Lycoming County Employees' Retirement System

Actuarial Valuation as of January 1, 2021

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Municipal Finance Partners, Inc.
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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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Consulting Actuary

President & Chief Actuary

Municipal Finance Partners, Inc.

Education

Experience

Areas of Expertise
- Municipal Pensions
- OPEB Benefits

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

Consulting
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.

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.
Actuarially Determined Employer Contribution (ADEC)

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

ADEC Calculation

- Prior Actuarial Valuation at 1/1/2020: $957,813
- Current Actuarial Valuation at 1/1/2021: $1,101,970

- Amortization of Unfunded Actuarial Accrued Liability/Funding Adjustment
- Administrative Expenses
- Normal Cost (Net of Expected Member Contributions)
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)

Experience Changes

- $1.58M Loss from Retiree elections
- $597,000 Gain from Salary increases < expected
- $637,937 Gain Retiree deaths > expected
- $156,000 Gain from Active Decrements > expected
- Other minor offsetting gains and losses
Changes in Plan Membership

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 Asset gain was $5,739,893.
History of Fund Values

Asset Performance History
Fund Investment Allocation

Actuarial Present Value of Future Benefits
Actuarial Balance Sheet

- Present Value of Future Normal Costs: $28,604,993
- Unfunded Actuarial Accrued Liability: $742,288
- Actuarial Value of Assets: $135,677,641

Amortization Table

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 off 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)
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
**Actuarial Cost Method**

- Entry Age Normal Cost
  - 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.

**Impact of Valuation, Interest Rate**

![Actuarial Balance Sheet](image_url)
ADEC

Actuarially Determined Employer Contribution

<table>
<thead>
<tr>
<th>Category</th>
<th>1/1/2019 Actuarial Valuation</th>
<th>1/1/2021 Valuation 7.0% Interest</th>
<th>1/1/2021 Valuation 5.5% Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amortization Payment</td>
<td>$943,631</td>
<td>$1,169,384</td>
<td>$1,431,836</td>
</tr>
<tr>
<td>Administrative Expense</td>
<td>$575,813</td>
<td>$1,101,870</td>
<td>$1,431,836</td>
</tr>
<tr>
<td>Net Normal Cost</td>
<td>$1,945,444</td>
<td>$2,678,230</td>
<td></td>
</tr>
</tbody>
</table>

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.

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:

<table>
<thead>
<tr>
<th>Investment risk</th>
<th>Asset/liability mismatch risk</th>
<th>Interest rate risk</th>
<th>Longevity and other demographic risks</th>
<th>Contribution risk</th>
</tr>
</thead>
</table>

Investment Risk

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

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

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

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
Longevity and Demographic Risk

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

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*.
Maturity Measures

Market Value of Assets/Payroll

Cash Flow/MV Assets (BOY)

Maturity Measures (Continued)
### 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.

### Forms of Benefit Payment

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

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.
Potential Updates

1. Update to mortality table (PUB-2010)
2. Use of blended male/female rates
3. Use of actual assumptions to replace tabular factors

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.
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.

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
Questions