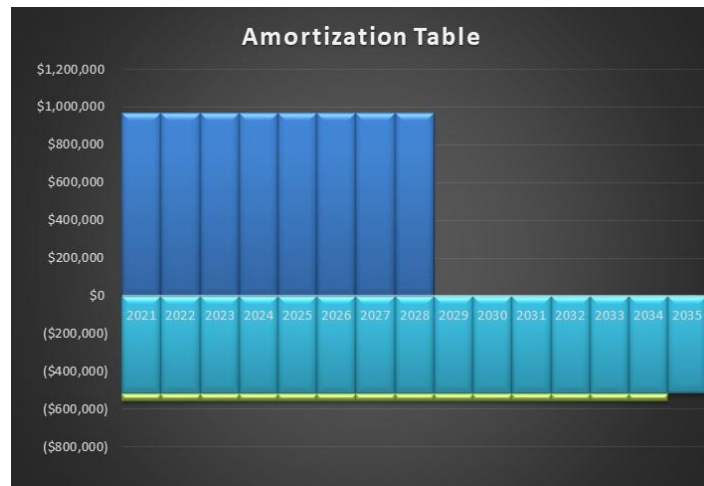


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## Amortization Table



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## Re-amortize?

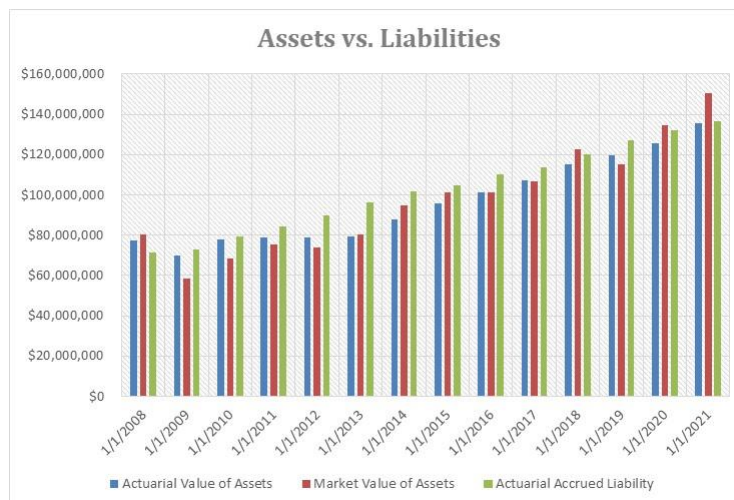
- At 1/1/2021:
  - Unfunded liability is \$742,288
  - Amortization payment is \$413,368
  - This would effectively pay of the unfunded liability in two years
- If re-amortize over 10 years, amortization payment decreases to \$98,771 (\$314,596) decrease.
- 5 years: \$169,194 (\$244,274 decrease)

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## Assets v. Liabilities

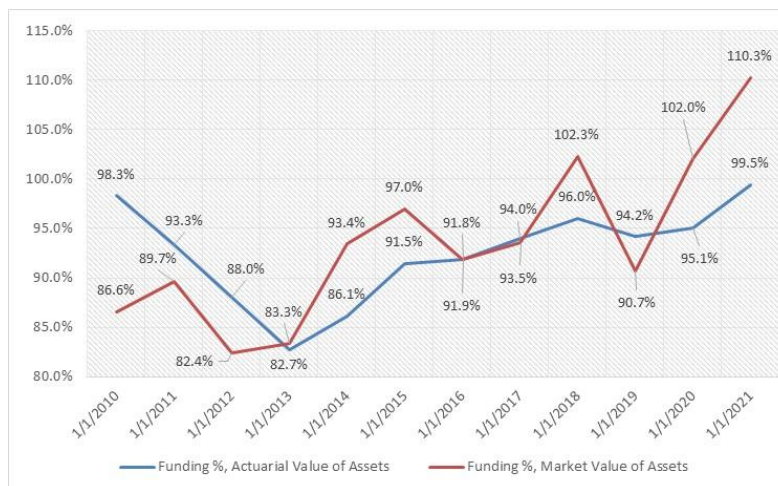


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## Funding Percentage



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## Actuarial Assumptions and Methods

