FPPTA®

FLORIDA PUBLIC PENSION TRUSTEES ASSOCIATION

SINCE 1984

Trustee Certification Program

Basic Level Guidebook
Tuesday

Shaping the Future - Trustee by Trustee

CPPT

CERTIFIED PUBLIC PENSION TRUSTEE

Dear Attendees,

Welcome and congratulations on starting your journey to becoming a Certified Public Pension Trustee through the FPPTA's certification program. I would first like to commend you for taking on the role of trustee for your municipal pension plan and ensuring the promise of a secure retirement to our public servants is fulfilled.

The FPPTA's certification program has identified four pillars of education for Florida's municipal pension trustees: 1. The Pension Formula: Contributions + Income = Benefits + Expenses; 2. Ethics and Professionalism; 3. Behavioral Governance & Decision Making; and 4. Economics. Each of these pillars will be incorporated into the curriculum as you make your way through the three tracks (Basic, Intermediate, and Advanced) of the CPPT program. In this Basic track,
you will receive a strong foundational knowledge of actuarial and plan design concepts that will provide a framework for understanding the investment, legal topics, and real-life case studies you will encounter at future trustee schools. It may seem overwhelming at times, but rest assured you are surrounded by a wealth of knowledge and experience in our presenters, experienced trustees, and members of the FPPTA Education Committee -- many of whom were in the same place you find yourself now. Don't be afraid to ask questions; we are all here to learn.

Over the next few days, I hope you take the time to bond with your fellow trustees, engage with the speakers, and lean on your room monitors and mentors to get the most out of your experience. The FPPTA community is welcoming and eager to help you in any way we can.

The role and responsibility of a pension trustee is important to our communities across the state of Florida. Thank you for heeding the call and welcome to the FPPTA.

Sean McKinstry, CPPT, FLC
Education Director

BASIC

Masters Ballroom D

Monday

8:00 - 10:00 AM
Bamboo Farmer Mindset
Greg Bell
Thought Leader, Business Consultant, Leadership Coach

10:00 - 10:30 AM
Morning Break

10:30 - 11:15 AM
Governance: Capacity to Serve as Exemplary Leaders & Stewards
Don Trone
Behavioral Governance Institute

11:20 - 12:10 PM
Overview of Trustee Ethics in Florida
Caroline Klancke, *Florida Ethics Institute*
Ken Harrison, *Sugarman Susskind Braswell & Herrera*

12:10 - 1:30 PM
Lunch Break

1:30 - 2:30 PM
Fundamental Equation of Pension Plan Financing Pension Formula: C + I = B + E
Sara Carlson
Foster & Foster Actuaries and Consultants

2:35 - 3:10 PM
Defined Benefit vs. Defined Contribution Pensions in Florida
Kevin Spanier
Gallagher

3:10 - 3:30 PM
Afternoon Break

3:30 - 4:30 PM
Foundational Economics for Public Pension Plan Trustees
Dr. Mary Kelly

Tuesday

8:30 - 9:15 AM
Pre-Funding vs. Pay-as-you-Go Pension Plans
Eric Atwater
Aon

9:20 - 10:10 AM
Actuarial Valuations of Defined Benefit Plans
Kevin Spanier
Gallagher

10:10 - 10:30 AM
Morning Break

10:30 - 12:10 PM
Actuarial Alphabet Soup
Brad Armstrong, Peter Tramont & Piotr Krekora
Gabriel Roeder Smith

12:10 - 1:30 PM
Lunch Break

1:30 - 3:05 PM
Funding Implications
Doug Lozen
Foster & Foster Actuaries and Consultants

3:10 - 3:30 PM
Afternoon Break

3:30 - 4:30 PM
Basic Program Review

Pre-Funding vs. Pay-As-You-Go in Florida Municipalities

Florida municipalities face important choices in how they fund retirement obligations for employees. Two common approaches are Pre-Funding and Pay-As-You-Go (PAYGO). While both ultimately pay for benefits, they differ dramatically in cost efficiency, risk, and long-term sustainability.

1. Pre-Funding

How It Works

- Contributions (employer and employee) are made into a trust fund during employees' working years.
- These contributions are invested by a pension board or plan administrator.
- Over time, investment earnings compound, funding a large share of future benefits.

Florida Application

- Most municipal defined benefit (DB) plans in Florida are pre-funded, as required by state law (Chapter 112, F.S.).
- Actuarial valuations determine how much each municipality must contribute annually to keep the plan on track.
- Pre-funding creates a reserve so that benefits are ready and available when due.

Advantages

- Investment growth reduces cost: Historically, 60–70% of benefits are paid from investment returns, not direct taxes.
- Stable funding: Reduces pressure on future budgets.
- Legal compliance: Florida law requires municipal DB plans to be actuarially funded, not just PAYGO.

Pre-Funding vs. Pay-As-You-Go in Florida Municipalities

Eric Atwater, FSA, CFA, EA, MAAA

Pre-Funding: How It Works

- Contributions made into a trust fund during employment
- Funds invested by pension board or administrator
- Compounding investment growth funds future benefits

2. Pay-As-You-Go (PAYGO)

How It Works

- The city does not set aside funds in advance.
- Instead, benefits are paid directly from current revenues (general fund) as retirees draw them.
- There is no investment pool or compounding growth.

Florida Application

- Rare for pensions because Florida law requires actuarial pre-funding.
- More common for Other Post-Employment Benefits (OPEB), such as retiree health insurance, where municipalities often pay benefits only when due.
- Some small municipalities historically tried PAYGO pensions but moved away due to rising liabilities.

Disadvantages

- More expensive in the long run: No investment earnings; taxpayers fund 100% of benefits.
- Budget shocks: Costs grow as retiree numbers increase.
- Intergenerational inequity: Current taxpayers must cover benefits for past workers.

Side-by-Side Comparison

Feature	Pre-Funding (Common for Pensions)	Pay-As-You-Go (Common for OPEB)
When Funded	During employee's career	At retirement, as benefits come due
Use of Investment	Yes – trust fund invests & compounds	No – paid directly from annual revenue
Cost Efficiency	Lower long-term cost (investment growth pays most benefits)	Higher long-term cost (100% taxpayer-funded)
Florida Law	Required for municipal DB pension plans under Chapter 112	Permitted for retiree health/OPEB
Risk	Market risk shared & smoothed over time	Budget volatility risk for municipality
Example	City of Orlando Police Pension Fund	City retiree health subsidies (OPEB)

Pre-Funding: Florida & Advantages

Florida Application:
- Required by Chapter 112, Florida Statutes
- Actuarial valuations set annual contributions
- Reserve of assets ready when benefits are due

Advantages:
- 60–70% of benefits funded by investment growth
- Stable contributions and budgets
- Legal compliance with state requirements

PAYGO: How It Works

- Benefits paid directly from current revenues
- No trust fund or compounding investments
- Costs grow as retirees increase

Why Pre-Funding Matters in Florida

Retirement benefits are long-term promises. In Florida, both state law and sound financial practice emphasize pre-funding pension obligations rather than relying on a pay-as-you-go (PAYGO) approach. Pre-funding ensures that retirement promises made today are backed by real assets and investment growth tomorrow.

1. Florida Law Requires It

- Under Chapter 112, Florida Statutes, municipal defined benefit (DB) pension plans must be actuarially funded.
- Annual actuarial valuations determine the contribution levels needed to keep the plan sound.
- The Florida Department of Management Services (DMS), Division of Retirement, oversees compliance.

This means Florida municipalities cannot simply pay pensions from current revenues—they must pre-fund them.

2. Investment Growth Pays the Majority of Benefits

- With pre-funding, contributions are invested in a trust fund.
- Over time, compounded investment earnings cover 60–70% of total pension costs.
- Without pre-funding, taxpayers would be responsible for 100% of benefits through higher taxes or reduced services.

In Florida's municipal plans, pre-funding ensures that future retirees' benefits are financed largely by investment growth, not just local revenues.

3. Protects Municipal Budgets from Shocks

- PAYGO systems cause costs to rise sharply as more employees retire, overwhelming city budgets.
- Pre-funding smooths costs over decades, creating stability and predictability.
- This protects taxpayers, elected officials, and employees by avoiding sudden budget crises.

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PAYGO: Florida & Disadvantages

Florida Application:
- Rare for pensions, more common for OPEB (retiree health)
- Some small cities historically used PAYGO

Disadvantages:
- Taxpayers cover 100% of benefits
- Budget volatility as liabilities rise
- Intergenerational inequity

Florida Comparison

Pre-Funding (Pensions):
- Funded during career
- Investment growth reduces costs
- Required by law (Ch. 112)
- Requires Funding Policy

PAYGO (OPEB):
- Paid at retirement from revenues
- No investments, higher long-term cost
- Permitted for retiree health benefits

4. Ensures Intergenerational Fairness

- Pre-funding ensures that today's taxpayers pay for today's workers' benefits.
- Under PAYGO, future taxpayers must cover benefits earned by past workers, creating inequity.
- Florida's pre-funding model keeps funding aligned with service periods.

5. Builds Trust and Security for Employees

- Firefighters, police officers, and general employees rely on their pensions for retirement security.
- Pre-funding demonstrates a municipality's commitment to keeping promises.
- It helps maintain morale, aids in recruitment, and assures retirees their benefits will be there.

Florida Example

- A city like Tampa or Orlando pre-funds its police and firefighter pension plans under Chapters 175 and 185.
- Employee and employer contributions are invested by a local board of trustees.
- When officers retire, their benefits are already secured by the assets and investment returns in the trust.
- Contrast this with retiree health subsidies (OPEB), which are often PAYGO—cities pay costs out of the annual budget, with no assets set aside. Those costs grow significantly over time.

Narrative Takeaway

Pre-funding matters in Florida because it:

- Is required by law for municipal pensions.
- Uses investment growth to reduce costs.
- Provides budget stability for cities and taxpayers.
- Ensures fairness between generations.
- Builds trust and retirement security for employees.

In short, pre-funding transforms pensions from a budgetary burden into a sustainable, forward-looking investment in Florida's public workforce.

Elements of a Funding Policy

- Payors (usually the employer **and** the employees)
- The desired pattern of funding over time (usually level as a percent of payroll)
  - Increasing
  - Decreasing
  - Level
- Determination of employer funding
  - Fixed rate – may not be adequate
  - Actuarially determined rate – may not be affordable
- Actuarial cost method (usually entry age)

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Elements of a Funding Policy

- Amortization of the Unfunded Actuarial Accrued Liability ("UAAL")
  - Period in years
  - Open period or closed period
  - Level percent of payroll or level dollar amount
- Actuarial Value of Assets
- Other considerations
  - Budget realities
  - Legal requirements
  - Public perception
  - Guidelines for actuarial soundness
  - Changes in GASB accounting standards

Shaping the Future - Trustee by Trustee Basic CPPT

Pre-Funding Benefits

- Required by Florida law (Ch. 112, F.S.)
- Investment growth funds majority of costs
- Protects budgets from shocks
- Ensures fairness across generations
- Builds employee trust and retirement security

City Example: Tampa & Orlando

- Police & firefighter pensions pre-funded under Ch. 175 & 185
- Contributions invested by trustees
- Benefits backed by assets and investment returns

OPEB Example:

- Retiree health subsidies paid PAYGO
- Costs grow significantly over time

Key Points

- Uses investment growth to lower costs
- Required by law for municipal pensions
- Stabilizes municipal budgets
- Ensures fairness between generations
- Builds trust and retirement security

- Pre-funding transforms pensions into a sustainable investment in Florida's public workforce.

