Connecticut Pension Academy
An Introduction to Public Pensions

“State of Connecticut’s Public Pensions”

Presented by
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Principal and Consulting Actuary
Cavanaugh Macdonald Consulting, LLC.
What is An Actuary?

- A person who passes as an expert on the basis of his prolific ability to produce an infinite variety of incomprehensible figures calculated with micrometric precision from the vaguest of assumptions based on debatable evidence from inconclusive data derived by a person of doubtful reliability for the sole purpose of confusing an already hopelessly befuddled group of persons who never read the statistics anyway.

- An actuary for a retirement plan calculates long-term liabilities of pension systems and how much money needed for funding the plan to maintain sustainability.
Connecticut Pension Plans

- Teachers’ Retirement System
- State Employees’ Retirement System
- Municipal Employees’ Retirement System
- Probate Judges and Employees Retirement System
- Judges, Family Support Magistrates and Compensation Commissioners Retirement System
Three Issues for all Public Sector Pension Plans

- **Attraction and Retention**
  - Compensation/Benefit Package
  - Competition with Private Sector

- **Funding/Cash Flow**
  - Baby boomer generation of retirees
  - Contribution holidays in past

- **Actuarial Assumptions**
  - Lower investment expectations
  - Mortality improvement
Pension Plan Policies

- Benefit policy
- Investment policy
- Funding policy
Benefit Policy

- How much, when and to whom are benefits paid?
- Typically established in statute or bargaining
- Limited actuarial role
Investment Policy

- What asset classes to invest in and in what proportion?
- Typically driven by investment professionals
- Actuarial role to assist with asset-liability modeling
Funding Policy

- How much and when to contribute?
- More necessary due to accounting requirements
- Typically driven by actuaries
Basic Retirement Funding Equation

\[ C + I = B + E \]

- **C** = Contributions
- **I** = Investment income
- **B** = Benefits paid
- **E** = Expenses (administration)
Basic Retirement Funding Equation

To ensure long term solvency the inflows must equal the outflows over the life of the program.

**INFLOW:**
- Employee Contributions
- Employer Contributions
- Investment Income

**OUTFLOW:**
- Benefit Payments
- Expenses
Funding Valuation Process

Present Value of Future Benefits (PVFB)

Actuarial Accrued Liability (AAL)

Future Normal Costs (NC)

Assets (AVA, MVA)

Unfunded Accrued Liability (UAL)

Member Portion

Employer Portion
The present value of an amount of money payable in the future is the amount of money that, if we had it today, would accumulate to the amount that will be payable considering:

- Investment return
- Probability that money will be paid
Example 1: You owe $1,000 to a financial institution payable one year from now. You estimate that you can invest money for a 7% return. What is the present value of the debt?

\[
\frac{1,000}{1.07} = \$934.58
\]

Observation: What if you’re mistaken about the 7%?
Example 2: You owe $1,000 to 100 people one year from now. Each person is 70 years old. You expect the same return (7%) and chance each person will be alive in one year (98%). What is the present value of the debt?

\[
100 \times \frac{1,000}{1.07} \times 98\% = 91,589
\]

Observation: Under what circumstances will you have exactly enough money to pay the debt?
Volatility vs. Predictability

Market Value Return vs Proposed Assumptions

-20.00% -15.00% -10.00% -5.00% 0.00% 5.00% 10.00% 15.00% 20.00% 25.00%


Return 7.5% 7.0%
Connecticut Teachers

- Plan covers any teacher, principal, superintendent or supervisor in public schools or professional employees at State Schools, if chosen
- Each member contributes 7% of annual pay and is not covered by Social Security
- Benefit at Retirement
  - 2% of Final Average Salary (3) multiplied by credited service (maximum benefit of 75% of FAS)
- Eligibilities
  - Normal Ret: Age 60 and 20 or 35 years of service
  - Early Ret: 25 years of service or Age 55 and 20
  - Vesting: 10 years of service
- COLA based on CPI and partially dependent on investment performance of Fund (risk shared)
Connecticut Teachers
Historical Membership Data