Interest Rate: 7.0%-  
reviewing this (see  
below)

Salary Scale: 4.0% per  
year

Mortality: Pub-2010 ,  
General Employees,  
with full projection  
(Scale MP-2019)

Turnover Table: T-4,  
six-year select period

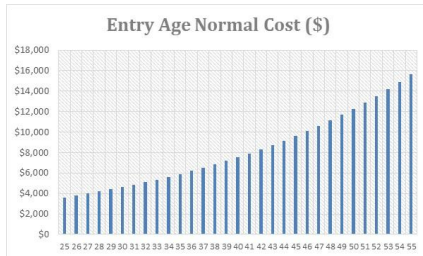
Accumulated Member  
Deductions: Valued by  
projecting balances to  
expected distribution  
date

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# Actuarial Cost Method



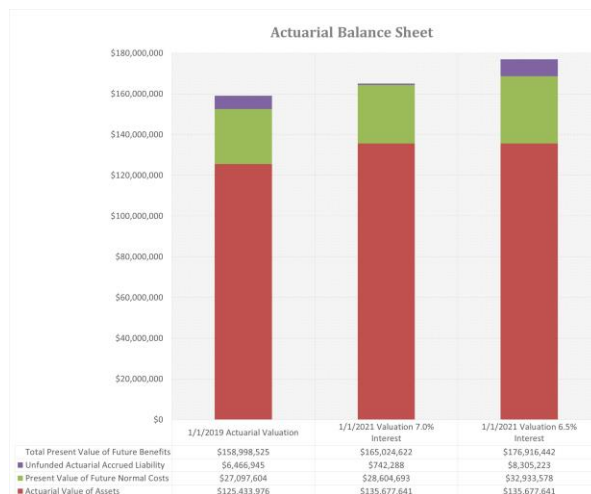
- Entry Age Normal Cost Actuarial Cost Method
  - Fund normal costs from hire date to retirement date as level percentage of payroll
  - Actuarial Accrued Liability is funding target, equal to present value of prior normal costs.
  - Amortization of changes in unfunded actuarial accrued liability.

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# Impact of Valuation, Interest Rate

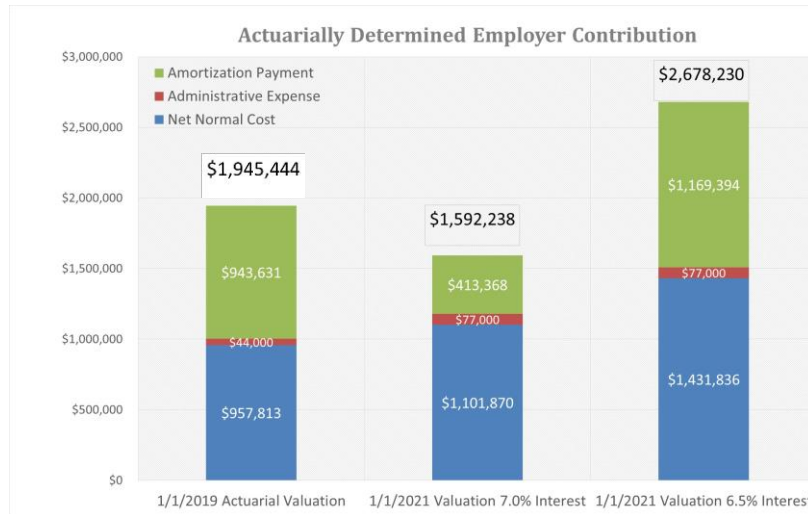


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## ADEC



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## GASB 67 & 68



Pension Expense was (\$28,153,301) in 2020, \$3,422,030 in 2019, \$4,822,476 in 2018, compared to \$1,238,407 for 2017 and \$3,623,533 for 2016 (no asset smoothing)



2020 – Impacted by dropping of future COLAs from liabilities



Net Pension Liability dropped from \$23,277,603 in 2016 to \$11,690,093 in 2017, increased to \$32,313,209 in 2018 and dropped to \$21,857,970 in 2019 and dropped significantly to \$(15,472,339) in 2020.