Actuarial Valuations of Defined Benefit Plans for Municipalities in Florida

In Florida, municipal defined benefit (DB) pension plans—whether for general employees, police officers, or firefighters—are governed by Chapter 112, Florida Statutes, along with Chapters 175 and 185 for police and firefighter plans.

A central requirement under these laws is the annual actuarial valuation. This is the key tool that ensures pension plans remain properly funded, sustainable, and compliant with state standards.

1. What is an Actuarial Valuation?

An actuarial valuation is a professional financial analysis prepared by a credentialed actuary that:

- Measures the plan's liabilities (the present value of benefits already earned by employees and retirees).
- Compares those liabilities to the assets currently held in the pension trust.
- Calculates the contribution rates needed from employers (and sometimes employees) to keep the plan on a sound footing.

It is essentially the "report card" for a pension plan.

2. Legal Requirements in Florida

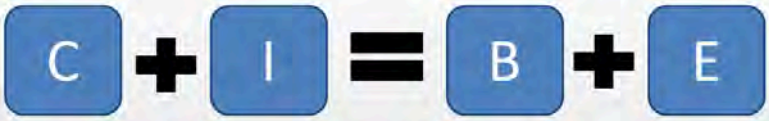
- Annual requirement: Every municipal DB plan must undergo an actuarial valuation at least once per year.
- Filing: Results must be filed with the Division of Retirement, Department of Management Services (DMS) for state review.
- Compliance: The valuation must use assumptions that are reasonable and consistent with generally accepted actuarial principles, including:
  - Mortality assumptions (how long members are expected to live).
  - Investment return assumption.
  - Salary growth and payroll assumptions.
  - Retirement, disability, and turnover rates.

These assumptions are critical because they shape the long-term funding outlook.

Actuarial Valuations of Defined Benefit Plans

FLORIDA PUBLIC PENSION TRUSTEES ASSOCIATION

Actuarial Valuation Funding Equation



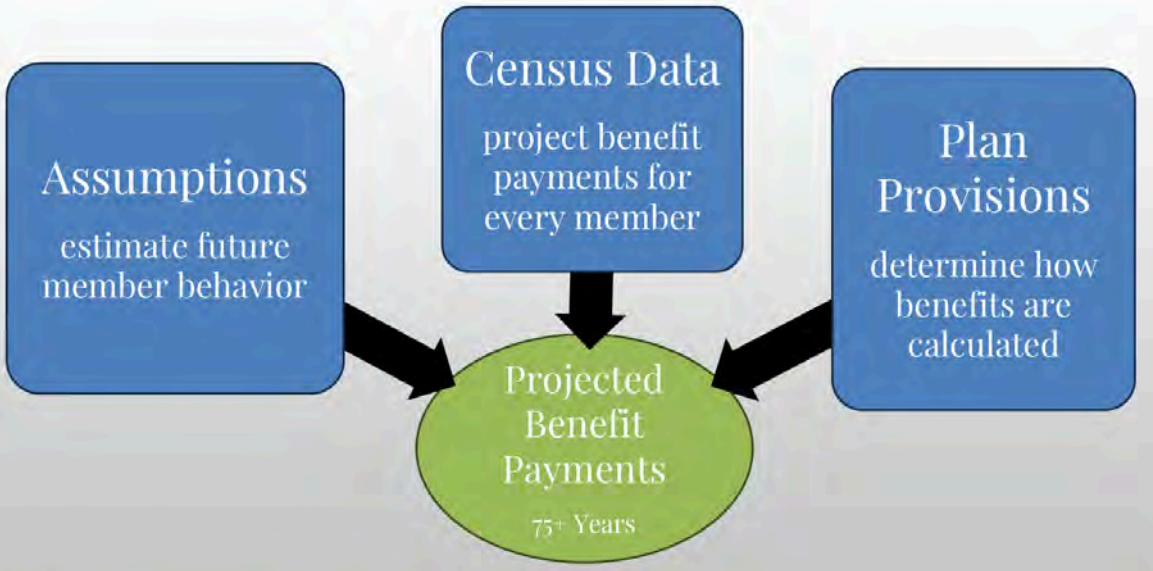
- Over the lifetime of the pension plan, the contributions made into the plan along with the investment returns will equal the benefit payments and expense paid out of the trust.
- Actuary's role is to help allocate the contributions over time, but the ultimate cost of the plan is driven by the plan provisions.

Actuarial Valuation

An Annual Valuation is performed in order to determine:

- Whether the plan is adequately funded
- The recommended employer contribution for the coming fiscal year
- Any changes to the plan's unfunded actuarial accrued liability (UAAL)
- The plan's funded ratio: a key measure of fiscal health

Actuarial Valuation Model



Actuarial Valuation Model

For a defined benefit pension plan, the ultimate value of future cash flows cannot be predicted with certainty.

- To estimate the probability and the likely cost of a future event such as disability, retirement, or death, actuaries need to make assumptions.
- The actuary recommends assumptions (typically based on an experience study), and the Board ultimately selects the assumptions to be used for the valuation.

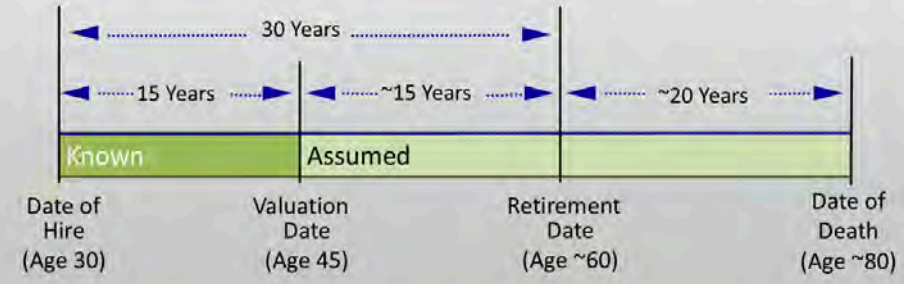
Actuarial Valuation Model

Known at valuation date:

1. Age
2. Salary
3. Gender
4. Service at valuation date

Assumed at valuation date:

1. Future salary increases
2. Retirement date(s)
3. Death rates (before and after retirement)
4. Disability rates
5. Other termination rates



3. Key Outputs of an Actuarial Valuation

- Actuarially Accrued Liability (AAL): The present value of promised benefits.
- Actuarial Value of Assets (AVA): The smoothed value of assets in the trust fund.
- Funded Ratio: A measure of plan health, calculated as assets ÷ liabilities.
    - Example: If a plan has $80M in assets and $100M in liabilities, the funded ratio is 80%.
- Unfunded Actuarial Accrued Liability (UAAL): The gap between liabilities and assets.
- Contribution Requirements: The actuary certifies the employer's minimum required contribution for the upcoming fiscal year.

4. Why Valuations Matter for Municipalities

- Legal Compliance: Florida law requires municipalities to fund their plans in accordance with the actuary's certified rates.
- Budget Planning: Contribution rates directly affect municipal budgets, often making pensions one of the largest long-term costs.
- Transparency & Accountability: Valuations provide employees, retirees, taxpayers, and officials with a clear picture of the plan's health.
- Early Warning System: If funding ratios decline, the valuation identifies the issue, allowing for corrective measures such as adjusting contributions or benefit designs.

5. Florida-Specific Example

- The City of Miami Police and Fire Pension Plan receives an annual actuarial valuation. The report shows the funded status, calculates employer contributions, and incorporates state insurance premium tax revenues (under Ch. 175 & 185).
- The City Commission must then budget for and pay the actuarially required contribution (ARC). Failure to do so would violate state law and risk state oversight.

Narrative Takeaway

Actuarial valuations are the backbone of municipal pension funding in Florida. They:

- Ensure legal compliance with Chapters 112, 175, and 185.
- Establish the minimum contribution rates municipalities must pay.
- Track the plan's health through funded ratio and liability measures.
- Provide transparency to employees, retirees, and taxpayers.

In short, without actuarial valuations, municipalities would be "flying blind" in managing pensions. With them, Florida's pension systems have a discipline and accountability framework that protects both retirement security and taxpayer interests.

Actuarial Assumptions - Demographic

Will an employee work long enough to vest and qualify for monthly benefits?

When will the employee retire and start collecting benefits?

How long will monthly benefits be paid?

Actuarial Assumptions - Economic

How will salaries grow in future years for each employee?

What is the present value of all of those future benefits in terms of today's dollars?

If we put money aside today, what rate of return can we expect to earn on it?

Discount Rate and Present Value in Pension Finance

1. What is the Present Value?

- The Present Value (PV) is the value today of money that will be paid in the future.
- Because a dollar received in the future is worth less than a dollar received today (due to inflation and investment opportunity), actuaries apply a discount rate to translate future pension payments into today's dollars.
- In pensions, the PV of all promised future benefits is called the Actuarial Accrued Liability (AAL).

Example:

A retiree is expected to receive $1,000 per month for 20 years. Without discounting, that looks like $240,000 in total payments. But when discounted to today's dollars at, say, 6.75%, the present value might be closer to $140,000.

2. What is the Discount Rate?

- The discount rate is the assumed long-term rate of return on the plan's invested assets.
- Actuaries use this rate to calculate the present value of liabilities.
- The higher the discount rate, the lower the present value of liabilities; the lower the discount rate, the higher the present value.

Florida Context:

- Each municipal plan's board of trustees sets its discount rate, based on advice from its actuary, subject to professional standards.
- Many Florida municipal plans use an assumed return around 6.5% to 7.0%, though this has trended downward in recent years to reflect market realities.
- The Florida Retirement System (FRS) discount rate is currently 6.7% (2023 assumption conference).