<table>
<thead>
<tr>
<th>Year</th>
<th>Active Members</th>
<th>Retirees &amp; Beneficiaries</th>
<th>Actives to Retired Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>51,368</td>
<td>30,493</td>
<td>1.68</td>
</tr>
<tr>
<td>2012</td>
<td>49,808</td>
<td>32,294</td>
<td>1.54</td>
</tr>
<tr>
<td>2014</td>
<td>51,433</td>
<td>34,310</td>
<td>1.50</td>
</tr>
<tr>
<td>2016</td>
<td>50,877</td>
<td>36,065</td>
<td>1.41</td>
</tr>
<tr>
<td>2018</td>
<td>50,594</td>
<td>37,446</td>
<td>1.35</td>
</tr>
</tbody>
</table>
Connecticut Teachers
Historical Payroll vs Benefits

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Annual Payroll</th>
<th>Total Benefits</th>
<th>Benefits as % of Payroll</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$3,646</td>
<td>$1,365</td>
<td>37.4%</td>
</tr>
<tr>
<td>2012</td>
<td>$3,653</td>
<td>$1,531</td>
<td>41.9%</td>
</tr>
<tr>
<td>2014</td>
<td>$3,832</td>
<td>$1,696</td>
<td>44.3%</td>
</tr>
<tr>
<td>2016</td>
<td>$3,950</td>
<td>$1,832</td>
<td>46.4%</td>
</tr>
<tr>
<td>2018</td>
<td>$4,076</td>
<td>$1,951</td>
<td>47.9%</td>
</tr>
</tbody>
</table>
Connecticut Teachers Valuation Results

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2012</th>
<th>2014</th>
<th>2016</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actuarial Liability</td>
<td>$23,496</td>
<td>$24,862</td>
<td>$26,349</td>
<td>$29,860</td>
<td>$31,111</td>
</tr>
<tr>
<td>Actuarial Assets</td>
<td>$14,430</td>
<td>$13,735</td>
<td>$15,547</td>
<td>$16,712</td>
<td>$17,952</td>
</tr>
<tr>
<td>UAAL</td>
<td>$9,066</td>
<td>$11,127</td>
<td>$10,803</td>
<td>$13,148</td>
<td>$13,159</td>
</tr>
<tr>
<td>Funded Ratio</td>
<td>61.4%</td>
<td>55.2%</td>
<td>59.0%</td>
<td>56.0%</td>
<td>57.7%</td>
</tr>
</tbody>
</table>
## Connecticut Teachers Contribution Rates

<table>
<thead>
<tr>
<th>Year</th>
<th>UAAL Amortization Rate</th>
<th>Employer Normal Cost Rate</th>
<th>Member Contributions</th>
<th>Total Contribution Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>15.09%</td>
<td>4.11%</td>
<td>6.00%</td>
<td>25.20%</td>
</tr>
<tr>
<td>2012</td>
<td>20.40%</td>
<td>3.73%</td>
<td>6.00%</td>
<td>30.13%</td>
</tr>
<tr>
<td>2014</td>
<td>19.92%</td>
<td>3.73%</td>
<td>6.00%</td>
<td>29.65%</td>
</tr>
<tr>
<td>2016</td>
<td>25.84%</td>
<td>3.60%</td>
<td>7.00%</td>
<td>36.44%</td>
</tr>
<tr>
<td>2018</td>
<td>27.50%</td>
<td>4.54%</td>
<td>6.00%</td>
<td>38.04%</td>
</tr>
</tbody>
</table>

* Members contribute 7% of salary but only 6% is used in determining employer contribution rate.
This projection is a deterministic projection from the 2018 valuation results and assumes contribution requirements continue to increase significantly to comply with the bond covenant in place at this time.
Connecticut Viability Commission

- Established and mandated to develop and implement a plan to satisfy both the sustainability and affordability of TRS
- Report completed in March, 2018
  - Benefit Benchmarking
    - TRS provides a moderate level of retirement to its members compared to its peers
    - Adding TRS members to Social Security would greatly increase the cost per dollar of benefit
Report completed in March, 2018