Net Deferred Outflows/(Inflows) of Resources ,went from \$3,624,508 (2016) to \$(7,383,912). (2017) to \$10,467,846 (2018) to \$(2,094,429) (2019) to \$(8,935,723) (2020)

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## A Discussion of Risk

Actuarial Standard of Practice No. 51 (ASOP 51) requires that we do more to discuss risk with our clients



Examples of risk:

Investment risk

Asset/liability mismatch risk

Interest rate risk

Longevity and other demographic risks

Contribution risk

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## Investment Risk

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This is the potential that investment returns will differ from what we expect, and it is your largest risk.

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We moderate this risk by using actuarial smoothing and amortizing gains and losses.

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Still, we can see just from recent years the impact of investment risk on the ADEC.

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## Asset/Liability Mismatch Risk



This is the potential that changes in liabilities and assets do not match.



Pension promises are fixed-rate liabilities and behave like bonds.



Equity investments achieve larger returns as a “risk premium.”



This risk can be “defeased” at the cost of lower returns and higher contributions (can we afford to fund at 3-4%?)

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## Interest Rate Risk

As interest rates increase generally, bond yields increase

- Higher bond yields are good for new investments
- Higher interest rates lower value of existing fixed income investments.

What caused changes in interest rates?

- Inflation-likely to cause increase in stock prices, salaries
- Economic downturn: US Gov’t bond prices increase due to flight to safety
- Lower discount rates increase liabilities; higher rates decrease liabilities

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## Longevity and Demographic Risk

- This is the potential that demographic experience will differ from what is expected.
  - We update mortality tables periodically to recognized increased longevity
  - We review experience of assumptions at each valuation
  - Experience studies should be performed periodically

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## Contribution Risk

This is the risk that contributions deviate from expected future contributions.

For municipal plans, there is no risk of large deviations; however, there will always be a small deviation in odd-numbered years due to MMO timing.

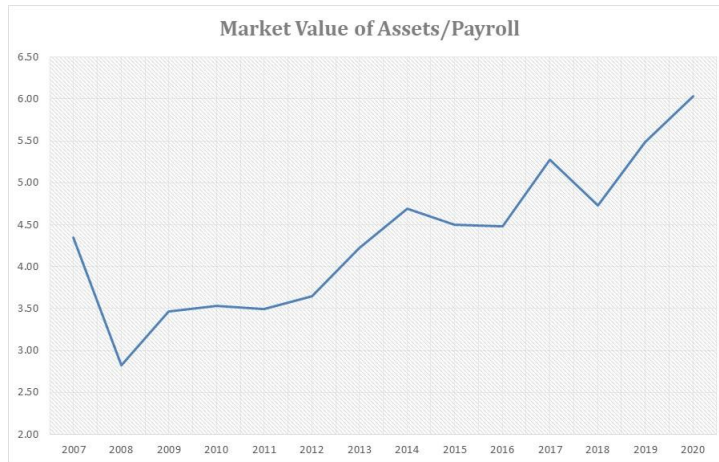
For County and State plans, this is what we call a *moral hazard*.