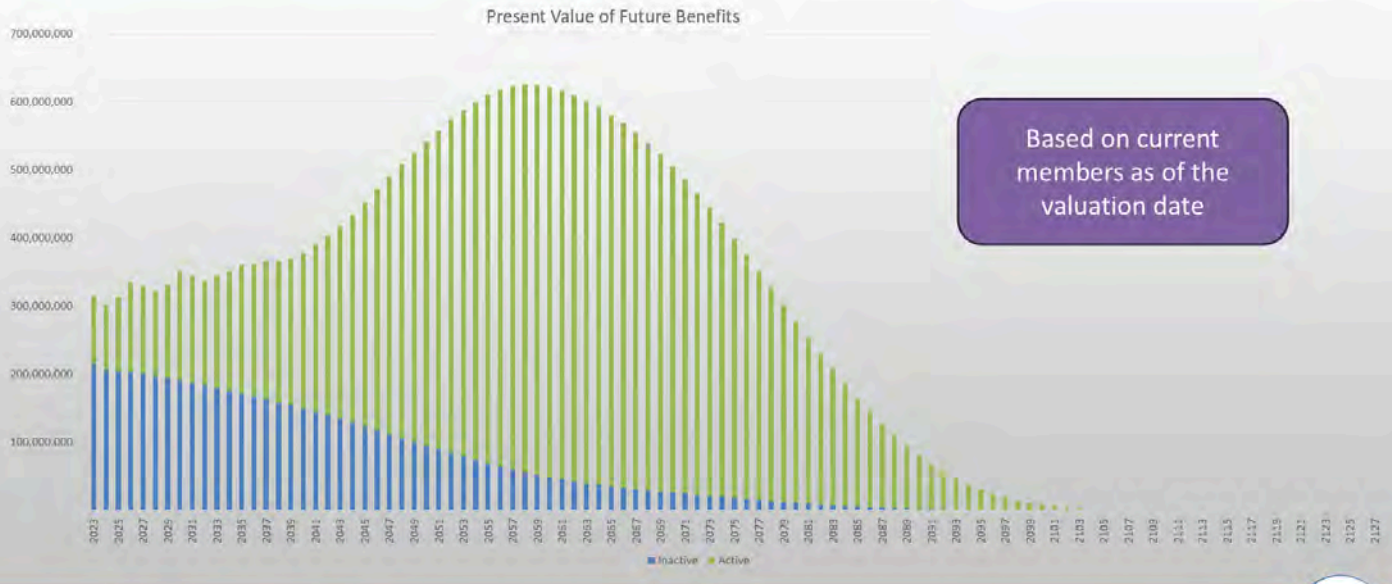
3. Why Does This Matter?

- Funding Requirements: The discount rate directly affects the size of required contributions.
    - A higher rate assumption lowers reported liabilities and contributions (but may understate true costs).
    - A lower rate assumption increases liabilities and contributions (but is more conservative).
- Plan Health: The present value calculation determines the funded ratio (assets ÷ liabilities).
- Budget Impact: For municipalities, even a 0.25% change in the discount rate can move millions of dollars in required contributions.

Actuarial Assumptions – Discount Rate and Present Value

- One of the most significant actuarial assumptions is the discount rate—the rate at which future benefit payments are brought back to today's dollars.
- In Florida, this is typically based on the long-term expected return on plan investments. A higher discount rate results in a lower present value of liabilities, while a lower rate increases the calculated liability.
- This is especially important for Florida municipal plans, where actuaries must justify assumptions and disclose their impact on the plan's funding status in compliance with:
  - Chapter 112.664, F.S. (Disclosure of funded ratio using both assumed and standardized discount rates)
  - Governmental Accounting Standards Board (GASB) Statements 67 and 68

Actuarial Valuation Model



Actuarial Valuation Model

Various liability measures:

- Present Value of Future Benefits – liability (today's value) associated with all benefits earned to date and benefits expected to be earned in the future
- Accrued Liability – liability associated with all benefits earned to date
- Normal Cost – annual cost of benefit accruals

Actuaries use the current value of plan assets and the liabilities to:

- Calculate an actuarially determined contribution
- Measure the current funded status of the plan = FUNDING RATIO

Present Value of Future Benefits

Accrued Liability: the value of benefits deemed to be earned-to-date, or the accumulation of prior normal costs

Present Value of Future Normal Costs: present value of expected future normal costs

Normal Cost: the portion of the PVFB to be accrued (or earned) in coming year

Funded Ratio

- A ratio of a pension plan's assets to its liabilities
- 100% indicates the assets are sufficient to pay for the benefits that have been earned to date if the investment rate of return and other assumptions are consistent with future outcomes

Why it Matters:

- Financial Health Indicator: It reflects the plan's ability to meet future obligations.
- Policy Decisions: Influences contribution rates, benefit adjustments, and funding strategies.
- Bond Ratings: Credit agencies consider funded ratios when evaluating municipal creditworthiness.

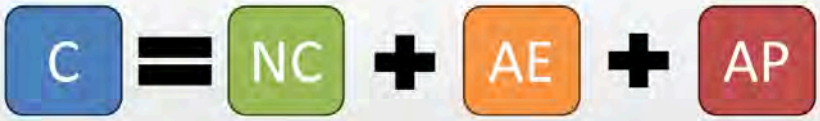
Funded Ratio

Source: NCPERS 2025 Public Retirement System Study

NCPERS Study shows the importance of making the full actuarial determined contributions (which is required under Florida Statutes).

Found that systems that receive the full actuarial determined contribution had a funded ratio that was 20% higher on average.

Actuarially Determined Contribution



C = Contribution
NC = Normal Cost
AE = Administration Expenses
AP = Amortization Payment

Actuarially Determined Contribution

Normal Cost

Normal Cost contributions fund benefits as the benefits are earned by members

- Goal is the fund benefits over the career of the members as benefits are earned (Goal is 100% funded by retirement for all members)

Administration Expenses

Covers expected administration expense for the year. Investment expenses are typically included in the Expected Return on Asset assumption.

Actuarially Determined Contribution

Unfunded Actuarial Accrued Liability Payment

Unfunded Actuarial Accrued Liability (UAAL) = Actuarial Accrued Liability less Actuarial Value of Assets

UAAL Payment is the "loan" payment to reduce the UAAL

- Goal is to pay off the UAAL over a reasonable period.

Florida Statute 112.64 has requirements regarding the amortization requirements for public pension systems

- The initial UAAL must be amortized over a period not greater than 40 years
- Increases in UAAL due to plan changes, assumption changes, funding method changes or actuarial gains and losses must be amortized over a period not greater than 30 years

Actuarially Determined Contribution

Florida Example - A 175 Firefighter Plan:

- The actuary evaluates plan assets, liabilities, and funding assumptions annually.
- Required contributions are calculated based on the plan's AAL (Actuarial Accrued Liability), AVA (Actuarial Value of Assets), and the target amortization period for the UAAL.
- Premium tax revenues received under Chapter 175 are applied toward the required employer contribution.

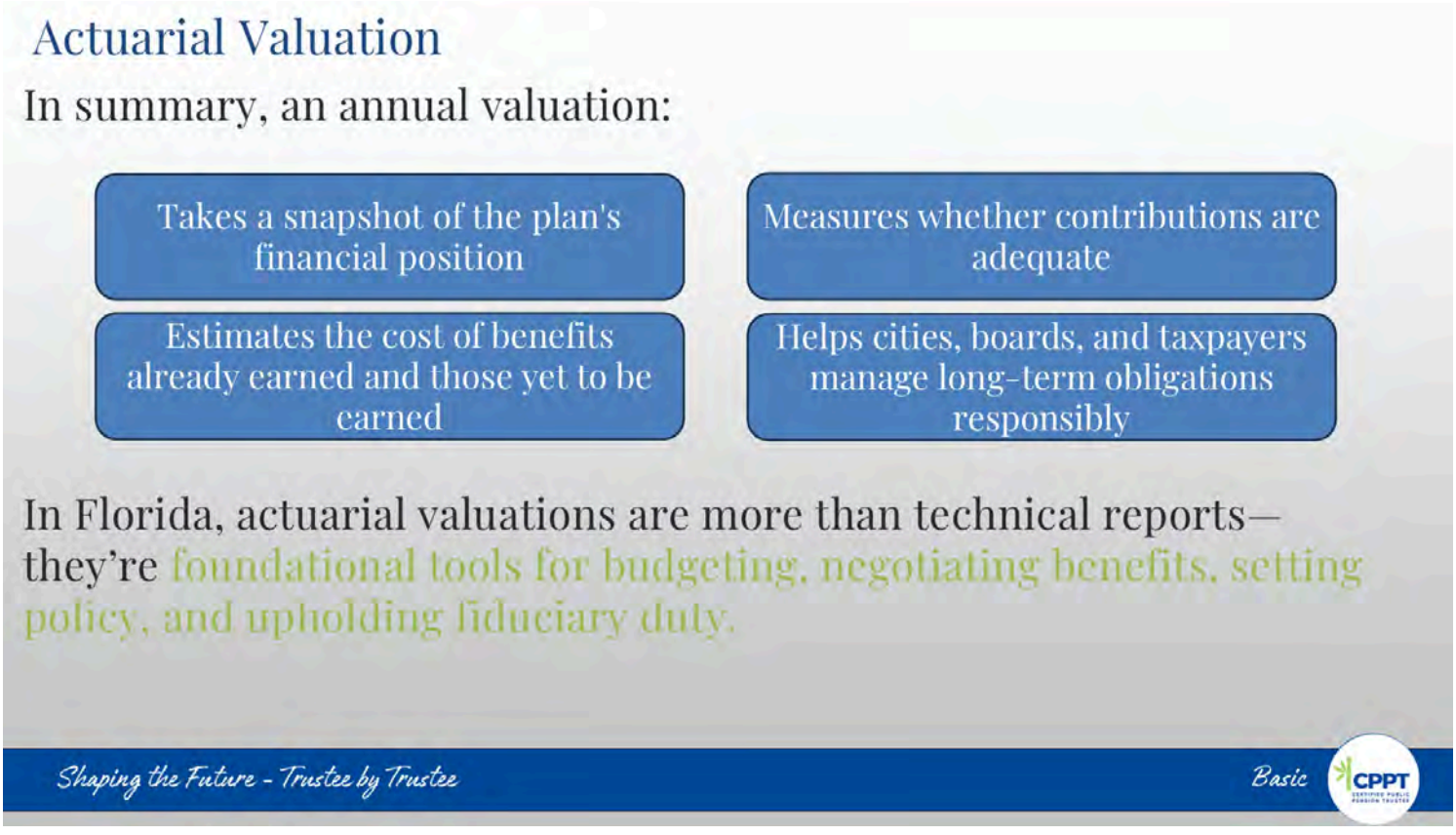
4. Florida Example

Let's say the City of Orlando Firefighters' Pension Plan has projected future benefit payments of $500 million over the next 50 years:

- At a 7.0% discount rate, the present value (liabilities) might be $250 million.
- At a 6.5% discount rate, the present value might rise to $280 million.
- That 0.5% change could require the city to contribute millions more each year to keep the plan fully funded.