- Current Plan Analysis
  - Stochastic model analysis indicates the benefit to TRS of reducing the assumed 8.0% assumption
  - Current bond covenant requires the State’s full funding of the ADEC but hamstrings the Plan to change assumptions used by other plans
  - Current return assumption is 8.0% but in this analysis, the median expected return of 7.0% is used.
Current return assumption is 8.0% but in this analysis the median expected return is 7.0%. Recurring investment losses are expected and result in increases to the expected ADEC.

The $6.2 billion possible State contribution in 2032 provided in the Boston College report is at the 18th Percentile of expected outcomes.
Funded Ratio by Percentile Rank of Outcomes
Current Funding Policy with Updated Return Expectation

Funding Policy assumes that the ADEC is fully funded in all future years regardless of the amount, resulting in improved funded ratio.
Connecticut Viability Commission

- Report completed in March, 2018
  - Alternative Plan Analysis
    - Pension Obligation Bond Settlement
    - Change Funding Policy
    - Asset Transfer

- Link to report:

- Future studies on these alternative plans are currently being conducted throughout the State
Connecticut State Employees

- Plan covers all State employees, elected officials and their appointees
  - Tiered benefit plan based on Date of Hire
- Member contributions vary by Tier and by Class of employee, employees covered by Social Security
- Benefit at Retirement for New Tier IV members
  - 1.30% of Final Average Salary (5) multiplied by credited service
- Eligibilities for New Tier IV members
  - Normal Ret: Age 63 and 25 or Age 65 and 10
  - Early Ret: Age 58 and 10
  - Vesting: 10 years of service
- COLA for new retirees (post 2022)
  - Based on CPI but assumed rate of 1.95%
Connecticut SERS
Historical Membership Data

<table>
<thead>
<tr>
<th>Year</th>
<th>Actives</th>
<th>Retirees</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>53,196</td>
<td>38,093</td>
<td>1.40</td>
</tr>
<tr>
<td>2010</td>
<td>50,064</td>
<td>41,782</td>
<td>1.20</td>
</tr>
<tr>
<td>2012</td>
<td>47,868</td>
<td>43,887</td>
<td>1.09</td>
</tr>
<tr>
<td>2014</td>
<td>49,976</td>
<td>45,803</td>
<td>1.09</td>
</tr>
<tr>
<td>2016</td>
<td>50,019</td>
<td>48,191</td>
<td>1.04</td>
</tr>
<tr>
<td>2018</td>
<td>49,153</td>
<td>50,441</td>
<td>0.97</td>
</tr>
</tbody>
</table>
Connecticut SERS
Historical Payroll vs Benefits

<table>
<thead>
<tr>
<th>Year</th>
<th>Payroll</th>
<th>Benefit Payments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>3,497</td>
<td>1,047</td>
</tr>
<tr>
<td>2010</td>
<td>3,296</td>
<td>1,264</td>
</tr>
<tr>
<td>2012</td>
<td>3,355</td>
<td>1,424</td>
</tr>
<tr>
<td>2014</td>
<td>3,488</td>
<td>1,577</td>
</tr>
<tr>
<td>2016</td>
<td>3,721</td>
<td>1,746</td>
</tr>
<tr>
<td>2018</td>
<td>3,428</td>
<td>1,931</td>
</tr>
</tbody>
</table>
## Connecticut SERS
### Amortization of UAAL