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## Maturity Measures

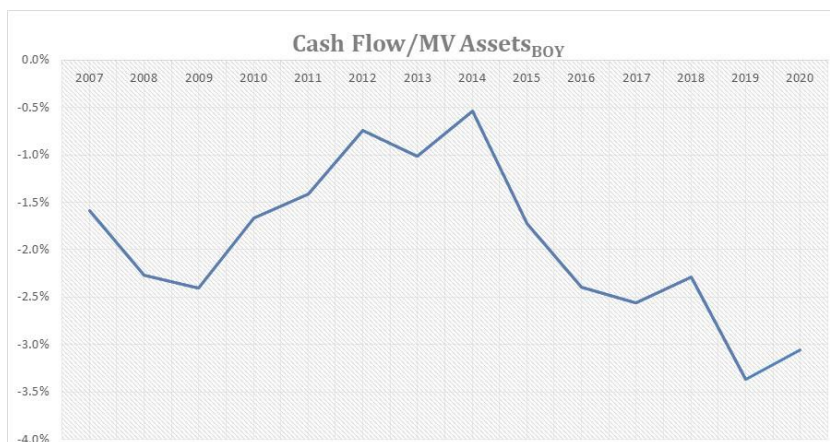


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## Maturity Measures (Continued)



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## Actuarial Equivalence

- These are the assumptions that are used to determine the optional forms of payment or early retirement pension for retiring members.
- Basis is GA1983 Mortality, 7% Interest Rate
  - Table assumes higher (male) mortality for participant and spouse.
  - Table does not consider mortality improvement over the last 38 years.

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## Forms of Benefit Payment

Option	Survivor Pension	Guaranteed Payments	Refund at Retirement
No	None	Accumulated deduct. at retirement, less benefits paid	None
One	None	Actuarial present value of pension at retirement, less benefits paid	None
Two	100% of Original Pension (prior to COLA)	Accumulated deduct. at retirement, less benefits paid	None
Three	50% of Original Pension (prior to COLA)	Accumulated deduct. at retirement, less benefits paid	None
Four (A)	None	None	Accum. deduct. at retirement
Four (B)	None	Actuarial present value of pension at retirement, less benefits paid	Accum. deduct. at retirement
Four (C)	100% of Original Pension (prior to COLA)	None	Accum. deduct. at retirement
Four (D)	50% of Original Pension (prior to COLA)	None	Accum. deduct. at retirement

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## Benefits of Tabular Factors

- The use of tabular factors allows ease of calculation. This was particularly important in the development of the actuarial profession, prior to modern technology (the “green paper spreadsheet days”)
- Except for rounding, the use of tabular factors for most calculations might not have a material impact.

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## Shortfalls of Tabular Factors

- In County Pension Plans, we use factors to convert from a No Option form of payment to Option One
  - This increases the guaranteed payments from the accumulated deductions at retirement to the entire present value at retirement.
  - The factor is based on age and therefore does not reflect the potential difference in the accumulated deductions (e.g., due to voluntary contributions). We are giving an extra three years of payments whether one already has two or five years guaranteed.

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## Potential Updates

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Update to  
mortality table  
(PUB-2010)

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Use of blended  
male/female  
rates

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Use of actual  
assumptions to  
replace tabular  
factors

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## Impact of Changes

Longer expected lifespans  
for members will decrease  
the amount of monthly  
pension purchased under  
Options 1-3.

Longer expected lifespans  
for members will increase  
the lump sum death benefit  
amount.

Impact on other conversions  
will be mixed:

- Joint and survivor options (and Option One) reflect relative age of survivor and amount of accumulated deductions at retirement.
- Early retirement pensions will increase slightly.

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## Potential Secondary Impact

Surge of retirements ahead of change, depending upon awareness.

Option Four more popular

- Reduces plan longevity risk
- Reduces cost of COLAs to retirees

Reduced liabilities over long term due to decreased purchasing power of accumulated deductions (County no longer running a sale on annuities)

More work for actuary.

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## Recommended Course of Action

Actuarial study:

- Chose most appropriate mortality table
- Impact on sample participants
- Impact on plan liabilities

Implementation schedule

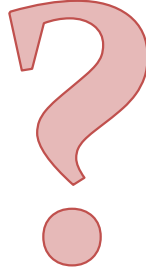
Communication to plan members, potential retirees

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# Questions



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