Narrative Takeaway

- Present Value: Today's cost of all future promised benefits.
- Discount Rate: The key assumption used to bring those future payments back to present dollars, based on expected long-term investment returns.
- In Florida municipal plans, the discount rate is one of the most important actuarial assumptions because it determines contribution requirements, funded status, and ultimately the sustainability of retirement promises.



Actuarial Alphabet Soup: A Guide for Pension Trustees

FLORIDA PUBLIC PENSION TRUSTEES ASSOCIATION

Brad Armstrong, ASA, EA, MAAA
Piotr Krekora, ASA, EA, MAAA
Peter Tramont

GRS

Shaping the Future - Trustee by Trustee

CPPT CERTIFIED PUBLIC PENSION TRUSTEE

What's on the menu?

- Hopefully not another boring actuarial lecture
- Let's have a dialogue – We have the time! (90+ min)
  - Stop us if we don't make sense (David Byrne)
  - Ask questions along the way – interrupt
- There will be classroom-style segment at the end (including hints for Q&A – remember, there will be a test!)

What's the Point?

- NOT to make you professional Actuaries (why would anyone want that?) – you have a Plan Actuary for a reason! You want a life outside of your fiduciary responsibilities as a trustee.
- The point is to prepare you, as a Trustee, for what you really need to know as you interact with your Plan Actuary

The Big Picture

- Actuarial language has many components – or "ingredients", just like soups
- Some ingredients are raw (onion, bones) – "inputs", e.g., Census data, plan provisions, etc.
- Other are partially processed (meatballs, noodles) – "outputs", e.g., PVFB, ADC, AVA, etc.

"A Rose By Any Other Name…"

- Actuaries use a LOT of synonyms, e.g.: Normal Cost = Service Cost; Actuarial Accrued Liability = Accrued Liability = Past Service Liability, etc.
- They also use a LOT of acronyms/abbreviations, e.g.: NC = SC; AAL = AL; PVB = PVFB = APVFB, etc.
- It's a lot of jargon and jumbled letters
- Our Goal: Help you "decode" the Soup!

Pension Obligations: PVFB, AAL, and Normal Cost

Florida's municipal pension plans (under Chapters 112, 175, and 185, Florida Statutes) are funded using actuarial valuations. These valuations measure pension obligations in several key ways. The three most important concepts are:

1. PVFB – Present Value of Future Benefits

- Definition: The total value today of all benefits expected to be paid in the future to current employees and retirees, discounted to the present using the plan's discount rate.
- Scope: Includes benefits earned for past service and benefits expected to be earned from future service.
- Purpose: Represents the ultimate cost of the plan for current members if the plan were to continue indefinitely.

Florida Example:

If a firefighter is projected to retire in 20 years and live for another 25 years, the PVFB represents the lump-sum value today of all benefits they will ever receive, including benefits for years they haven't worked yet.

2. AAL – Actuarial Accrued Liability

- Definition: The portion of the PVFB that has already been earned by past service up to the valuation date.
- Scope: Excludes benefits not yet earned by future service.
- Purpose: Measures the liability that must be funded to date, based on service already rendered.
- Funding Status: Compared against plan assets to determine the Funded Ratio.

Florida Example:

In the City of Orlando Police Pension Plan:

- PVFB (all future benefits) might be $1.2 billion.
- AAL (earned so far) might be $900 million.
- Assets total $750 million.
- This means the funded ratio is 750 ÷ 900 = 83%, and the unfunded actuarial accrued liability (UAAL) is $150 million.

Main Ingredients in the Soup?

- PVFB = Present Value of Future Benefits
- AAL = Actuarial Accrued Liability
- NC = Normal Cost
- PVFNC = Present Value of Future Normal Costs
- DR = Discount Rate
- AVA = Actuarial Value of Assets

More Ingredients in the Soup?

- MVA = Market Value of Assets
- UAAL = Unfunded Actuarial Accrued Liability
- Funded Ratio = AVA / AAL or MVA / AAL
- LDROM = Low Default Risk Obligation Measure
- COLA = Cost-of-Living Adjustment
- DROP = Deferred Retirement Option Program

3. Normal Cost

- Definition: The value of benefits being earned for one year of additional service by active employees.
- Scope: Represents the cost of benefits accruing in the current year.
- Purpose: Added to the amortization of any unfunded liability to determine the annual contribution requirement.

Florida Example:
If the Normal Cost for Orlando firefighters is 12% of payroll, then for a firefighter earning $60,000, the plan must contribute $7,200 this year to cover the value of benefits earned for this year of service.

How They Work Together

- PVFB (all benefits) = AAL (past service) + Present Value of Future Normal Costs (future service).
- Each year, employees earn more service credit, so:
  - The AAL grows as more benefits are accrued.
  - The Normal Cost is added to reflect the new year of earned service.

This is why actuarial valuations in Florida present all three values—they show the total cost, the portion already earned, and the current year's cost of accruals.

Narrative Takeaway

- PVFB = the big picture (all promised benefits).
- AAL = the portion earned so far (the "debt" today).
- Normal Cost = the cost of one more year of service.

For Florida municipalities, these measures are the cornerstones of actuarial discipline. They ensure that:

- Cities and counties fund benefits as they are earned.
- Taxpayers understand both the present and future obligations.
- Retirement security for public employees is backed by sound funding.

Spice things up?

- GASB = Governmental Accounting Standards Board
- DB = Defined Benefit
- NaCl = Salt
- TPL = Total Pension Liability
- PFNP = Plan Fiduciary Net Position
- TPL = Net Pension Liability

Present Value of Future Benefits

- AKA (Also Known As):
  - PVFB
  - APVFB = Actuarial PVFB (more on the "A" later)
  - PVB = Present Value of Benefits
  - EBO = Expected Benefit Obligation (accounting)
- PVFB is the **total** value today of **all expected future benefit payments** for current plan members, *including* benefits that will be earned in the future

Application of PVFB, AAL, and Normal Cost in Florida Municipal Pension Plans

Florida municipalities operate defined benefit (DB) pension plans for general employees, police, and firefighters under Chapter 112, Florida Statutes, and Chapters 175 and 185 for police/firefighter plans.

Every year, their actuaries prepare valuations that calculate PVFB, AAL, and Normal Cost to determine how much the city must contribute to keep the plan financially sound.

1. Present Value of Future Benefits (PVFB)

- Application: The actuary first projects all retirement, disability, and survivor benefits for every active, retired, and terminated member with deferred benefits.
- This represents the ultimate cost of the plan for all current members.
- PVFB is not funded immediately; instead, it is broken into past and future portions.

Florida Example:

The City of Jacksonville Police and Fire Pension Fund may project billions in total future benefit payments. The PVFB shows the lump-sum value of those promises today, discounted by the plan's investment return assumption.

2. Actuarial Accrued Liability (AAL)

- Application: The actuary then measures how much of the PVFB has already been earned for past service.
- This liability must be matched against plan assets to determine the funded ratio.
- If assets are less than the AAL, the difference is the Unfunded Actuarial Accrued Liability (UAAL), which must be amortized (paid down) under state law.

Florida Example:

If the City of Orlando's Firefighters' Pension Plan has:

- PVFB = $1.2 billion,
- AAL = $900 million,
- Assets = $780 million,
- then the plan is 87% funded with a UAAL of $120 million.
- The city is legally required to fund contributions that address both the normal cost and a portion of this UAAL.

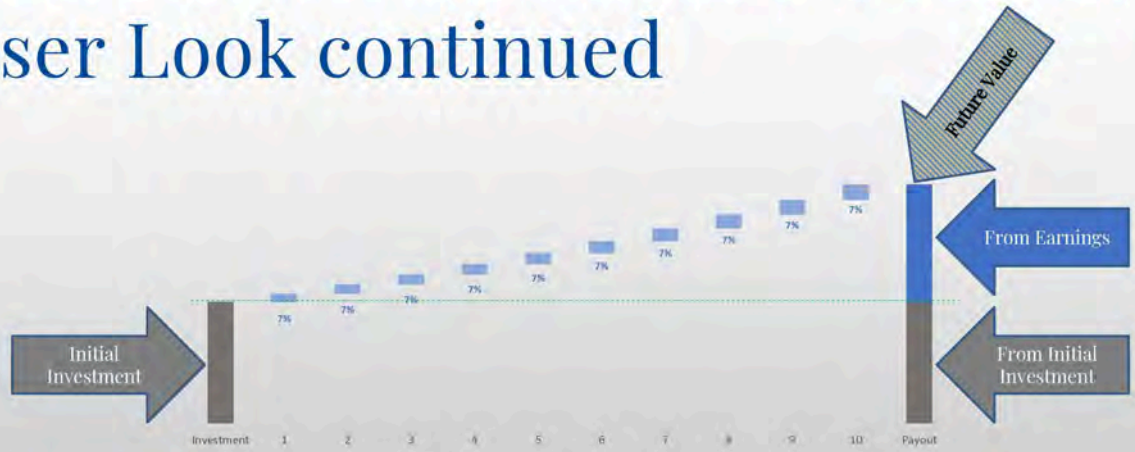
3. Normal Cost

- Application: Each year, employees earn one more year of service, which increases their pension benefits.
- The Normal Cost is the value of those new benefits earned during the year.
- In Florida municipal plans, the normal cost rate is typically expressed as a percentage of payroll.

Present Value of Future Benefits:
A Closer Look At the Basics

- Joe expects to spend $100,000 on a project in 10 years
- Joe has an investment opportunity promising 7% return each year for the next 10 years
- How much should Joe invest to receive a payout of $100,000 in 10 years?

Present Value of Future Benefits:
A Closer Look continued



- $100,000 = Investment × $(1+7\%)^{10}$
- Need to solve for Investment

Florida Example:

If Tampa's police officers' plan has a normal cost of 12% of payroll, then for every $100 of officer payroll, $12 must be contributed to cover benefits earned this year.

- The city pays most of this, but officers also contribute a fixed percentage (say 8% of salary), and state insurance premium tax revenue (Chapters 175 & 185) may offset part of the employer's share.

How They All Fit Together in Florida Municipalities

- PVFB = All future benefits for current members.
- AAL = The portion of PVFB already earned (must be funded today).
- Normal Cost = The cost of benefits earned this year (added annually).
- Florida municipalities must fund:
    - Normal Cost (current service) + Amortization of UAAL (past shortfalls) – employee contributions and premium tax revenues.

This certified contribution, known as the Actuarially Determined Employer Contribution (ADEC), is reported to the Florida DMS Division of Retirement and must be paid each year.

Narrative Takeaway

In Florida's municipal pension system:

- PVFB gives the big picture of all benefits promised.
- AAL tells us how much is already "owed" for past service.
- Normal Cost shows the annual cost of benefits earned this year.

Together, they form the foundation of actuarial valuations that guide city commissions, pension boards, and taxpayers in keeping plans sustainable and compliant with Florida law.