<table>
<thead>
<tr>
<th></th>
<th>Initial UAAL</th>
<th>Remaining UAAL</th>
<th>Remaining Amortization Period (years)</th>
<th>Amortization Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Statutory Base</strong></td>
<td>$ 4,138,969</td>
<td>$ 3,968,724</td>
<td>13</td>
<td>$ 414,929</td>
</tr>
<tr>
<td>(1984 UAAL)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2016 Base</strong></td>
<td>16,248,400</td>
<td>16,683,862</td>
<td>28</td>
<td>1,083,777</td>
</tr>
<tr>
<td><strong>2018 Base</strong></td>
<td>570,349</td>
<td>570,349</td>
<td>25</td>
<td>39,265</td>
</tr>
<tr>
<td><strong>Total UAAL</strong></td>
<td></td>
<td>$21,222,935</td>
<td></td>
<td>$ 1,537,971</td>
</tr>
<tr>
<td><strong>Annual Valuation Payroll</strong></td>
<td></td>
<td></td>
<td></td>
<td>$ 3,428,068</td>
</tr>
<tr>
<td><strong>UAAL Amortization Rate</strong></td>
<td></td>
<td></td>
<td></td>
<td>44.86%</td>
</tr>
</tbody>
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Connecticut SERS Contribution Rates

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<tr>
<th>Year</th>
<th>UAAL Amortization</th>
<th>Employer Normal Cost</th>
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</thead>
<tbody>
<tr>
<td>2008</td>
<td>17.25%</td>
<td>9.44%</td>
</tr>
<tr>
<td>2010</td>
<td>22.06%</td>
<td>9.00%</td>
</tr>
<tr>
<td>2012</td>
<td>30.37%</td>
<td>7.45%</td>
</tr>
<tr>
<td>2014</td>
<td>35.43%</td>
<td>7.99%</td>
</tr>
<tr>
<td>2016</td>
<td>31.53%</td>
<td>7.28%</td>
</tr>
<tr>
<td>2018</td>
<td>44.86%</td>
<td>6.87%</td>
</tr>
</tbody>
</table>
Connecticut SERS
Projection of Plan

Connecticut SERS - Projection of Funded Ratio and Employer Contribution Requirement

Valuation Date (6/30)

- Employer Normal Cost
- Unfunded Accrued Liability Payment
- Funded Ratio
Plan covers municipalities that elected to provide a benefit to their departments
Municipalities upon entry can elect and pay for past service for their employees
Currently, there are 191 employers
Mixture of General and Police/Fire Plans and With/Without Social Security (SS) Benefits
Members contribute 5.00% if not covered in SS and 2.25% if covered by SS
Benefit at Retirement
- Not SS – 2% of FAS (3) multiplied by credited service
Connecticut Municipal

- **Benefit at Retirement**
  - SS – 1.5% of FAS (3) not in excess of year’s breakpoint (currently $74,000), plus 2.0% of FAS (3) in excess of breakpoint, multiplied by credited service

- **Eligibilities at Retirement**
  - Age 55 and 5 years of continuous service
  - 15 years of active aggregate service
  - 25 years of aggregate service
  - Compulsory retirement at age 65 for P&F members
  - Vesting – 5 years of continuous service

- **COLA** – CPI based with minimum annual COLA of 2.5%
Connecticut Municipal

- Last Valuation Completed was in 2016
- Membership:
  - Active members: 9,373
  - Annual Payroll: $566 Million
  - Retired members: 7,102
  - Annual benefits: $146 Million
- Funded Ratio of 86.1%
- Contribution Requirements (as a % of payroll)
  - General with SS: 11.74%
  - General without SS: 12.15%
  - Police and Fire with SS: 17.13%
  - Police and Fire without SS: 16.93%
Experience Investigation of all actuarial assumptions completed in 2018
Main recommendation was to lower investment return assumption from 8% to 7% to get in line with other State pension plans
Will significantly increase contribution requirements for these municipalities
2018 Valuation report in the final stages and will be presented to Commission next week
Connecticut Judges

- State also covers plans for its Judges
  - Probate Judges and Employees (~ 500 members)
  - Judges, Family Support Magistrates and Compensation Commissioners (~ 870 members)

- Funded Ratios
  - PJERS: 84.8%
  - JFSMCCRS: 52.3%

- State contributions
  - PJERS: $4.4 Million for FYE 2019
  - JFSMCCRS: $27.0 Million for FYE 2019
Questions?

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