Present Value of Future Benefits:
A Closer Look continued

- 100,000 = Investment × $(1+7\%)^{10}$

$$\text{Investment} = \frac{100{,}000}{(1+7\%)^{10}}$$

Answer: 50,835

- In more general terms:

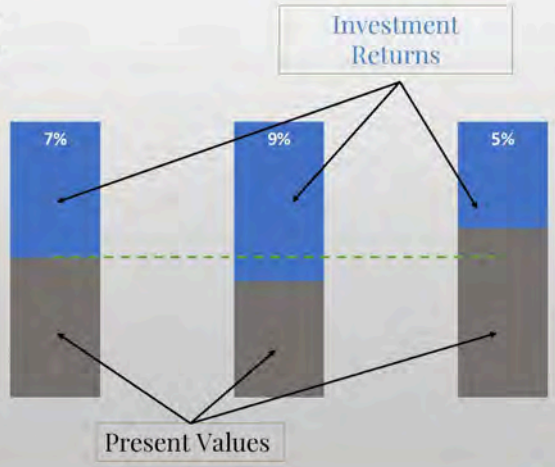
$$\textit{Present Value} = \frac{\textit{Future Value}}{(1+\textit{interest})^{\textit{time}}}$$

- Present Value is the portion of Future Value paid from current resources

Present Value of Future Benefits:
A Closer Look continued

- What if Joe could invest at 9%
  - ➢ Need to invest less *(lower present value)*

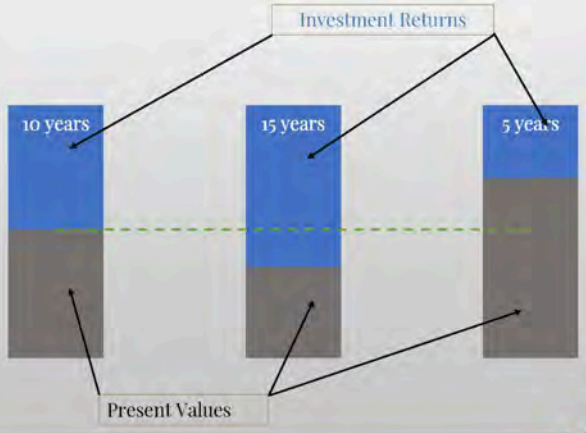
- Or at 5%?
  - ➢ Need to invest more *(higher present value)*



Present Value of Future Benefits:
A Closer Look continued

- What if Joe could invest for 15 years
  - ➢ Need to invest less
    (lower present value)

- Or 5 years?
  - ➢ Need to invest more
    (higher present value)

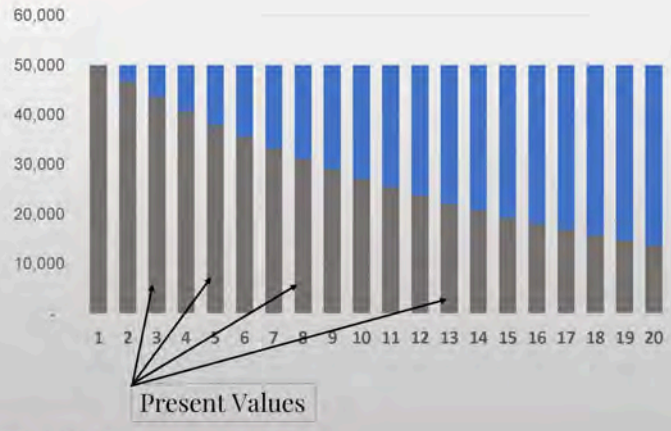


Present Value of Future Benefits:
A Closer Look continued

- What if Joe wins a lottery?

- He can get $1 Million
  in 20 annual installments
- Or $460,000 lump sum

- PV of the 20-year payout =
  Sum of each year's PVs
  (depends on interest, at 7% it's $566,780)

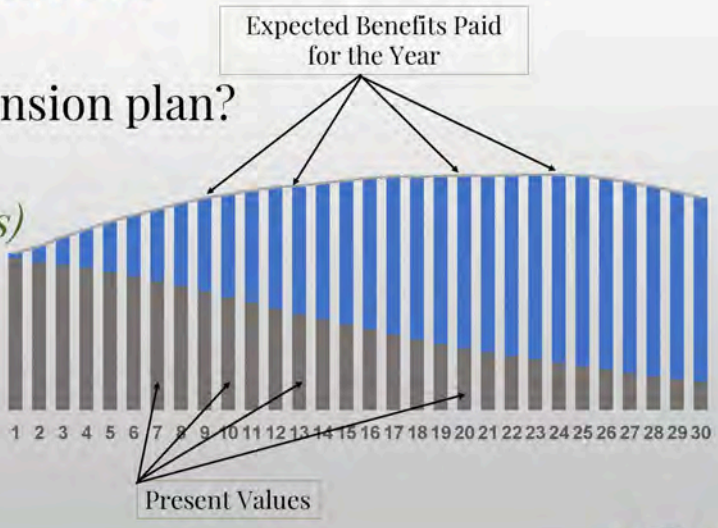


Present Value of Future Benefits:
A Closer Look continued

- What if Joe is a trustee of a pension plan?

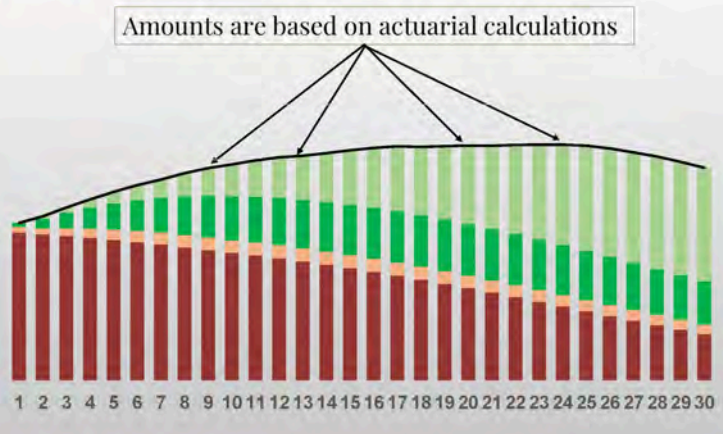
  (his plan is projected to pay millions per year for many years)

- PVB for the Plan = Sum of each year's PVB



Present Value of Future Benefits:
A Closer Look continued

- Whose benefits are included?
  - Retirees and Beneficiaries
  - Terminated vested
  - Active employees
    - ✓ Benefits accrued to date
    - ✓ Benefits not to accrue
- Whose benefits are not included?
  - Future employees (closed valuation)



PVFB: Break it Down

- Let's break it down a bit:
  - Present Value = Discounted Value: the "time value of money" today based on interest (or discount) rates
  - Future Benefits: What's implicit between "Future" and "Benefits" is "**Expected**", i.e., the probability-weighted or average value (also called the "expectation" or "expected value")

PVFB: Gets a New Name

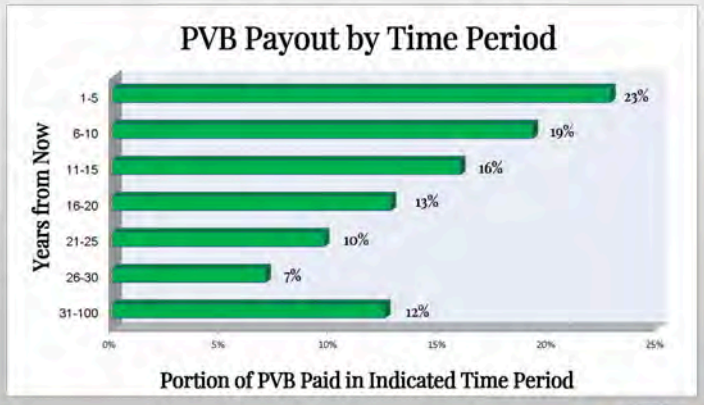
- There's an implicit word "Actuarial" in front of PVB/PVFB (i.e., Actuarial Present Value of Future Benefits, or APVB/APVFB)
- The implicit word "Actuarial" denotes **the application of probabilities** to the present values
- Probabilities are assumed in most actuarial models, so we can simplify and drop the "A" / "Actuarial

PVFB: Concept is Key

- PVB goes up/(down) when expected benefits increase/(decrease), e.g.:
  - 3% one-time COLA = 3% PVB increase
  - 2% benefit multiplier cut to 1% = 50% PVB decrease
- PVB goes up/(down) when the interest rate or assumed investment rate of return is lowered/(raised)

PVFB: Visualization is Key, Too

- In a typical open plan, 40-50% of the PVB will be paid out over the next 10 years; for a closed plan, the % paid out can be much higher



PVFB: Takeaways

- Takeaway 1: PVFB is the "starting point" for all actuarial measurements
- Takeaway 2: PVFB represents the TOTAL liability – the ultimate cost today of all benefits payable over the life of the plan (and the total needed to pay for all of them)
- Takeaway 3: PVFB includes both past service (already earned) AND service to be earned (in the future)

Present Value of Future Benefits: What Lies Beyond

- PVFB is just the beginning, the first step to
  - Measuring plan's funded status and
    - ✓ Actuarial Accrued Liability
  - Setting contribution requirements
    - ✓ Actuarially Determined Contribution

Actuarially Determined Contribution (ADC): A Preview

- ADC is the periodic contribution amount developed by the actuary to facilitate orderly funding of the pension plan
- Typically composed of two parts:
  - Normal Cost – amount needed to pay for the current year's cost of benefit accruals
  - Amortization Payment – amount needed to pay down a portion of any past funding shortfalls

Caveat: sometimes these two parts are comingled into one aggregate normal cost

Actuarial Accrued Liability

- AKA:
  - AAL, or AL = Accrued (sometimes Actuarial) Liability
  - The liability (colloquially, customarily)
  - **Past Service** Liability
  - ABO/PBO = Accumulated/Projected Benefit Obligation (in specific accounting contexts)
- AAL is the portion of the PVFB **allocated to service already rendered** by members as of today

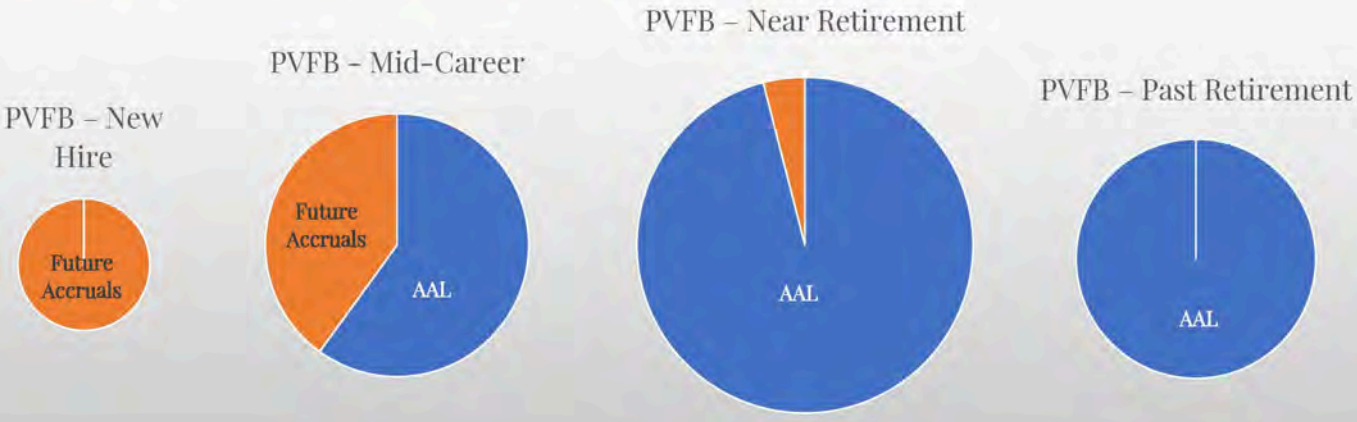
AAL: Break it Down

- Let's break it down a bit:
  - **Accrued** = What portion of the total **liability** (PVB) is allocated, or attributable, or assigned, to past service (i.e., what's been earned to-date)
  - **Actuarial** cost method (or attribution method) is how this allocation or spreading over a member's career – past service and future service – is done

AAL: Let's Conceptualize

- AAL answers the question: "If the **total** cost today of all expected plan benefits to be paid out in the future is $X (i.e., PVB), what **portion** of these benefits has ***actually been earned*** (i.e., accrued for service) as of today?"
- Special case: for *inactive* members, ***all*** *of their benefits have already been earned* (by definition, on the day they retired from their careers) – so, AAL = PVB

AAL: A Picture



AAL: Key Ingredient to Measure

- AAL is a key ingredient in fundamental measurements of a plan's funding levels
  - Unfunded Actuarial Accrued Liability = UAAL or UAL = AAL - Actuarial Value of Assets (AVA)
  - NPL = AAL (in specific accounting contexts) - Market Value of Assets (MVA)
  - Funded Ratio = AVA ÷ AAL (or MVA ÷ AAL)

AAL: Takeaways

- Takeaway 1: AAL is the "slice" of PVB earned to-date
- Takeaway 2: AAL is what "grows into" the PVB over time – when an employee ultimately retires, their AAL finally = their PVB, i.e., when all their service is finally rendered, or earned, or accrued and in the past
- Takeaway 3: AAL is a key ingredient in funding level measures (UAAL, NPL, funded ratio)

Present Value of Future Normal Costs (& Normal Cost)

- AKA
  - PVFNC (& NC)
  - Actuarial Normal Cost = Normal Cost
  - SC = **Service** Cost (typically in accounting contexts)
- PVFNC is the **portion** of PVFB representing the cost of benefits **earned in all future years**; NC is the cost of benefits earned in just the next year

PVFNC & NC: Break it Down

- NC without any qualification (e.g., "next year's NC") conventionally means this year's NC (i.e., the cost of benefit accruals attributable to the current plan year)
- "**Normal**" connotes the *regular*, ongoing nature of the cost of benefits earned by members each year–benefits earned for service rendered yields "service cost"
- PVFNC is the **present value** of the NC (i.e., the current/upcoming year's) + all future years' NC's

PVFNC & NC: Conceptualizing

- PVFNC (which includes the NC, by definition) is the complementary "future" slice of the PVB "pie" (while AAL is the remaining "past" slice making up the rest of the PVB "pie")
- NC is what would need to be paid to "prefund", or pay in advance, the cost of benefits to be earned for service to be rendered in the upcoming year

PVFNC & NC: Takeaways

- Takeaway 1: PVFNC is the future "slice" of PVB (i.e., for benefits earned for future service)
- Takeaway 2: NC (included in PVFNC) is the annual *normal*, or *regular*, or *standard*, or *expected* cost to fund future benefits earned for a given year (defaulting to the current plan year, unless otherwise indicated)
- Takeaway 3: NC is a key ingredient in annual funding requirements (i.e., contributions)

Combining Liability Ingredients: PVFB = AAL + PVFNC

- In other words, "Total Liability" = "Past Service Liability" + "Future Service Liability"
- This translates to the Fundamental Equation of Pension Plan Financing: B = C - E + I
- AP (Amortization Payment – more on this later) is the *past service* component of C (if any AAL is unfunded)
- NC is the *future service* component of C

Combining Liability Ingredients: Conceptual Example

- Let's say the plan is to pay Lee, a 60-year old employee hired today, a $150k lump sum based on $30k per year of service, at the end of 5 years when he retires
  - Assume **0% interest, 100% probability he works each of the next 5 years** (i.e., no chance of quitting, death or disability, etc.), **then 100% probability he retires**
  - Today, PVFB = $150k, AAL = $0, PVFNC = $150k

Combining Liability Ingredients: Conceptual Example – Continued 1

- NC's can be determined in various ways (some more logical than others)
- Perhaps most intuitively, $30k for each of the 5 years (since that's how the benefit is defined)
- Perhaps more frequently, $20k for 1st year, $25k for 2nd year… and $40k for 5th year

Combining Liability Ingredients: Conceptual Example – Continued 2

- Let's suppose the $30k/year actuarial NC method (or just "actuarial cost method") – conceptually, this is the UC (Unit Credit) method – so, NC = $30k for each year
- After Lee has worked 1 year, AAL = $30k and PVFNC = $120k; after 2 years worked, AAL = $60k and PVFNC = $90k…; after the full 5 years worked (and Lee retires): AAL = $150k = PVFB, & PVFNC = $0

Combining Liability Ingredients: Conceptual Example – Continued 3

- Now, let's suppose the 2nd actuarial cost method, i.e., $20k for the 1st year, $25k for the 2nd year, … $40k for the 5th year
- After Lee has worked 1 year, AAL = $20k and PVFNC = $130k; after 2 years worked, AAL = $45k and PVFNC = $105k…; after the full 5 years worked (and Lee retires): AAL = $150k = PVFB, & PVFNC = $0

Combining Liability Ingredients: Conceptual Example – Continued 4

- The PVFB is $150k in both (all) cases, regardless of actuarial cost method
- *How the NC's are determined* (i.e., the actuarial cost method) is what determines the "split" of the PVFB between AAL and PVFNC
- In both (all) cases, PVFB = AAL + PVFNC

Actuarial Value of Assets - Why?

- Investment returns are volatile
  - In the short-term, the Market Value of Assets (MVA) is often volatile and subject to temporary conditions
  - In the long-term, the MVA is always right and is the only measurement if assets must be used today
  - Rarely need to liquidate more than 5% MVA

Actuarial Value of Assets – Why?

- "Smoothing" the value of assets over a period of time reduces the volatility
  - Purpose is to avoid passing the volatility onto the required contributions and funding measurements
  - When the AVA (or "Funding Value" of assets) reflects smoothing, it's called the "smoothed (market) value of assets"

Actuarial Value of Assets – How?

- The AVA is designed to track closely to the MVA, but with less volatility
- Each year, the Assumed Rate of Return (ARR) is recognized (e.g., 7%)
- Annual asset gains and losses (above or below the ARR) are recognized over a fixed period (typically, 3 to 5 years)

Actuarial Value of Assets – How?

- Florida requires AVA method must employ a "corridor" to restrict the AVA from deviating more than 20% from the MVA (i.e., 80% to 120% of MVA)

AVA – When?

Amortization of Unfunded Actuarial Accrued Liability (UAAL)

- As previously mentioned, a shortfall exists when the AVA is less than the AAL (our funding target), which we call UAAL
- If contributions equal to the actuarially determined contribution were made in the past, why does UAAL exist?
  - Experience differing from expectations
  - Benefit changes
  - Assumption or method changes

Amortization of UAAL

- The UAAL must be paid off over time
  - Paid off or amortized similar to a mortgage
  - Length of time to pay off the UAAL is generally set in the funding policy

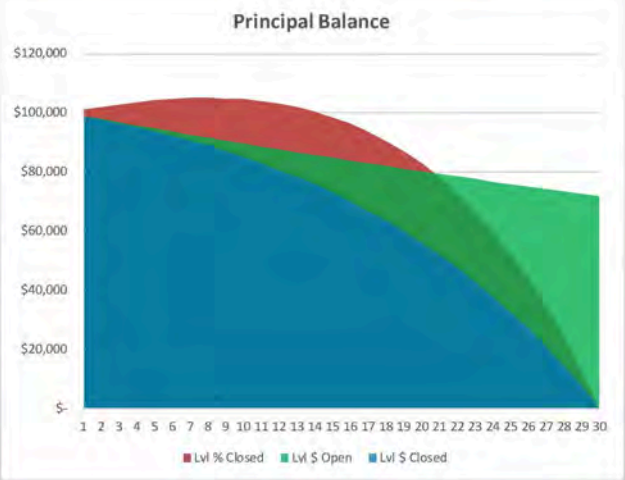
Types of UAAL Amortization

- Amortization **Payment** Methods
  - **Level dollar** – similar to a fixed-rate mortgage, the payment is the same each year
  - **Level percent of payroll** – uses an annually increasing payment amount

Types of UAAL Amortization

- Amortization **Period** Methods
  - **Open period** – the period restarts each valuation, like refinancing your mortgage over 30 years, every year
  - **Closed period** – the period decreases by 1 each year until exhausted, like a traditional mortgage

UAAL Amortization Examples



Basic Funding Equation Revisited

- Starting with the "Basic Formula":
- C + I – E = B
- We can rewrite this formula using actuarial terms:
- AAL + PVFNC = PVB
  (past + future)
- Further, we can replace AAL with AVA + UAAL:
  AVA + UAAL + PVFNC = PVB

Actuarially Determined Contribution (ADC): From Soup to Nuts

- AKA (Also Known As):
  - ADEC = Actuarially Determined *Employer* Contribution – "Employer" is implicit in ADC, as it is presumptive (it's the Employer's portion)
  - ARC = Actuarially (or Annual) Required Contribution
  - REC = Required Employer Contribution

ADC: In General

- ADC is the periodic (typically annual) contribution amount calculated/certified by the actuary (via actuarial valuations) to fund the pension plan
  - It is the recommended (typically minimum required) amount that, if paid as scheduled each year, would be sufficient to accumulate plan assets to pay all promised future benefits *based on current assumptions and plan provisions*

ADC: In General (continued)

- Most simply: ADC = NC + UAAL Amortization Payment
  - In other words, the contribution to fund the plan for the current/upcoming year = the cost of benefits earned by active members for the year PLUS the cost to pay down a portion of any past shortfall between plan assets and liabilities – roughly speaking:

"total annual cost" = "current service cost" + "past shortfall cost"

ADC: In Florida

- Municipal Employer plan sponsors must contribute *at least* the ADC each year – statutorily mandated under Ch. 112, Florida Statutes (F.S.)
- Ch. 112.63, F.S., requires at least the full NC be funded annually – if a plan has a negative UAAL amort. payment (e.g., if overfunded), this CANNOT offset the NC portion of ADC (i.e., ADC >= NC)

ADC: More In Florida

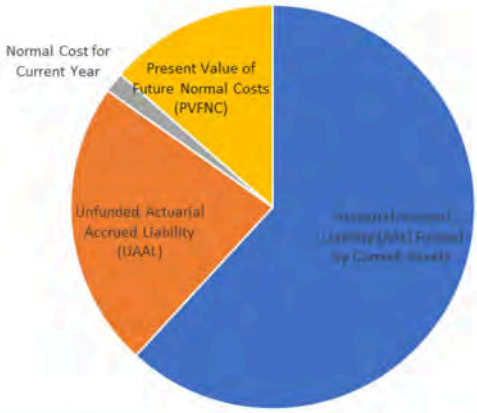
- State Premium Tax Revenues for Police & Fire plans
  - State provides insurance premium tax revenues to municipalities, earmarked for Police and Firefighter pension benefits (under Ch. 185 and 175)
  - These "State contributions" commonly are a part of the ADC and can often reduce what the Municipality (City, Town, Village, etc.) itself must contribute

ADC: Takeaways

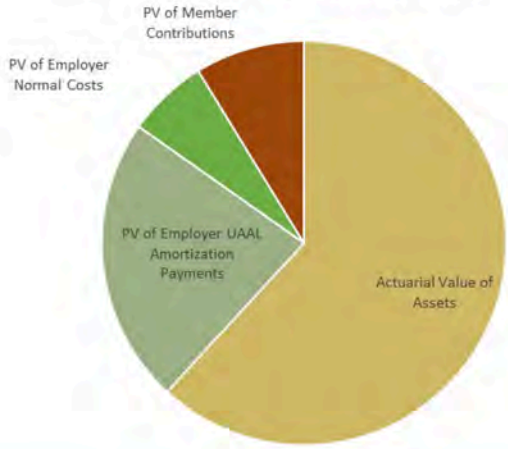
- Takeaway 1: ADC is the employer's minimum required annual contribution to the pension plan, calculated and certified by the plan actuary, in accordance with State statutes and Local ordinances (& CBA's)
- Takeaway 2: ADC = NC + UAAL Amort. Payment
- Takeaway 3: Various State/Florida-specific statutes and rules apply to Local/Municipal plans

Actuarial Liabilities & Resources

LIABILITIES
Present Value of Benefits (PVB)



RESOURCES
Assets and Future Contributions



Funding Implications for Municipal Pension Plans in Florida

Florida's municipal pension plans—covering police officers, firefighters, and general employees—are vital for retirement security and governed by Chapter 112, Florida Statutes, along with Chapters 175 and 185 for police/firefighter plans.
The way these plans are funded has major implications for municipal budgets, employee security, and taxpayer responsibility.

1. Legal Funding Requirements

- Florida law mandates that municipal DB plans must be pre-funded through annual actuarial valuations.
- Municipalities are required to pay the Actuarially Determined Employer Contribution (ADEC), which includes:
  - Normal Cost (benefits earned this year).
  - Amortization of Unfunded Liabilities (UAAL) from past underfunding.
- The Florida Department of Management Services (DMS) reviews these valuations to ensure compliance.

Implication: Cities cannot defer pension costs indefinitely. They must budget annually to cover actuarial requirements.

2. Budget Impact on Municipalities

- Pension contributions are often among the largest recurring costs in a city budget, alongside salaries and health care.
- Rising costs can crowd out funding for services like parks, police staffing, and infrastructure.
- For smaller municipalities, even a modest increase in contribution rates can significantly affect fiscal stability.

Example: If a plan's discount rate assumption is lowered from 7.0% to 6.75%, liabilities rise. That can add millions in required contributions, impacting the city's general fund.

3. Role of Investment Performance

- Investment earnings typically cover 60–70% of total pension costs.
- If investments underperform, employer contributions must increase to make up the difference.
- Conversely, strong investment performance can reduce contribution pressure.

Implication: Florida municipal budgets are indirectly exposed to global market volatility through their pension funds.

Funding Implications

Presented By:
Douglas H. Lozen, EA, MAAA

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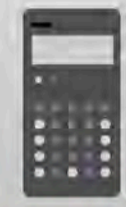
The Basics

Normal Cost
+ Administrative Expense
+ UAAL Amortization Payment
Total Required Contribution



4. Unfunded Liabilities (UAAL)

- If assets < liabilities (AAL), the plan has a UAAL that must be amortized over time.
- Florida requires municipalities to contribute additional funds each year to pay down this shortfall.
- Large UAALs can lead to increased property taxes, reduced city services, or strained labor negotiations.

5. Employee and Taxpayer Balance

- Employees contribute a fixed percentage of salary (often 5–10% depending on the plan).
- Municipalities (taxpayers) bear the balance of costs, including UAAL amortization.
- State premium tax revenues (under Chapters 175 & 185) provide supplemental funding for police/firefighter plans, easing some employer burden.

6. Policy and Collective Bargaining Implications

- Pension costs are a key issue in union negotiations.
- Richer benefits raise AAL and normal cost, requiring higher city contributions.
- Reforms (e.g., changing multipliers, retirement ages, or COLAs) are often considered when funding pressures mount.

Florida Case Study Example

- A mid-size city (e.g., Gainesville or St. Petersburg) may have:
  - AAL = $500M, Assets = $420M, creating a UAAL of $80M.
  - Actuary certifies employer contribution = $25M/year.
  - City must budget this amount annually, diverting funds that could otherwise support services.

This illustrates how funding shortfalls directly impact city finances and planning.

Narrative Takeaway

Funding municipal pension plans in Florida carries significant implications:

- Cities must pay actuarially determined contributions each year under state law.
- Budgets are sensitive to changes in assumptions, investment performance, and unfunded liabilities.
- Taxpayers ultimately share the risk if plans fall short, since municipalities must make up the difference.
- Strong pre-funding discipline ensures benefits are secure for employees and that cities maintain fiscal stability.

In short, pension funding is not just an actuarial exercise—it is a budgetary, political, and intergenerational responsibility in Florida municipalities.

Normal Cost

- Annual contribution over length of career
- Generally stable as a percent of payroll from year to year
- Increase/Decrease due to assumption or benefit changes
- Typically higher for plans with "richer" benefits

"Standard" vs "Rich" Plan
General Employees

	Accrual Rate (Multiplier)	Normal Retirement Age	Post-Retirement Auto COLA	Normal Cost
Standard Plan	2.50%	65	None	15%
Rich Plan	3.00%	55	2.00%	30%

"Standard" vs "Rich" Plan
Police/Fire

	Accrual Rate (Multiplier)	Normal Retirement Age	Post-Retirement Auto COLA	Normal Cost
Standard Plan	3.00%	Age 55 or Twenty-Five and out	1.00%	25%
Rich Plan	3.50%	Age 50 or Twenty and out	3.00%	45%

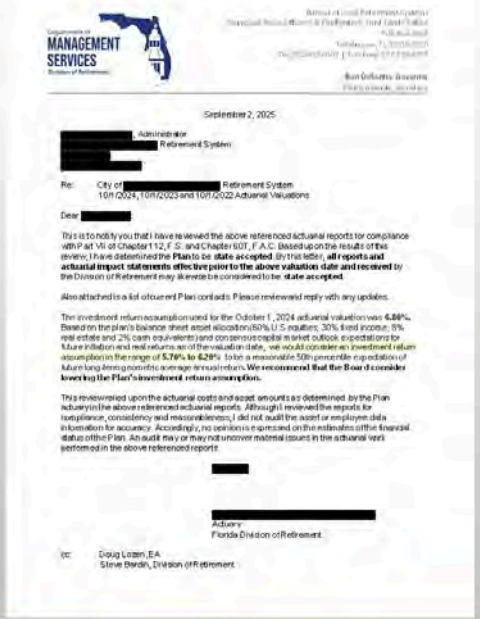
Compliance Considerations

- Normal Cost Minimum
- Pressure on Reducing the Investment Return Assumption
- Limitation on Overtime Pay for Pension Benefits
- Phase out of Lump Sum Sick and Vacation Pay for Penson Benefits

Normal Cost Minimum
Which is the Correct Total Required Contribution?

	A	B
Normal Cost	20%	20%
Administrative Expense	1%	1%
UAAL Amortization Payment	(5%)	(5%)
Total Required Contribution	16%	21%

Acceptance Letters



MANAGEMENT SERVICES

September 2, 2025

[redacted], Administrator
[redacted] Retirement System

Re: City of [redacted] Retirement System
10/1/2024, 10/1/2023 and 10/1/2022 Actuarial Valuations

Dear [redacted]

This is to notify you that I have reviewed the above referenced actuarial reports for compliance with Part VII of Chapter 112, F.S. and Chapter 60T, F.A.C. Based upon the results of this review, I have determined the **Plan** to be **state accepted**. By this letter, **all reports and actuarial impact statements effective prior to the above valuation date and received** by the Division of Retirement may likewise be considered to be **state accepted**.

Also attached is a list of current Plan contacts. Please review and reply with any updates.

The investment return assumption used for the October 1, 2024 actuarial valuation was **6.80%**. Based on the plan's balance sheet asset allocation (60% U.S. equities; 30% fixed income; 8% real estate and 2% cash equivalents) and consensus capital market outlook expectations for future inflation and real returns, as of the valuation date, we would consider an investment return assumption in the range of **5.70% to 6.20%** to be a reasonable 50th percentile expectation of future long-term geometric average annual returns. **We recommend that the Board consider lowering the Plan's investment return assumption.**

This review relied upon the actuarial costs and asset amounts as determined by the Plan actuary in the above referenced actuarial reports. Although I reviewed the reports for completeness, consistency and reasonableness, I did not audit the asset or employee data information for accuracy. Accordingly, no opinion is expressed on the estimates of the financial status of the Plan. An audit may or may not uncover material issues in the actuarial work performed in the above referenced reports.

[redacted]

[redacted]
Actuary
Florida Division of Retirement

cc: Doug Lozen, EA
Steve Bardin, Division of Retirement

Limitation on Overtime Pay

- Overtime pay for pension purposes limited to no more than 300 hours per year
- Implemented in 2012
- Previously, some plans (e.g. Police) considered all earnings reportable on Form W-2 as pensionable
- Led to "Pension Spiking" associated with excessive overtime in last years of employment

Lump Sum Sick and Vacation Pay

- Cash outs added to final year earnings for Pension purposes
- Can significantly increase pension check
- Phasing out started in 2011
- Typically limited to number of hours on "Effective Date"
- Members hired after "Effective Date" cannot use for Pension Purposes

Miscellaneous

- Contribution Timing
- Role of Assumptions/Experience Studies
- State Monies and Mutual Consent

Contribution Timing

- Sponsor is required to contribute no less frequently than quarterly
- Total Required Contribution typically has interest load
- Beginning of Year funding removes interest load
- Coordination between Finance and Pension Board needed since methods and assumptions are established by Trustees

Role of Assumptions/Experience Studies

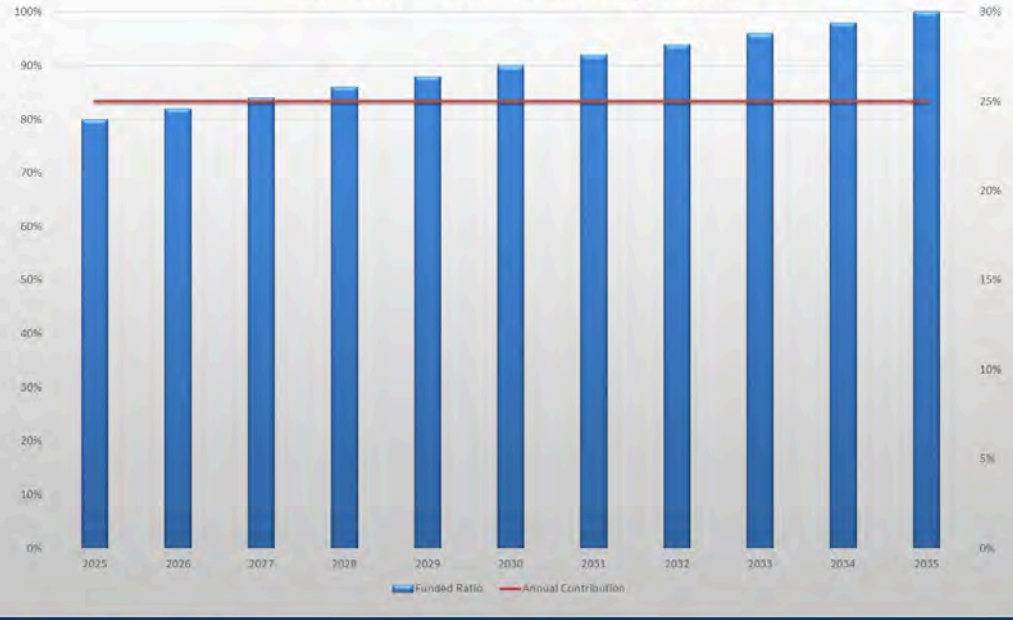
- Assumptions used to determine Total Required Contribution
- Should be reasonable individually and in aggregate
- Established periodically through Experience Studies (every five years or so)
- Have ZERO impact on cost of pension plan

$$C + I = B + E$$

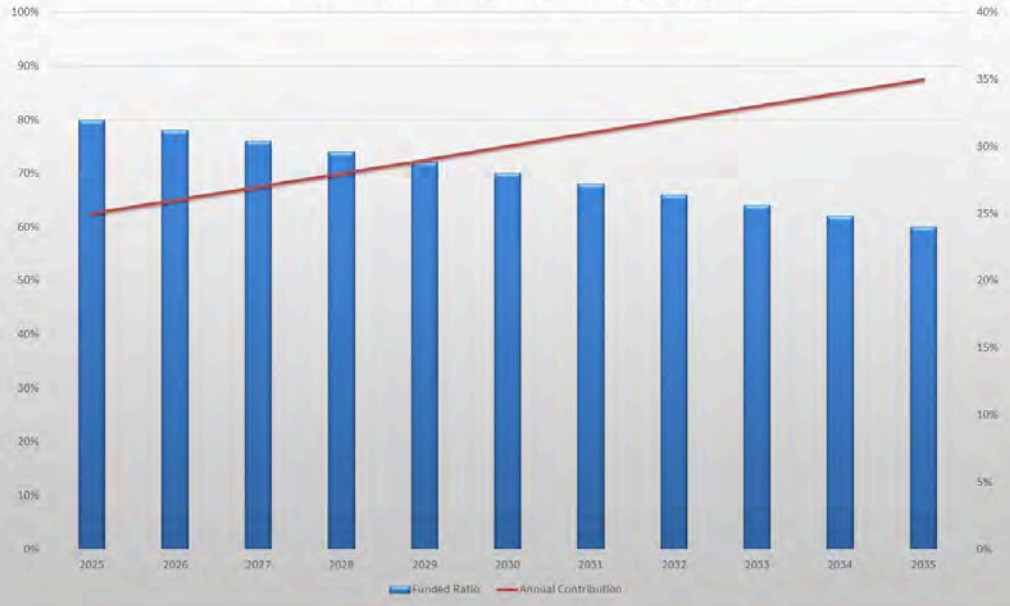
Contributions + Investment Income = Benefits + Expenses

NOTE: The above formula is agnostic with respect to assumptions

"Reasonable" Assumptions



"Unreasonable" Assumptions



State Monies/Mutual Consent

- Applies to Police and Fire Plans Only
- Tax on Insurance Premiums
- 0.85% on Auto Insurance Premiums for Police
- 1.85% on Hazard Insurance for Fire

State Monies/Mutual Consent

- Chapter 99-1 Required Actuary to determine cost of minimum benefits; annual monies in excess of the minimums were reserved for extra benefits.
- Since 2015, negotiating parties can decide how to allocate the State Monies through a "Mutal Consent" Agreement.
- In absence of a Mutal Consent, allocation of State Monies between Membership and Sponsor determined by actuary through "Default" Method.

Speakers Biographies

Eric Atwater, Partner & Co-Leader, Aon

Eric J. Atwater is a Partner and co-leader of Aon's Public Sector Actuarial practice. He also serves as lead consulting actuary and relationship manager to public entities.

He has about eighteen years of consulting experience in pension and employee benefits in both the public and private sector. Prior to joining Aon, Mr. Atwater spent the nine years as Consulting Actuary focused exclusively on public and quasi-public entities retirement and post-retirement benefit programs. Mr. Atwater specializes in the management of assets and liabilities for public pension and Other Post Employment Benefit (OPEB) plans.

He is a fully credentialed actuary and in the process of obtaining the Charter Financial Analyst (CFA) designation to solidify his understanding of the assets. His work includes deterministic and stochastic modeling of plan liabilities and future cash flows.

Mr. Atwater is generally recognized as an expert in pension reform and consulting to public plans with distressed funding situations. He has lead benefit (Health, Pension and/or OPEB) reform for public entities including: City of Atlanta (GA), City of Memphis (TN), City of New Orleans (LA), DeKalb County (GA) and Town of Hamden (CT). He is also a regular speaker at industry conferences and has been quoted in pension-related articles in the Wall Street Journal, Washington Post and several local newspapers.

Mr. Atwater graduated with honors from Georgia State University, where he received a BBA with a concentration in Actuarial Science. He is a Fellow of the Society of Actuaries, a Fellow of the Conference of Consulting Actuaries, a Member of the American Academy of Actuaries and an Enrolled Actuary. He is also in the process of completing the requirements for the CFA (Level III candidate June 2017).

Brad L. Armstrong, ASA, EA, FCA, MAAA

Brad L. Armstrong, ASA, EA, FCA, MAAA, is a Senior Consultant for Gabriel, Roeder, Smith & Company. He has more than 25 years of actuarial and benefits consulting experience exclusively with public sector pension and OPEB plans. Brad has primary responsibility for state retirement systems in Illinois and Maryland, and multiple municipal and county retirement systems in Florida, Missouri and Michigan. He has also conducted actuarial audits for large plans in California, Iowa and Texas, and managed special projects for public employee retirement systems in Arizona, Kansas, Oklahoma and Wisconsin.

Brad frequently speaks before public sector retirement boards, legislative bodies, public pension conferences and employee groups on issues including: the cost impact of proposed plan changes, operation of a retirement system, funding policies, risk assessment and accounting compliance.

Speakers Biographies

Peter G. Tramont

Expertise

Peter Tramont is a Senior Analyst in GRS' Fort Lauderdale, Florida office. He has more than 14 years of actuarial and consulting experience. Peter provides actuarial and consulting services to public sector retirement systems and OPEB plans, and has served clients in Florida, Louisiana, and Connecticut.

Peter's actuarial experience encompasses pension and OPEB actuarial valuations for funding and accounting purposes, liability and cost projections, experience studies, and actuarial impact statements and cost analyses for proposed plan changes.
Professional Designations
Peter is currently pursuing his Associate designation sponsored by the Society of Actuaries.
Education
Bachelor of Arts, Mathematics/Actuarial Science, University of Connecticut

Doug Lozen, EA,MAAA

Doug joined Foster & Foster in 1999 and is currently a consulting actuary to over 80 governmental retirement plans in Florida. Doug's experience includes topics such as actuarial valuations, plan redesign studies, Collective Bargaining studies, statutory requirement disclosures, plan experience studies and assumption/method recommendations, actuarial audits, forecasting, and individual retirement benefit calculations. Doug has a Bachelor of Science in Applied Mathematics from Michigan Technological University and a Master of Science in Mathematics Education from Nova Southeastern University. Doug is an Enrolled Actuary under ERISA, and a member of the American Academy of Actuaries.

Speakers Biographies

Piotr Krekora, ASA, EA, FCA, MAAA, PhD - Consultant

Piotr Krekora is a Senior Consultant in GRS' Fort Lauderdale, Florida office. Piotr has more than 15 years of actuarial and consulting experience.

Piotr is a member of the GRS Office of the Chief Actuary. In this capacity, he provides strategic thought leadership to public sector clients as well as ensuring that service is being provided at the highest level by all GRS employees.

Piotr's actuarial expertise covers all aspects of public sector pension and retiree health plan design and operation, including pension and OPEB valuations, pension and retiree health care studies, cost analyses of proposed plan changes, liability and contribution projections, and asset simulation and cash flow studies. Additionally, Piotr is experienced in designing and implementing cash balance plans as well as other alternative designs. He has a working knowledge of Florida Statutes governing operations of municipal pension plans, and group insurance plans offered by public sector employees.

Presentations & Publications

Piotr's speaking engagements include national and regional benefit conferences such as the National Conference of Public Employee Retirement Systems (NCPERS), The Government Finance Officers Association (GFOA), the Florida Public Pension Trustees Association (FPPTA), the Florida GFOA and FSFOA, as well as actuarial meetings including the Conference of Consulting Actuaries (CCA) and Society of Actuaries (SOA). He also co-authored the paper Revisiting Pension Actuarial Science-A Five Part Series, by Rizzo, Ostaszewski, and Krekora published by the Society of Actuaries in 2009.

Education

Ph.D., Physics, Polish Academy of Sciences

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